PRACTICE AND EDUCATION COMMITTEE
TELECONFERENCE MEETING AGENDA
May 27, 2016
8:00 AM – 9:00 AM
(or until conclusion of business)

Elihu Harris Building
1515 Clay Street, Room 11
Oakland, CA 94612

ORDER OF ITEMS SUBJECT TO CHANGE

1. Call to Order/Roll Call
2. Public Comment for Items Not on the Agenda
   Note: The committee may not discuss or take action on any matter raised during this public comment section, except to decide whether to place the matter on the agenda of a future meeting [Government Code §11125, §11125.7(a)].
3. Discussion and Possible Action on Continuing Education Course Approval Request Form Amendments; Recommendations to Full Board
4. Discussion and Possible Action on Continuing Education Course Approval Requests Pursuant to California Code of Regulations § 1536
   A. Orbit, Eyelid Lesions, & Mohs Surgery
   B. Taste of the Islands: Corneal Inlay Options vs. IOLs for Presbyopia: When to do What and Can They Co-Exist?; An Extraordinary “Retina” Tale of Great Egret Regret; Herpes Zoster: The Master Masquerader; Cataract in the Glaucoma Patient: What IOL Should I Use?; Macular Degeneration; Orbital Lumps and Bumps; Duane Syndrome; Refractive Surgery Advances: Contra Vision (topography guided) Lasik vs. SMILE; OCT & Macular Disease: Mastering the Basics; Challenging Refractive Surgery Cases: How to Manage Patients Outcomes with Advanced Technologies; Cataract Surgery: To Femto or Not to Femto; Eyelid and Periocular Cancer: The Optometric Role in Diagnosis and Management; What I Always Wanted to Ask The Glaucoma Specialist
   C. 1. Time to Smile with KAMRA or Topoguided?
      2. Update of Glaucoma Medical Treatments
      3. Cataract Surgery in Fuchs Dystrophy
      4. Retinal Care of the Myopic Patient: Considerations for Refractive Surgery
      5. Management of Corneal Ulcers
      6. The New Age of Refractive Cataract Patients
      7. Diagnosing Glaucoma: To Start or Not Start, That is the Question
      8. Retinal Imaging – OCT
      9. Myopic Treatment in Presbyopic Patients
   D. Cataract & Refractive Surgery
   E. Vitreo Retinal Procedures
   F. Glaucoma iStent Procedure
5. Adjournment

The mission of the California State Board of Optometry is to protect the health and safety of California consumers through licensing, education, and regulation of the practice of Optometry.

Meetings of the California State Board of Optometry and its committees are open to the public except when specifically noticed otherwise in accordance with the Open Meeting Act. Public comments will be taken on agenda items at the time the specific item is raised. Time limitations will be determined by the Chairperson. The Committee may take action on any item listed on the agenda, unless listed as informational only. Agenda items may be taken out of order to accommodate speakers and to maintain a quorum.

NOTICE: The meeting is accessible to the physically disabled. A person who needs a disability-related accommodation or modification in order to participate in the meeting may make a request by contacting Rob Stephanopoulos at (916) 575-7184 or sending a written request to that person at the California State Board of Optometry, 2450 Del Paso Road, Suite 105, Sacramento, CA 95834. Providing your request at least five (5) business days before the meeting will help ensure availability of the requested accommodation.
Dr. Madhu Chawla, O.D., Committee Chair, will call the meeting to order and call roll.
The committee may not discuss or take action on any matter raised during this public comment section, except to decide whether to place the matter on the agenda of a future meeting [Government Code §11125, §11125.7(a)].
To: Practice and Education Committee Members  Date: May 27, 2016

From: Robert Stephanopoulos  Telephone: (916) 575-7170
Assistant Executive Officer

Subject: Agenda Item 3. – Discussion and Possible Action on Continuing Education Course Approval Request Form Amendments; Recommendations to Full Board

The Board approved a CE Application form during its February 2016 meeting. However, on April 15, 2016 the Practice and Education Committee believed the form required additional amendments. Attached is the CE Application form containing these amendments.
CONTINUING EDUCATION COURSE APPROVAL
APPLICATION

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule, a detailed course and topical outline of the subject matter and presentation materials (e.g., PowerPoint presentation). Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>____________________</td>
<td>□ □/□□/□□</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Provider Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Name: __________________</td>
</tr>
<tr>
<td>(First)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street __________________</td>
</tr>
</tbody>
</table>

| Provider Email Address ____________________ |

<table>
<thead>
<tr>
<th>Will the proposed course be open to all California licensed optometrists?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ YES □ NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ YES □ NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Instructor Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course.</td>
</tr>
<tr>
<td>If there are more instructors in the course, please provide the requested information on a separate sheet of paper.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>__________________</td>
<td>__________________</td>
<td>__________________</td>
</tr>
<tr>
<td>(First)</td>
<td>(Last)</td>
<td>(Middle)</td>
</tr>
</tbody>
</table>

| Phone Number (____) __________________ | Email Address ____________________ |

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider __________________ Date __________________
To: Practice and Education Committee Members  Date: May 27, 2016

From: Robert Stephanopoulos  Telephone: (916) 575-7185
Assistant Executive Officer

Subject: Agenda Item 4. – Discussion and Possible Action on Continuing Education Course Approval Requests Pursuant to California Code of Regulations § 1536.

Pursuant to California Code of Regulations (CCR) § 1536 (f) and (g), the Board may approve continuing optometric education courses meeting the criteria set forth in the regulation:

(f) Other continuing optometric education courses approved by the Board as meeting the criteria set forth in paragraph (g) below, after submission of a course, schedule, topical outline of subject matter, and curriculum vitae of all instructors or lecturers involved, to the Board not less than 45 days prior to the date of the program. The Board may, upon application of any licensee and for good cause shown, waive the requirement for submission of advance information and request for prior approval. Nothing herein shall permit the Board to approve a continuing optometric education course which has not complied with the criteria set forth in paragraph (g) below.

(g) The criteria for judging and approving continuing education courses by the Board for continuing optometric education credit will be determined on the following basis:

(1) Whether the program is likely to contribute to the advancement of professional skill and knowledge in the practice of optometry.

(2) Whether the instructors, lecturers, and others participating in the presentation are recognized by the Board as being qualified in their field.

(3) Whether the proposed course is open to all optometrists licensed in this State.

(4) Whether the provider of any mandatory continuing optometric education course agrees to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation.

The list below and the application packets that follow are for the committee’s review. Each CE application packet is presented as they were submitted to the Board.

Please use the criteria above to determine whether or not to approve each continuing education course below.
A. Orbit, Eyelid Lesions, & Mohs Surgery
B. Taste of the Islands: Corneal Inlay Options vs. IOLs for Presbyopia: When to do What and Can They Co-Exist?; An Extraordinary “Retina” Tale of Great Egret Regret; Herpes Zoster: The Master Masquerader; Cataract in the Glaucoma Patient: What IOL Should I Use?; Macular Degeneration; Orbital Lumps and Bumps; Duane Syndrome; Refractive Surgery Advances: Contra Vision (topography guided) Lasik vs. SMILE; OCT & Macular Disease: Mastering the Basics; Challenging Refractive Surgery Cases: How to Manage Patients Outcomes with Advanced Technologies; Cataract Surgery: To Femto or Not to Femto; Eyelid and Periocular Cancer: The Optometric Role in Diagnosis and Management; What I Always Wanted to Ask The Glaucoma Specialist
C. 1. Time to Smile with KAMRA or Topoguided?
   2. Update of Glaucoma Medical Treatments
   3. Cataract Surgery in Fuchs Dystrophy
   4. Retinal Care of the Myopic Patient: Considerations for Refractive Surgery
   5. Management of Corneal Ulcers
   6. The New Age of Refractive Cataract Patients
   7. Diagnosing Glaucoma: To Start or Not Start, That is the Question
   8. Retinal Imaging – OCT
   9. Myopic Treatment in Presbyopic Patients
D. Cataract & Refractive Surgery
E. Vitreo Retinal Procedures
F. Glaucoma iStent Procedure
G. Ocular Herbology
H. Retinal Toxicity of Systemic Medications
I. Decision Making in Glaucoma
J. Culinary Guide to Ophthalmic Diseases
K. Idiopathic Orbital Inflammatory Syndrome
L. 2016 Maloney Vision Institute OD Dinner Educational Lecture: Cataract surgery in patients with prior refractive surgery: Consultation & Preoperative evaluation; Cataract surgery in patients with prior refractive surgery: surgery and post-op; Indications for the use of advanced lenses and femtosecond laser in cataract surgery; The Acufocus Intracorneal Inlay
Continuing Education Course
Approval Checklist

Title: The Orbit, Eyelid Lesions, & Mohs Surgery
Provider Name: Rachelle Lin (Orange County Optometric Society)

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No

☐ Detailed Course Description
☑ PowerPoint and/or other presentation materials
☑ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☑ Yes (below) ☐ No

Dr. John J. Martinez, M.D.
$50 Mandatory

CONTINUING EDUCATION COURSE APPROVAL APPLICATION

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Orbit, Eyelid Lesions &amp; Mohs Surgery</td>
<td>04/12/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Provider Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Name: Orange County Optometric Society</td>
</tr>
<tr>
<td>Education: Rachelle Lin J.</td>
</tr>
<tr>
<td>Provider Mailing Address: Marshall B. Ketchum University</td>
</tr>
<tr>
<td>Street: 2575 Yorba Linda Blvd. Fullerton, State CA Zip 92831</td>
</tr>
<tr>
<td>Provider Email Address: <a href="mailto:rachelle.lin@gmail.com">rachelle.lin@gmail.com</a></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists?  YES ☐  NO ☑

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? YES ☐  NO ☑

Course Instructor Information
Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ramin Tayani</td>
</tr>
<tr>
<td>(First) (Last)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>License Number</th>
<th>License Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>69679</td>
<td>Physician &amp; Surgeon A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>949-489-2218</td>
<td><a href="mailto:dr.tayani@tayani.com">dr.tayani@tayani.com</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct.

Rachelle Lin
Signature of Course Provider
5/5/2016 Date
TUESDAY
APRIL 12

1 HR OF CE
WITH DR. RAMIN TAYANI “THE ORBIT”
& DR. MARTINEZ “EYELID LESIONS & MOHS SURGERY”

+ COA TOWN HALL MEETING
+ 2016-2017 OCOS BOARD INSTALLATION

ORANGE HILL RESTAURANT
6410 E. CHAPMAN AVE., ORANGE, CA

6:30 REGISTRATION / 7:00-9:00 DINNER / CE

$30 OCOS/COA
$45 NON-MEMBERS
$55 AT THE DOOR
Welcome

Presenter:
Ramin Tayani, MD, FAAO
Diplomate, American Board of Ophthalmology

Tumors
Orbital Pseudotumor
Cellulitis
Graves
Trauma/ Orbital Fractures

Dermoid:
65 y/o referred for "conjunctivitis"

Preseptal mass:

Conjunctival Tumors...

(it's not always just a pterygium)

Lipodermoid vs Prolapsed orbital fat:
Final Diagnosis

Non-Hodgkin's Lymphoma, B-Cell Type with Phenotypic Features Most Consistent with a Diagnosis of Mantle Cell Lymphoma

Majority of mantle cell lymphomas stain positive for CyclinD-1
These tumors do respond well to localized radiation

Orbital Tumor:

Masquerading Orbital Tumor:

72 yo referred for surgical correction of the RUL Ptosis

Orbital Inflammatory Pseudotumor:

Both children and adults may be affected Defined as an idiopathic tumorous inflammation made up of a pleomorphic inflammatory cellular response and a fibrovascular tissue reaction.
Pt's typically present w/ acute onset of orbital pain, a red eye, restricted eye movements, and proptosis.
Pseudotumors

Both children and adults may be affected
Defined as an idiopathic tumorous inflammation made up of a pleomorphic inflammatory cellular response and a fibrovascular tissue reaction.
Pt's typically present w/ acute onset of orbital pain, a red eye, restricted eye movements, and proptosis.

Orbital Inflammatory Pseudotumor:

Orbital CT scanning shows a thickened posterior sclera, orbital fat or lacrimal gland involvement, or thickening of extraocular muscles (including the tendons)
Bilateral disease in adults should prompt a careful eval to r/o a systemic vasculitis (e.g. Wegener's granulomatosis, polyarteritis nodosa, and lymphoma).

Orbital Pseudotumor

Treatment is usually with systemic steroids
Low dose radiation therapy may be used when the patient does not respond to systemic steroids

Cellulitis
Preseptal Cellulitis:

Sx's: Tenderness, redness, mild fever, irritability.
Signs: erythema, edema, warmth, tenderness, NO restriction of EOM's, NO proptosis, NO pain w/ eye movement, basically no Orbital signs

W/U: History, vitals, full eye exam (a speculum or desmarres may be necessary), LN eval, CT to r/o abscess/orbital cellulitis

Treatment: Admit pt for abx Rx if <5y/o, toxic appearance, noncomp, no improve. w/ oral Rx. O/W pt can be managed w/ oral abx and ophthalmology closely.

Orbital Cellulitis:

Sx's: Tenderness, redness, fever, pain, blurred VA, headache, dbl vision, irritability.
Signs: erythema, edema, warmth, tenderness, restriction of EOM's, proptosis, pain w/ eye movement

W/U: Hx, orbital sx's, i.e. EOM, pain, APD, ON eval, proptosis, vitals, CBC, CT. Always consider mucor in the dx.

Tx: Admit w/ broad spect IV abx., if getting worse, repeat CT for possible abscess.

Orbital Cellulitis:

Red eye, pain, blurred vision, fever, headache, double vision
Clinically, edema, erythema, warmth, tenderness, conjunctival chemosis, proptosis, restricted EOM
CT scan usually shows accompanying sinusitis (especially the ethmoids)

- Staphylococcus
- Streptococcus
- Haemophilus influenza (especially in children)
- Bacteroides
- Gram negative rods
- Mucormycosis must be considered in an immunocompromised individual
Orbital Cellulitis Treatment:

- Admit for IV abx w/ broad spectrum agents for at least one week.
- Surgical drainage of sinuses and subperiosteal abscesses.

Graves Disease:

- Chronic inflammatory disease of the orbits.
- Wide range of ages (avg is in the 40's).
- Females are affected 3-6x males.
- 80% have hyperthyroid, 10% are euthyroid and 10% are hypothyroid.
- It is an immunologically mediated process with the extraocular muscles as the end organs.

Graves Disease:

- TRO is the most common cause of both unilateral and bilateral proptosis in adults.
- Smoking has been shown to definitely affect TRO.
- Treatment of systemic thyroid dysfunction has little predictable effect on the course of TRO.
Graves Disease:

- TSH is the most effective screening tool for systemic thyroid imbalance. Further eval is done by an internist or endocrinologist.
- A complete ophthalmic exam is done with emphasis on visual function, pupils, color vision, visual fields, ocular motility, proptosis eval and eyelid position.
- Orbital imaging is good to evaluate nerve compression and extraocular muscle status.

- Imaging studies show enlargement of the rectus muscles, mostly involving the inferior rectus followed by the medial rectus and then the superior rectus.
- Infiltration by inflammatory cells results in fibroblasts that produce mucopolysaccharides in early disease and collagen in later stages. Orbital and eyelid swelling is common early in disease. Late in the disease, the inflammation resolves and the enlarged muscles become fibrotic and scarred.

Graves Disease Treatment:

- Many patients need no treatment
- Systemic steroids can decrease active inflammation (usually temporizing until more definitive Rx is planned)
- Orbital irradiation is used without much knowledge of the exact mechanism and it takes 2-4 wks to see the effects.
- Surgery...

Graves Surgical Treatment:

- Surgery is emergent only if optic nerve compression is evidenced. Usually it is not indicated emergently and instead is for proptosis, dbl vision, and for restrictive myopathy.
- Surgery falls into 3 categories: orbital decompression, muscle surgery, and eyelid surgery.

Orbital Decompression:

Graves CT Axial and Coronal:
Other Sequela of Graves:

Orbital Floor Fracture:
Symptoms: Pain (wh/ is usually exacerbated with EOM), tenderness, binocular diplopia, eyelid swelling after nose blowing, recent hx of trauma.

Signs: Restricted EOM, Subcut and/or subconj emphysema, hypesthesia, step-off, enophthalmos.

Orbital Fracture:
Work-up: Complete globe exam, EOM eval, globe displacement, check for crepitus, consider forced ductions, CT scan w/ coronal & axial views.

Plan: Not all fx's need fixing!
Nasal decongest, Oral abx, no nose blow, ice packs, HOB up, sx w/ 1-2 wks, Operate for lg fx, enophthal., entrapment, or persistent diplopia

Large Orbital Tripod Fracture:
Procedure: Open reduction w/ internal fixation of orbital floor fracture.

Procedure: Orbital Fracture.

Open orbital fracture with facial laceration

Canalicular Laceration:

"Football Player at Night"

His wife said "You saved my husband's life"
Traumatic Retrobulbar Hemorrhage:

- Pain, dec. vision, hx of trauma to eye or orbit.
- Sx's: Proptosis with resistance to retropropulsion, diffuse subconj hem & ecchymosis, limited EOM.
- W/U: APD, VA, Color plates, IOP, CT scan, but if VA is threatened, do the canthotomy/cantholysis ASAP.

Ruptured Globe:

Symptoms: Pain, dec VA, hx of trauma

Signs: Usually SCH, shallow AC, hyphema, limited EOM, intraocular contents may be outside the globe, low IOP (can also be n/high), irregular pupil, VH, etc...

Work-up: Once a dx of RG is made the more extensive examination should be performed in the OR in a more controlled envrmnt.

Plan: Immediate fox shield on eye, NPO, IV abx, antiemetics, and Tetanus toxoid, CT scan, arrange for surgical repair.

General Eye Care
- Laser Eye Surgery
- No-Stitch, No-Needle Cataract Surgery
- Advanced Medical and Surgical Treatments of Glaucoma
- Diabetic Eye Disease
- Infections of the Eye
- Muscular Degeneration
- Tearing and Dry Eyes
- Vision Correction

Reconstructive Eye Services
- Graves (Thyroid) Disease
- Droopy/Non-Closing Eyelids
- Correction of Eyelid Abnormalities
- Reconstructive Trauma Surgery
- Eyelid Cancers
- Orbital Diseases and Abnormalities

Services

Aesthetic Eye & Facial Surgery
- Blepharoplasty
- Droopy Eyelid Rejuvenation & Enhancement
- Small-Incision Endoscopic Brow Lift
- Fat Pocket Reduction
- Correction of Eyelid Abnormalities
- Post-Cancer Reconstructive
- Eye & Face Reconstruction
- Scar Rejuvenation
- Laser Resurfacing
- Upper and Mid-Face Lift

Aesthetics

- Most PPO's
- Monarch
- Cal Optima
- MVP
- Medicare
- Regal

Insurances
Welcome

Eyelid Lesions

The Spectrum and Finesse of Oculoplastic Surgery
presented by
Ramin Tayani, MD, FAAO
Diplomate, American Board of Ophthalmology

Benign Lesions
- Chalazia
- Acneic Keratosis
- Seborrheic Keratosis
- Atopic Dermatitis
- Capillary Hemangioma
- Cutaneous Rosacea
- Sebaceous Cyst
- Lipid Cysts
- Sebaceous Hyperplasia
- Acquired Nevus
- Inclusion Cyst
- Xanthelasma
- Irritated Hordeolum
- Prepuce Granuloma
- Irritated Gland of Zeis

Oculoplastic Surgery
- Reconstructive
  - Eyelid Lesions
  - Eyelid Malpositions
  - Lacrimal
  - Orbit
- Cosmetic
  - Upper Lid Blepharoplasty
  - Lower Lid Blepharoplasty
  - Brow Lifts
  - Laser Resurfacing

Malignant Lesions:
- Madarosis
- BCC
- Keratoacanthoma
- Kaposi Sarcoma
- Molluscum Contagiosum
- Irritated Gland of Zeis
- SCC

- Sebaceous Cell Carcinoma
- Malignant Melanoma
Eyelid Lesions

- Benign: generally "look benign"! These lesions are smooth, less vascular, don't damage adjacent tissues, etc.
- Malignant: look "angry", "ugly", "worrisome". These lesions are irregular, vascular, cause madarosis, destroy local tissue, are fast growing, etc.

> Chalazia

> Actinic Keratosis

> Atopic Dermatitis

> Capillary Hemangioma

> Cutaneous Horn

> Squamous Papilloma
- Malignant - look "angry", "ugly", "worrisome". These lesions are irregular, vascular, cause maderosis, destroy local tissue, are fast growing, etc.

Eyelid Lesions
Malignant

- Keratoacanthoma

Eyelid Lesions
Benign/Malignant

- Malignant

Eyelid Lesions
Malignant

- BCC

Eyelid Lesions
Malignant

- Kaposi Sarcoma
- Ulcerating gland of Sicca
- Molluscum Contagiosum

Eyelid Lesions
Malignant

- BCC

Eyelid Lesions
Malignant

- Malignant Melanoma
Eyelid Lesions Before & After

Before & After Malignant Eyelid Lesions

Before & After Malignant Brow Lesions

Before & After Malignant Eyelid Lesions

> Chalazion

> BCC of lower lid margin

> Squamous cell carcinoma pre and post op

> BCC of lower lid margin

Ophthalmic Services

General Eye Care
- Laser Eye Surgery
- No-Stitch, No-Needle Cataract Surgery
- Advanced Medical and Surgical Treatments of Glaucoma
- Diabetic Eye Diseases
- Infections of the Eye
- Macular Degeneration
- Tearing and Dry Eyes
- Vision Correction

Reconstructive Eye Services
- Graves (Thyroid) Disease
- Drooping/Non-Closing Eyelids
- Correction of Eyelid Abnormalities
- Reconstructive Trauma Surgery
- Eyelid Cancers
- Orbital Diseases and Abnormalities
### Aesthetic Services

- Aesthetic Eye & Facial Surgery
  - Blepharoplasty
  - Droopy Eyelid Rejuvenation & Enhancement
  - Small-Incision Brow Lifts
  - Fat Pocket Reduction
  - Correction of Eyelid Abnormalities
- Aesthetic Body
  - Post-Cancer Reconstruction
  - Body Contouring
  - Scar Revision
  - Laser Resurfacing
  - Upper and Mid Face Lifts
CURRICULUM VITAE
RAMIN TAYANI, M.D., M.P.H.

Personal:
AKA: Ramin Tayyanipour (official name change in 2/97)
DOB: August 2, 1965
Citizenship: U.S.A.
Marital Status: Married 12/28/90
Children: Arya Tayani (DOB: 2/22/97)
Nadia Tayani (DOB: 2/10/99)
Saara Tayani (DOB: 7/6/00)

CA License #: A069679
DEA License #: BT6474770
Board Certified: May 2006 Diplomate, American Board of Ophthalmology

Professional Appointments:

February 3, 2009 – present: President and Medical Director, DermaBare of Mission Viejo, Mission Viejo, CA

May 24, 2008 – present: President, Founder and Medical Director, West Coast Center for Surgeries, San Clemente, CA

January, 2001 – present: Chief Ophthalmology, San Clemente Hospital and Medical Center, San Clemente, CA


March 27, 2000 – present: President, Founder and Medical Director, Ramin Tayani, M.D., Inc, San Clemente, CA

Medical Staff Appointment at the following Hospitals:
- San Clemente Hospital and Medical Center, San Clemente, CA
- Mission Regional Medical Center, Mission Viejo, CA
- Mission Regional Medical Center, Laguna Beach, CA
- Saddleback Memorial Medical Center, Laguna Hills, CA
- Saddleback Memorial Medical Center, San Clemente, CA
- Hoag, Irvine, CA
- Hoag, Newport Beach, CA
- Children’s Hospital of Orange County, Mission Viejo, CA
- UCI Medical Center, Orange, CA
- Bear Valley Community Hospital, Big Bear Lake, CA
- Mountain Community Hospital, Lake Arrowhead, CA
Appointment at the following Ambulatory Surgical Centers:

- West Coast Center for Surgeries
- Pacific Hills Surgery Center
- Mission Ambulatory Surgical Center

Education:

7/99 – 10/99 Preceptorship
Private preceptorships throughout the county with various experts in cosmetic surgery (Dermatologists, Facial Plastic Surgeons, and Oculoplastics Specialist)

7/98 – 8/99 Fellowship
Harvard University, Mass. Eye and Ear Infirmary
Department of Ophthalmology
Ophthalmic Plastic & Reconstructive Surgery, & Ophthalmic Pathology

7/98 – 8/99 Fellowship
Harvard University, Mass. Eye and Ear Infirmary
Department of Ophthalmology
Ocular Oncology

7/97 – 7/98 Chief Resident
The Eye Institute, Medical College of Wisconsin
Department of Ophthalmology

7/95 – 7/98 Residency in Ophthalmology
The Eye Institute – Medical College of Wisconsin
Department of Ophthalmology

6/94 – 7/95 Internship
Yale University
Internal Medicine, Primary Care Track

9/88 – 6/94 Medical Degree
University of California, Irvine
M.D., California College of Medicine

6/90 – 9/91 Research Associate
University of California, San Francisco

6/87 – 3/90 Masters Degree
University of California, Los Angeles
M.P.H., School of Public Health
Division of Health Policy and Management

9/82 – 6/87 Undergraduate Double Major
University of California, Irvine
B.S. in Biology, School of Biological Sciences
B.A. in Psychology, School of Social Sciences
Assist Clinical Professor of Ophthalmology  
UCI Department of Ophthalmology |
|-----------------------|---------------------------------------------------------------|
|                       | 1998 – 1999  
Clinical Instructor (Department of Ophthalmology)  
Harvard University, Massachusetts Eye and Ear Infarnary |
|                       | 1997 – 1998  
Chief Resident (Department of Ophthalmology)  
The Eye Institute  
Medical College of Wisconsin |
|                       | 1985 – 1987  
Instructor and Organizer (Summer prep for General Chemistry, Organic Chemistry and Physics)  
University of California, Irvine |

Chief Resident, Department of Ophthalmology, The Eye Institute, Medical College of Wisconsin |
|--------------------|---------------------------------------------------------------|
|                    | 1993  
Veterans Administration (Long Beach) Research Stipend |
|                    | 1992  
Letters of Commendation for multiple clinical rotation, UCI Medical Center |
|                    | 1986  
Scholl of Biological Sciences Service Award (awarded by nomination to 3 students per year out of a total of over 4,000) |
|                    | 1985 – 1986  
President Alpha Epsilon Delta National Premed Honor Society (Irvine Chapter) |
|                    | 1984 – 1987  
Dean’s Honor List at University of California, Irvine |
|                    | 1985  
University of California, President Undergraduate Research Fellowship Award |
|                    | 1984  
Excellence in Research Award, School of Biological Sciences, university of California, Irvine |
| Memberships: | 1995 – Present  
Fellow, American Academy of Ophthalmology |
|-------------|--------------------------------------------------|
|             | 1999 – Present  
Member, California Academy of Ophthalmology |
|             | 1999 – Present  
Member, Ophthalmology Society |
|             | 1990 – Present  
Member, Association for Research in Vision & Ophthalmology |
|             | 1986 – Present  
Past President and Member, Alpha Epsilon Delta National Medical Honor Society |
| Foreign Language: | Fluent Farsi  
Intermediate Spanish |
| Leadership & Extracurricular Experiences: | 2013 – Present  
Managing Board Member, Pacific Private Practice Network (P3N) |
|             | 1997 – 1998  
Chief Resident, The Eye Institute, Medical College of Wisconsin |
|             | 1991 – 1993  
Calexico Program (USC Ophthalmology Dept.)  
I have participated in several trips to Calexico with the residents from Doheny Eye Institute/USC Department of Ophthalmology providing eye care to the indigent population that come to Calexico. |
|             | 1989 – 1993  
Scientific Assembly Committee, Student Representative to the California Medical Association  
I organized the 1991, 1992, & 1993 California Medical Association’s sponsored program on “Residency Selection & Career Planning” for medical students |
|             | 1989 – 1993  
Scientific Advisory Panel on Ophthalmology  
California Medical Association Student Representative |
|             | 1990 – 1991  
Student Liaison to the Orange County Medical Association |
|             | 1989 – 1990  
Secretary of the Associated Medical Students  
University of California, Irvine |
|             | 1989 – 1990  
Interviewing Committee for medical school applicants |
|             | 1985 – 1986  
President Alpha Epsilon Delta National Premed Honor Society  
University of California, Irvine |
Research Projects and Advisors:

1999 – 2000
Frederick A. Jakobiec, M.D.
Professor and Chairman
Harvard-University, Mass-Eye-and-Ear-Infirmary
Department of Ophthalmology
Boston, MA
Research Project: Orbital Oncology

1998—2000
Peter A.D. Rubin, M.D.
Assistant Professor
Harvard University, Mass Eye and Ear Infirmary
Department of Ophthalmology
Boston, MA
Research Project: Several projects in the area of oculoplastics.
See publication list below

1998 – 1999
Francis C. Sutula, M.D.
Clinical Professor of Ophthalmology
Harvard University, Mass Eye and Ear Infirmary
Department of Ophthalmology
Boston, MA
Research Project: Several projects in the area of oculoplastics.
See publication list below.

1998 – 1999
John Woog, M.D.
Professor of Ophthalmology
Tufts University, New England Medical Center
Department of Ophthalmology
Boston, MA
Research Project: Muir-Torre Syndrome

1998 – 1999
Daniel Townsend, M.D.
Clinical Professor of Ophthalmology
Harvard University, Mass Eye and Ear Infirmary
Department of Ophthalmology
Boston, MA
Research Project: Several projects in the areas of oculoplastics.
See publication list below.

1996 – 1998
Gerald J. Harris, M.D.
Professor of Ophthalmology
Chief of Oculoplastic and Orbital Disease
Department of Ophthalmology
Medical College of Wisconsin
Milwaukee, WI
Research Project: Late Onset Chemosis in Association with Head and Neck Tumors.
1996 – 1998
Robert A. Hyndiuk, M.D.
Professor of Ophthalmology
Medical College of Wisconsin
Milwaukee, WI
Research Project: Sporotrichosis

1996 – 1998
William F. Mieler, M.D.
Professor of Ophthalmology
Chief of Vitreoretinal Surgery
Medical College of Wisconsin
Milwaukee, WI
Research Project: Vitrectomy for Vitreous Hemorrhage in Association with Uvea Melanoma.

1996 – 1997
Jose S. Pulido, M.D., M.S.
Professor of Ophthalmology
Medical College of Wisconsin
Milwaukee, WI
Research Project:
   I) Diffuse Disseminated Atheroembolism
   II) Retinal Arterial Occlusion and Factor V (Leiden Gene) Mutation

1993
Peter J. McDonnell, M.D.
Professor of Ophthalmology, Department of Ophthalmology
University of Southern California/ Doheny Eye Institute
Research Project:
   I) Comparison of a 4mm incision and a 2mm incision in Radial Kertotomy by studying the post operative ocular rupture with increasing intraocular pressure.
   II) Management of severe infectious corneal ulcers.

1993
Ronald Gaster, M.D.
Associate Professor, Department of Ophthalmology
University of California, Irvine
Research Project: Postkeratoplasty Astigmatism with Double Running Opposing Suture Technique in 96 patients.

1993
Alan Elias, M.D.
Professor of Endocrinology and Metabolism, Department of Medicine
University of California, Irvine
Research Project: Premature Ovarian Failure
1990 – 1991
Roy Steinberg, M.D., Ph.D.
Professor and Vice Chairman of Ophthalmology
Professor of Physiology and Neuroscience
Departments of Physiology and Ophthalmology
University of California, San Francisco

1983 – 1986
Monte S. Buchsbaum, M.D.
Professor of Psychiatry & Human Behavior, Department of Psychiatry
University of California, Irvine
Research Project: A comparison of visual evoked potentials in a group of normal subjects. A second study of the memory and EEG effects of Tranxene in anxiety patients. A third study I was involved in was the specific brain regional effects of Tranxene as assessed by Positron Emission Tomography (PET) and electroencephalography.

Publications:


Tayani, R., Ong, HV, Gaster, R. Visual and Astigmatic Results of a Double Running Opposing Suture Technique for Penetrating Keratoplasty. In preparation.

Tayani, R., Kim, J., Mieler, M. Vitrectomy for Vitreous Hemorrhage Associated with Uveal Melanoma. In preparation


Tayani, R., Harris, G., Schultz, C., In Woo, K., Cancel, E. Late Onset Chemosis in Patients with Head or Neck Tumors. Submitted for Publication.


Tayani, R., Rubin, PAD. Periocular reconstruction, including brow and upper face. In preparation.

Abstracts/Poster Presentations:


Paper Presentations:


Invited Lectures:
October 24, 2001
UCI Department of Ophthalmology, Grand Rounds Lecture
“Finesse in Ophthalmic Plastic and Reconstructive Surgery”

November 19, 2001
Department of Emergency Medicine, Mission Hospital
“Orbital Trauma and Reconstructive Surgery”

February 18, 2002
Department of Emergency Medicine, Irvine Hospital
“Orbital Trauma and Reconstructive Surgery”

November 4, 2002
Orange County Optometric Society
“Pink Eye Masquerader of Orbital Disease”

May 10, 2003
UCI Department of Ophthalmology, Grand Rounds Lecture
“Comprehensive Ophthalmology and Orbital Trauma”

March 6, 2004
Bristol Park Medical Group, Physicians Round Table
“Ophthalmic Plastic and Reconstructive Surgery”

September 15, 2005
Orange County Optometric Society
“Cataract Causes and Treatment”

May 23, 2006
American Academy of Ophthalmology, Orange County Chapter
“Eye and Systemic Diseases”

October 10, 2006
Orange County Optometric Society
“Eyelid Lesions and Orbital Trauma”

July 11, 2007
Orange County Optometric Society
“Comprehensive Ophthalmology and Cataract Co-Management”
February 8, 2008
Mission Hospital Continuing Medical Education Series
“Finesse in Ophthalmic Plastic and Reconstructive Surgery”

August 23, 2008
UCI Department of Ophthalmology, Grand Rounds Lecture
“Earlier Detection, Earlier Treatment, Better Outcomes”

April 4, 2009
Bristol Park Medical Group, Physicians Round Table
“Ophalmic Plastic and Reconstructive Surgery”

June 24, 2009
UCI Department of Ophthalmology, Grand Rounds Lecture
“Comprehensive Ophthalmology and Orbital Trauma”

March 25, 2010
American Academy of Ophthalmology, Orange County Chapter
“Pink Eye Masquarader of Orbital Disease”

October 28, 2010
San Clemente Hospital Continuing Medical Education Series
“Eye and Systemic Diseases”

May 20, 2011
Mission Hospital Continuing Medical Education Series
“The Ophthalmologist’s Perspective on Findings in Autoimmune System Disorders.”

May 24, 2011
Laguna Beach Hospital Continuing Medical Education Series
“The Ophthalmologist’s Perspective on Findings in Autoimmune System Disorders.”

October 25, 2011
American Academy of Ophthalmology (Orlando, Florida)
“Orbital Lymphoma”

November 5, 2011
Lumenis, Tianjin International Eye Medical Aesthetic Forum (Beijing, China)
“Global Cosmetic Market Overview & Ophthalmological Medical Cosmetology Trend”
CURRICULUM VITAE

JOHN J MARTINEZ, MD

PERSONAL DATA

Born June 15, 1958
Marital Status Married
Medical License New York: 187664-inactive
California: G058835
Pennsylvania: MD-052748-L –Inactive
DEA Number: BM0690520

EDUCATION

1979-1980 A.B. Stanford University
1982-1983 M.A Stanford University
1980-1985 M.D. Stanford University

BOARD CERTIFICATION

American Board of Dermatology

POST GRADUATE EDUCATION

1985-1988 Resident, Family Medicine PGY 1-3
University of California, Irvine
1988-1991 Research Fellow, Immunology/Melanoma
University of California, San Francisco
1991-1994 Resident, Dermatology PGY2-4
State University of New York at Buffalo
1994-1995 Fellow, Mohs Surgery and Cutaneous Oncology
University of Pennsylvania
ACADEMIC HONORS

1976          Honors at Entrance, Stanford University
1978          Alpha Gamma Sigma Honor Society
1979          Norman Topping Scholar
1980          Magna cum Laude
               California State Scholarship Recipient

PROFESSIONAL EMPLOYMENT

2004-Present  Partner SCPMG/Kaiser Permanente, Chief of Dermatology Orange County
               Coordinating Chief for Mohs Surgery, Southern California Region
1998-2004     Private Practice; Mohs Surgery West Seneca, New York
1995-1998     Acting Chief of Dermatologic Surgery and Cutaneous Oncology
               Roswell Park Cancer Institute/ University at Buffalo

HOSPITAL AFFILIATIONS

2004-Present  Kaiser Foundation Hospital Anaheim and Los Angeles Medical Center
1997-2001     Mercy Hospital of Buffalo. Chief of Division of Dermatology
1995-2003     Buffalo General Hospital. Attending Physician in Dermatology
1995-2003     United Memorial Medical Center. Batavia, New York. Courtesy Staff
Memberships

Fellow of the American Academy of Dermatology
American College of Mohs Micrographic Surgery and Cutaneous Oncology
American Academy of Facial Plastic and Reconstructive Surgery
Pennsylvania Academy of Dermatology
Erie County Medical Society
Buffalo-Rochester Dermatology Society

Teaching Experience

2007-Present  Clinical Associate Professor of Dermatology
University of California, Irvine

2008-Present  Fellowship Director of the Procedural Dermatology/Mohs Fellowship
University of California, Irvine/Kaiser Permanente

1995-1998  Assistant Professor of Dermatology
University of Buffalo/ State University of New York

1998-2003  Clinical Assistant Professor of Dermatology
University of Buffalo/ State University of New York

SPECIAL CLINICAL EXPERIENCE IN DERMATOLOGY

1989-1991  Fellow – Pigmented Skin Lesion Clinic
Children’s Hospital of San Francisco
RESEARCH EXPERIENCE

1979-1980  Research Assistant, Department of Biological Sciences
Stanford University
Supervisor: Dr. B Abbott, MD PHD.
Subject: Special Tissue Histiochemistry in Exfoliative Cytology.

1988  Research Assistant, Department of Dermatology
University of California Irvine Medical center
Supervisor: Ronald J Barr, MD
Subject: The Viability of Human Skin Xenografts Prolonged by Cyclosporine A.

1989  Clinical Research Fellow, Melanoma Center
University of California at San Francisco
Supervisor: Lynn Spitler, MD

PUBLICATIONS and PRESENTATIONS

Children's Hospital of San Francisco and the University of California at San Francisco
Department of Immunology and surgical oncology.
Abstract to American Society of Clinical Oncology, Washington, DC
Martinez, J., Benedetto, A., Hughes, S. “Schneiderian Papilloma Treated by Mohs Surgery”


Continuing Education Course Approval Checklist

Title: Taste of the Islands
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☒ Completed Application
  ☐ Open to all optometrists? ☒ Yes ☐ No
  ☐ Maintain record agreement? ☒ Yes ☐ No
☐ Detailed Course Description
☒ PowerPoint and/or other presentation materials
☒ Advertising (optional)
☒ CV for EACH course instructor
☒ License Verification for each course instructor
  ☐ Disciplinary History? ☐ Yes ☒ No
Continuing Education Course Approval Application

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Taste of The Islands</td>
<td>04/17/2016</td>
</tr>
</tbody>
</table>

Course Provider Contact Information

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Provider Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gina Valdemar</td>
<td>243 S. Main St, Ste. 100, Orange, CA 92868</td>
</tr>
</tbody>
</table>

Provider Email Address: gina.valdemar@coastal-vision.com

Will the proposed course be open to all California licensed optometrists? [ ] YES [ ] NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? [ ] YES [ ] NO

Course Instructor Information

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dan Tran B</td>
<td>088139</td>
<td>MD</td>
<td><a href="mailto:dan.tran@coastal-vision.com">dan.tran@coastal-vision.com</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct.

Signature of Course Provider: [Signature] Date: 4/7/16
May 3, 2016

State Board of Optometry
2450 Del Paso Road, Ste. 105
Sacramento, CA 95834

RE: Deficiency letter-Late submission of CE course approval

Dear Practice and Education Committee,

Coastal Vision Medical Group is dedicated to quality patient care with the latest technology and advanced surgical techniques. Our practice is comprised of several Ophthalmologists that work with local optometric and ophthalmology offices. We use a co-management model that involves sharing in patient care with their eye care providers. Our surgeons work full time and we try to provide quality continuing education for the optometric community year-round while dedicating many hours towards their presentations.

Many of the lectures sometimes evolve as a result of new technology, fulfilling the needs of the community and co-management education. While trying to provide quality education, sometimes complying with guidelines in regards to timely submission is sometimes difficult depending on the changing climate of education we are trying to provide, such as new technology changes or FDA approvals.

In regards to the “Taste of the Islands” CE, we offered a large program with several lectures and speakers for a 7 hour CE program. While it was challenging trying to coordinate such an event, we respect the time of the board and education committee and are committed to trying to get education approval to you in a timely manner. We ask for your lenience in our late submission with our goal of working more diligently to comply with the board’s submission guidelines.

We hope this letter helps clarify our position and look forward to continued relations with the State Board of Optometry in regards to continuing education for the optometric community.

Sincerely,

Gina Valdemar, Affiliate Relations and Education Director

Coastal Vision Medical Group
Course Title: Taste of the Island CE

Course Presentation date: 4/17/16

Speakers: Dan Tran, MD; Timothy You, MD; Lisa Garbutt, MD; Betsy (Baothu) Nguyen, MD; John Hwang, MD; Madhu Agarwal, MD; Golareh Fazilat, MD; David Schanzlin, MD; Sanford Chen, MD; Jeffery Joseph, MD

Target Audience: This lecture is intended for optometrist seeking continuing education

Course description: This 7 hour continuing education program provides education in the areas of Retina, Glaucoma, Ocular Plastics, Ocular Disease, Refractive Surgical options and more will the goal of increasing knowledge and options for the optometric community and their patients (see attachment with individual lecture descriptions).

CE credits: 7 CE units
“Taste of the Islands” individual course descriptions

Course Title: Corneal Inlay Options vs. IOLs for Presbyopia: When to do What and Can they Co-exist
Speaker: Dan Tran, MD
Course Description: Updates in IOL and corneal inlay options to support optometric patient counseling and education in the advancements of new presbyopia treatments.

Course Title: An Extraordinary “Retina” Tale of Great Egret Regret
Speaker: Timothy You, MD
Course Description: A story of a unique patient that was attacked by an “Egret” bird, who developed vision loss after the attack to his eye. The purpose was to educate optometrists on how to treat the retinal detachment with this type of an injury to the eye.

Course Title: Herpes Zoster: The Master Masquerader
Speaker: Lisa Garbutt, MD
To help optometrists better understand Herpes Zoster and its many phases. Also sharing patient cases to have optometrists better understand treatment options. This will help optometrists explain to patients an in-depth description of Herpes Zoster and what to expect.

Course Title: Cataract in the Glaucoma Patient: What IOL Should I use?
Speaker: Betsy Nguyen, MD
To give optometrists insight on what IOL is used on patients based on glaucoma status and on the patient’s lifestyle needs. Also showing case presentations of patients attendees with audience participation on possible suggested treatment. This gives optometrists a better idea of what IOL’s they can discuss with their patients.

Course Title: Macular Degeneration
Speaker: John Hwang, MD
Help educate optometrists on what is AMD, risk factors, symptoms, types of AMD, diagnosis, and treatment, in order to help optometrists recognize this in their patients. This will help optometrists counsel patients on what AMD is and how it can be treated.

Course Title: Orbital Lumps and Bumps
Speaker: Madhu Agarwal, MD
Educate optometrists on neuro-ophtalmology, ocular plastics, and strabismus. It gives optometrists a more in depth view of these three topics in particular so they can have more knowledge on how these types of patients can be treated.
Course Title: Duane Syndrome

Speaker: Golareh Fazlat, MD

To give a better understanding to optometrists on the general characteristics of Duane Syndrome, how to diagnose it, management, and treatment. This will help optometrists recognize it in their patients and be more knowledgeable about how to handle these types of patients.

Course Title: Refractive Surgery Advances: Contura Vision (topography guided) Lasik vs. SMILE

Speakers: David Schanzlin, MD & Dan Tran, MD

Updates on new advanced technology with Contura Vision (topography guided) Lasik and the new SMILE procedure to help educate optometrists on how to discuss these new procedures when talking to possible patients that are candidates. Also, to show optometrists what patient best fits either of these two different procedures.

Course Title: OCT & Macular Disease: Mastering the Basics

Speaker: Sanford Chen, MD

To help optometrists increase their ability to identify retinal pathology on OCT with their patients and also to educate them on OCT interpretations.

Course Title: Challenging Refractive Surgery Cases: How to Manage Patients Outcomes with Advanced Technologies

Speaker: Dan Tran, MD

Give optometrists an overview of how challenging refractive cases are managed using new advanced technology. This allows the optometrist to be more knowledgeable and aware on advanced technology as well as become familiar with how certain refractive surgery cases are handled. Therefore, giving optometrists more knowledge under their belt when speaking to their own patients.

Course Title: Cataract Surgery: To Femto or Not to Femto

Speaker: Lisa Garbutt, MD

Educate optometrists on the goals, benefits, and advantages of the Femtosecond lasers as well as give an overview of the different types of femtosecond lasers in the market. This allows the optometrist to have more information available to them when speaking to patients about laser guided cataract surgery and know the different options we have to offer.

Course Title: Eyelid and Periocular Cancer: The Optometric Role in Diagnosis and Management

Speaker: Jeffrey Joseph, MD

To educate optometrists on how to diagnose and manage eyelid and periocular cancer and recognize the symptoms in their patients.
Course Title: What I Always wanted to ask the Glaucoma specialist

Speaker: Betsy Nguyen, MD

Educate optometrists on the medical treatment of glaucoma, future glaucoma medications, and knowing when to start glaucoma treatment in patients. Also the case presentations help the optometrist become more aware of what type of medication needs to be administered to their patients.

Total CE units: 7 hours
3rd Annual Taste of the Islands CE
April 17, 2016

When
Sunday, April 17, 2016
7:00am – 3:30pm

Where
The Westin South Coast Plaza
686 Anton Boulevard
Costa Mesa, CA 92626
in the Grand Ballroom

Self Parking: $10

Contact:
Gina Valdemar
Director
Affiliate Relations & Education
GinaValdemar@coastal-vision.com
714.746.9679

Join Coastal Vision for this 7-hour CE event and enjoy a day of learning, fun, and socializing. We'll have informative speakers, a delicious lunch, and you might get a chance to brush up on your hula skills. So dig out your puka shells and join us April 17th.

Register before April 1st and receive $30 off the regular price.

Early Bird Registration - $95 until April 1st
Registration Fee - $125 after April 1st

For registration information please visit our new Affiliate Portal:
coastalvisionmedical.com/site/ces.htm
Username: CVAFFILIATE
Password: 293main

Schedule of Events:

7:00 am-7:50 am  Registration & Breakfast
7:50 am-8:00 am  Welcome-Opening Remarks
8:00 am-8:25 am  Dan Tran, MD
8:25 am-8:50 am  Timothy You, MD
8:55 am-9:20 am  Lisa Garbutt, MD
9:20 am-9:45 am  Betsy Nguyen, MD
9:45 am-10:10 am John Hwang, MD
10:10 am-10:35 am Madhu Agarwal, MD
10:35 am-11:00 am Break
11:00 am-11:25 am Golareh Fazilat, MD
11:25 am-12:15 pm David Schanzlin, MD &
Dan Tran, MD
12:15 pm-1:15 pm  Lunch/Luau
1:20 pm-1:45 pm  Sanford Chen, MD
1:45 pm-2:10 pm  Dan Tran, MD
2:10 pm-2:35 pm  Lisa Garbutt, MD
2:35 pm-3:00 pm  Jeffrey Joseph, MD
3:00 pm-3:25 pm  Betsy Nguyen, MD
3:25 pm-3:30 pm  Closing Remarks/Raffle

Corneal Inlay Options vs. IOLs for Presbyopia: When To Do What and Can They Co-exist?
An Extraordinary "Retina" Tale of Great Egret Regret
Herpes Zoster: The Master Masquerader
Cataract in the Glaucoma Patient: What IOL Should I Use?
Macular Degeneration
Orbital Lumps and Bumps
Duane Syndrome
Refractive Surgery Advances: Contura Vision (topography guided)
LASIK vs. SMILE
OCT & Macular Disease: Mastering the Basics
Challenging Refractive Surgery Cases: How to Manage Patients
Outcomes with Advanced Technologies
Cataract Surgery: To Femto or Not To Femto
Eyelid and Periocular Cancer: The Optometric Role in Diagnosis
and Management
What I always wanted to ask the Glaucoma Specialist

*At time of print, pending CA Board of Optometry approval. Topics and speakers are subject to change.
Dan B. Tran, MD
Medical Director
Cornea, LASIK & Cataract Surgery Specialist

With the mind of a trained engineer and the intuitive skills of an experienced surgeon, Dr. Dan B. Tran is internationally recognized as a leading expert in advanced vision correction.

The all-laser, bladeless LASIK technique, now considered the standard in care, was first introduced by Dr. Tran to LASIK centers in Orange County when it received FDA clearance in 2001. Dr. Tran is also the first surgeon in the world to combine IntraLase™ femtosecond laser technology with intracorneal rings (Intacs™) to treat keratoconus, a vision loss disorder affecting young adults.

In 2011, Dr. Tran was the first surgeon in California to utilize advanced LenSx™ femtosecond technology to perform refractive cataract surgery. This technology is now used in hundreds of cataract centers around the world by highly prominent cataract surgeons. He is among a select few surgeons currently conducting multiple FDA clinical studies on new advanced ophthalmic surgical implant devices.

His combination of surgical finesse and deep understanding of technology are why eye doctors and eye industry executives alike trust Dr. Tran as their personal surgeon. These traits have helped propel the advancement of surgical eye care in Orange County, keeping it at the forefront of surgical eye care delivery worldwide.

Featured several times in the Orange County Register, a member of medical advisory boards for several medical device companies, often invited to conduct FDA clinical trials, and published many times in national ophthalmological publications, Dr. Dan B. Tran is a frequent speaker at national and international meetings throughout the world.

877-ALL-LASER | www.coastalvisionmedical.com
EDUCATION
1984 BS, Electrical Engineering, Magna Cum Laude, California State Polytechnic University, Pomona, CA
1985 Graduate Studies in Electrical & Biomedical Engineering, Stanford University, Palo Alto, CA
1987 Graduate Studies in Electrical & Biomedical Engineering, University of Arizona, Tucson, AZ
1993 MD, University of Southern California, Keck School of Medicine, Los Angeles, CA

PROFESSIONAL TRAINING
1994 Internship, Internal Medicine, St. Mary Medical Center, UCLA School of Medicine, Los Angeles, CA
1997 Resident in Ophthalmology, Scheie Eye Institute, University of Pennsylvania, Philadelphia, PA

FELLOWSHIPS
1998 Fellow in Cornea and Refractive Surgery, Shiley Eye Center, University of California, San Diego, CA

BOARD CERTIFICATION
1999 American Academy of Ophthalmology

PROFESSIONAL AFFILIATIONS
- American Society of Cataract & Refractive Surgery
- International Society of Refractive Surgery
- American Academy of Ophthalmology

UNIVERSITY & HOSPITAL POSITIONS
- Clinical Instructor, Shiley Eye Center, University of California, San Diego, CA
- Staff Ophthalmologist, St. Joseph Hospital of Orange, CA
- Staff Ophthalmologist, St. Mary Hospital, Long Beach, CA
Lisa D. Garbutt, MD
Comprehensive Ophthalmology
Cornea, Anterior Segment and Eyelid Surgeries

Board certified ophthalmologist Lisa Garbutt, MD, joined Coastal Vision in 2014. As a fellowship trained surgeon, she specializes in cataract surgery, corneal transplants, refractive procedures, such as LASIK, and certain oculoplastic procedures to improve vision such as blepharoplasty and ptosis repair. She is also extensively trained in DSAEK, a breakthrough technique for treating corneal diseases.

In addition to treating medical and surgical diseases of the eye, Dr. Garbutt enjoys being involved in various FDA trials conducted at Coastal Vision. She completed her medical degree cum laude at Boston University School of Medicine and received her ophthalmology training at the University of California, San Diego School of Medicine Shiley Eye Institute. She is a member of the American Academy of Ophthalmology and the American Society of Cataract and Refractive Surgeons.

She also participates in research and FDA clinical trials at Coastal Vision.

“One of the main reasons I became an ophthalmologist is because it gives me the opportunity to make a significant difference in someone’s life. We often take our sight for granted, and don’t realize how important it is to our everyday functioning, enjoyment, and happiness until it is compromised.”

“I enjoy introducing the science and innovation of ophthalmology into my patients’ lives. The advancements in this field are moving swiftly forward each year, and allow me to provide the best care possible. Most importantly, I have the utmost respect for the trust of a patient, and aim to use my training, experience, and skill to enhance their quality of life.”

Dr. Garbutt is well respected and well liked by her patients, as well as her peers, for her compassion with patient care, her meticulous surgical skills and her comprehensive approach to ophthalmology. She has successfully performed thousands of cataract and cornea surgical cases prior to joining Coastal Vision.

Happy to return home to Orange County, where she grew up, Dr. Garbutt enjoys running, skiing and spending time with her friends and family.
EDUCATION

1994  Bachelor of Science, Psychobiology, University of California, Los Angeles, CA
1999  Master of Arts, Medical Science, Boston University School of Medicine, Boston, MA
2003  Doctor of Medicine, Boston University School of Medicine, Boston, MA

PROFESSIONAL TRAINING

2004-2007  Ophthalmology Residency, Shiley Eye Center, University of California, San Diego, CA
2003-2004  General Surgery Internship, Department of General Surgery, University of California, San Diego, CA

FELLOWSHIPS

2008  Fellow in Cornea, Cataract, and Refractive Surgery, Shiley Eye Center, University of California, San Diego, CA

BOARD CERTIFICATION

2008  American Academy of Ophthalmology

PROFESSIONAL AFFILIATIONS

- American Academy of Ophthalmology
- American Society of Cataract and Refractive Surgery
Betsy Nguyen, MD
Glaucoma & Cataract Specialist

Dr. Betsy Nguyen is a board certified cataract & glaucoma specialist, with 14 years of experience in her field. Trained at the prestigious, internationally recognized Jules Stein Eye Institute, at UCLA, Dr. Nguyen then became active in glaucoma research with the USC Doheny Eye Institute.

After earning her medical degree with highest distinction at the top of her class from UCLA School of Medicine, Dr. Nguyen went on to UCSF for her fellowship in glaucoma. As a diplomate of the American Academy of Ophthalmology and the California Academy of Eye Physicians & Surgeons, she was one of the team eye doctors for both the LA Angels and the Anaheim Ducks.

Dr. Betsy Nguyen is an ardent researcher, to further treatment options available for all, and has extensive expertise in managing glaucoma and cataracts together. These commonly concomitant conditions are best treated together—treating one and ignoring the other will result in long-term problems for patients. Dr. Nguyen uses the most advanced technologies available to combine the treatment in an integrated fashion, offering patients with cataract and glaucoma the very latest in surgery and research.

Customizing care to every one of her patients, Dr. Nguyen remains passionate about what she does and spends quality time counseling each one. “I give every patient the same level of attention and surgical excellence as I would give my own family.”
EDUCATION
1991 Bachelor of Science, Biological Sciences, University of California, Irvine, CA
1995 Doctor of Medicine, David Geffen School of Medicine, University of California, Los Angeles, CA

PROFESSIONAL TRAINING
1995-1996 Internship, Preliminary Medicine, University of California, San Fernando Valley, CA
1996-1999 Residency, Ophthalmology, Jules Stein Eye Institute, University of California, Los Angeles, CA

FELLOWSHIPS
1999-2000 Clinical Fellowship, Glaucoma and Clinical Instructor; University of California, San Francisco, CA
and California Pacific Medical Center

BOARD CERTIFICATION
1997 Medical Board of California
2000 American Academy of Ophthalmology

PROFESSIONAL AFFILIATIONS
- American Academy of Ophthalmology
- American Society of Cataract and Refractive Surgery
- American Medical Association
- California Medical Association
- California Academy of Eye Physicians & Surgeons
- Memorial Physician Society
- Orange County Ophthalmology Society
- Orange County Glaucoma Society

RESEARCH, EXPERIENCE, PRESENTATIONS & PUBLICATIONS


2000-2011 Researcher for USC – Collaboration with Los Angeles Latino Eye Study (LALES). Collaborate with Rohit Varma, MD and Brian Francis, MD.


2007-2009 Schering study (LOCS III Certified)
2004-2006 TAKEDA study (LOCS III Certified)

2003 Advanced Glaucoma Training DVD, for Allergan

1999-2000 Evaluation of computerized optic discs to determine stability vs. progression of glaucoma, under Robert L. Stamper, MD, Chief of Glaucoma, UCSF.


877-ALL-LASER | www.coastalvisionmedical.com
CURRICULUM VITAE

TIMOTHY T. YOU, M.D.

Fellow, American Academy of Ophthalmology

Mailing/Contact Address:
Orange County Retina Medical Group
1200 North Tustin Avenue, Suite 140
Santa Ana, California 92705
714-972-8432

PROFESSIONAL PRACTICE AFFILIATIONS

Orange County Retina Medical Group
Physician/Surgeon/Partner
Since 3/1/2005

1200 North Tustin Avenue
Suite 140
Santa Ana, CA 92705
714-972-8432

1200 North Tustin Avenue
Suite 100
Santa Ana, CA 92705
714-972-8432

24022 Calle de la Plata
Suite 475
Laguna Hills, CA 92653
949-581-3618

320 Superior Avenue
Suite 160
Newport Beach, CA 92663
949-646-3242

333 W. Bastanchury Road
Suite 200
Fullerton, CA 92835
714-451-0801

31451 Rancho Viejo Road
Suite 101
San Juan Capistrano, CA 92675
949-496-0611

7/2002-2/2005 Rhodes Island Eye Institute, Providence, Rhode Island
7/1999-6/2002 Pacific Clear Vision Institute, Eugene, Oregon

EDUCATION AND TRAINING

Vitreo-Retinal Fellowship
Massachusetts Eye and Ear Infirmary
Harvard Medical School, Boston, Massachusetts, 1997-1999
• Thomas Heed Ophthalmic Fellow, 1997-98
• American Ophthalmological Society, Herman Knapp Fellow, 1998-99

Research Fellowships
Penn Medical Scholars Anatomic Pathology Fellowship
Department of Pathology & Laboratory Medicine
Hospital of the University of Pennsylvania, 1991-1992

Children's Hospital of Los Angeles
University of Southern California, Doheny Eye Institute
Medical Student Fellowship in Pediatric Ophthalmology, 1989

Residency in Ophthalmology
Massachusetts Eye and Ear Infirmary
Harvard Medical School, Boston, Massachusetts, 1994-1997

Internship in Medicine
VA Medical Center, Sepulveda, California
University of California, Los Angeles, 1993-1994

Medical School
Medical Doctorate
University of Pennsylvania School of Medicine

Revised: 31Dec2013.MC

T. You, MD

Page 1 of 12

57
Undergraduate Education
Bachelor of Science in Biology with distinction in major & *cum laude*
Yale College, New Haven, Connecticut, 1984-1988
Lab Assistant, Yale School of Medicine, Department of Microbiology, 1987

PROFESSIONAL POSITIONS

2013-Present  Clinical Rotation Preceptor, Southern California College of Ophthalmology, Fullerton, California
2012-Present  Preceptor and Site Coordinator, Western University Health Sciences, Pomona, California
2012-Present  Chief, Department of Ophthalmology, Children’s Hospital of Orange County, Orange, California
2009-Present  Advisor, Clinical Institute, St. Joseph Hospital, Orange, California
2010-2012    Member, Planning Committee, Children’s Hospital of Orange County Tower, Orange, California
2006-Present  Expert Witness, Medical Board of California
2005-Present  Medical Reviewer, MES Group
2003-2005    Assistant Clinical Professor in Ophthalmology, Brown Medical School, Providence, Rhode Island
2000-Present  Medical Reviewer, Advanced Medical Group
1997-1999    Assistant Staff, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, Massachusetts

MEDICAL LICENSES

American Board of Ophthalmology, Diplomate, (Board Certified) in 1999
Exam score 95th percentile
American Board of Ophthalmology, Diplomate, (Recertification) in 2009
Maintanence of Certification
Diplomat National Board of Medical Examiners, since 1994
Medical Board of California, since 1993
HOSPITAL AFFILIATIONS

3/1/2005 – Present  Anaheim Regional Medical Center, Anaheim, California
3/1/2005 – Present  Children's Hospital at Mission, Mission Viejo, California
3/1/2005 – Present  Children's Hospital of Orange County, Orange, California
3/1/2005 – Present  Hoag Memorial Hospital Presbyterian, Newport Beach, California
3/1/2005 – Present  St. Joseph Hospital, Orange, California
3/1/2005 – Present  Western Medical Center, Anaheim, California
3/1/2005 – Present  Western Medical Center, Santa Ana, California

HONORS AND AWARDS

2003  Brown Medical School Award for Excellence in Teaching
1999  Fellow of the Year for Massachusetts Eye and Ear for Excellence in Teaching
1999  Fellow Award at Paul Chandler Lecture for Resident Teaching
1997  STORZ Ophthalmic Instrument Design Contest for Modified Phaco-Chopper
1994-1991  Bill Raskob Foundation Award
1993  History of Medicine Prize, *The Stigma of Atomic Bomb Disease*
1992  History of Medicine Prize, *A Short History of Egyptian Military Ophthalmia*
1988  Summer Research Internship, Taejon Research Institute, South Korea
1985  Jostens' Scholarship
1985  Elks Club Western-Division Scholarship
1985  Soroptomist Club Scholarship
1985  Orange County Medical Association Scholarship
1984-1988  Mission Community Hospital Auxiliary Scholarship
1982-1984  American Academy of Sciences Junior Scientist, University of Southern California/University of California at Irvine
PROFESSIONAL SOCIETY MEMBERSHIPS

American Academy of Ophthalmology, Fellow
American Society of Retina Specialists (The Vitreous Society)
Association for Research in Vision and Ophthalmology
California Association of Eye Physicians and Surgeons
California Medical Association
California Scholarship Federation
Orange County Society of Ophthalmology
Orange County Medical Association
Oregon Medical Association
Society of Heed Fellows
Society of Penn Medical Scholars
Western Retina Study Club

CLINICAL RESEARCH

01. Genetech, Inc., Protocol #FVF2598g (Marina), Phase IIIb, 2003-2005
Sub-Investigator. A multicenter, randomized, double masked, sham injection-controlled study of the safety and efficacy of rhuFab V2 in subjects with neovascular AMD who have minimally classic or occult lesion

02. Eyetech Pharmaceuticals, Protocol #EOP1004, Phase II/III, 2005-2005
Sub-Investigator. A randomized, double-masked, controlled, dose-ranging, multi-center comparative trial, in parallel groups, to establish safety and efficacy of intravitreal injections of EYE001 (anti-VEGF pegylated aptamer) in patients with exudative AMD

Sub-Investigator. A multicenter, double-masked, randomized, parallel groups study to demonstrate efficacy and safety of anecortave treatment relative to Visudyne for AMD.

Sub-Investigator. A multi-center, randomized, double-masked, placebo-controlled, parallel group, evaluation of the safety and efficacy of combretastatin A4 phosphate infusion for treating subfoveal CNV in pathologic myopia.

Sub-Investigator. A randomized trial comparing intravitreal corticosteroids and laser photocoagulation for DME.

06. Alcon Research, Ltd., Protocol C-02-60 (AART), Phase III, 2005-2009
Sub-Investigator. Anecortave Acetate Risk Reduction Trial (AART): An evaluation of efficacy and safety of posterior juxtascleral administrations of anecortave acetate for depot suspension (15 mg or 30 mg) versus sham administration in patients (enrolled in study “A” or study “B”) at risk for developing sight-threatening CNV due to exudative AMD.

07. National Eye Institute, SCORE, 2005-2009
Sub-Investigator. The Standard Care vs. Corticosteroid for Retinal Vein Occlusion (SCORE): Two randomized trials to compare the efficacy and safety of intravitreal injection(s) of triamcinolone acetonide with standard care to treat macular edema: one for CRVO and one for BRVO.
Sub-Investigator. A randomized, double-blind, parallel-design, placebo-controlled study to evaluate the effects of 5mg tadalafil (IC351, LY450190) and 50mg sildenafil administered once daily for 6 months on visual function in healthy subjects or subjects with mild erectile dysfunction.

Sub-Investigator. A trial using anecortave acetate 15mg administered every 3 months versus anecortave acetate 15 mg every 6 months versus anecortave acetate 30 mg administered every 6 with exudative AMD.

Sub-Investigator. A randomized, active-controlled, double-masked, single dummy, multicenter comparative trial, in parallel groups, to compare the safety and efficacy of intravitreous injections of Macugen given every 6 weeks for up to 122 weeks, plus sham PDT, to Macugen plus PDT with Visudyne, in subjects with predominantly classic subfoveal CNV secondary to AMD.

Principal Investigator. A 24-month randomized, double-masked, sham controlled, multicenter study comparing PDT with verteporfin (Visudyne) plus two different dose regimens of intravitreal triamcinolone acetonide (1 mg and 4 mg) versus Visudyne plus intravitreal pegaptanib (Macugen) in patients with subfoveal CNV secondary to AMD.

Principal Investigator. An open label, multicenter trial of maintenance intravitreous injections of Macugen (pegaptanib sodium) given every six weeks for 48 weeks in subjects with subfoveal neovascular AMD initially treated with a different modality resulting in maculopathy improvement.

13. Novartis, Protocol #CBPD952A2308 (Denali), Phase IIIb, 2006-2010
Principal Investigator. A 24-month randomized, double-masked, controlled, multicenter study assessing safety and efficacy of verteporfin (Visudyne) photodynamic therapy administered in conjunction with ranibizumab (Lucentis) versus ranibizumab (Lucentis) monotherapy in patients with subfoveal CNV secondary to AMD.

Sub-Investigator. Fluocinolone Acetonide in Diabetic Macular Edema (FAME): A randomized, double-masked, parallel group, multicenter, dose-finding comparison of the safety and efficacy of AS-001A 0.5μg/day and ASI-001B 0.2 μg/day fluocinolone acetonide intravitreal inserts to sham injection in subjects with DME (Medidur®).

Sub-Investigator. Clinical Evaluation of Anti-angiogenesis in the Retina - Intravitreal Trial 3 (CLEAR-IT 3): A randomized, double-masked, active-controlled phase III study of the efficacy, safety, and tolerability of repeated doses of intravitreal VEGF Trap in subjects with neovascular AMD.

Sub-Investigator. Combining Bevasirinib and Lucentis Therapy (COBALT): A randomized, double-masked, parallel-assignment study of intravitreal bevasirinib sodium, administered every 4 to 12 weeks as maintenance therapy following three injections of Lucentis compared with Lucentis monotherapy every 4 weeks in patients with exudative AMD.
17. Allergan, Protocol 206207-012, Phase III, 2007-2010
Sub-Investigator. A 52-week, masked, multicenter, randomized, controlled trial (with up to 13 weeks additional follow-up) to assess the safety and efficacy of 700 μg dexamethasone posterior-segment drug delivery system (DEX PS DDS) Applicator System in combination with laser photocoagulation compared with laser photocoagulation alone in the treatment of subjects with diffuse DME.

Sub-Investigator. A safety and efficacy study of Vitreosolve for ophthalmic intravitreal injection for inducing posterior vitreous detachment in subjects with NPDR.

Ophthalmology Investigator. A safety follow-up study of patients previously exposed to MK-0634 (a beta-3 receptor antagonist developed for the treatment of overactive bladder). Subjects had previously been enrolled in a multicenter, double-blind, randomized, placebo-controlled, parallel group, dose-ranging study of L-000796568 in postmenopausal women with OAB.

20. Allergan, Protocol 206207-019-00, Phase II , 2008-2010
Sub-Investigator. A 26-week, open-label study to assess the safety and efficacy of 700 μg dexamethasone posterior segment drug delivery system applicator system in conjunction with Lucentis® in the treatment of patients CNV secondary to AMD.

Sub-Investigator. An ascending dose and parallel group trial to establish the safety, tolerability and pharmacokinetic profile of multiple intravitreal injections of volociximab (α5β1 integrin antagonist) as monotherapy or in combination with Lucentis 0.5 mg/eye in subjects with neovascular AMD.

22. Regeneron, Protocol VGFT-OD-0706 (Da Vinci), Phase III, 2008-2011
Sub-Investigator. A double-masked, randomized, controlled study of the safety, tolerability and biological effect of repeated intravitreal administration of VEGF Trap-eye in patients with DME.

23. NEI/Tufts Medical Center, The Family Study of Macular Degeneration, 2009-2010
The goal is to evaluate genetic and non-genetic risk factors for AMD

Sub-Investigator. A 26-week, open-label study to assess the safety and efficacy of 700 μg dexamethasone posterior segment drug delivery system applicator system in the treatment of vitreomized subjects with DME.

Sub-Investigator. A randomized, multicenter, double-blind, parallel-group trial to assess the analgesic efficacy and safety of a new analgesic compared with placebo in subjects with painful diabetic peripheral neuropathy.

Sub-Investigator. A randomized, multicenter, double-blind, two-arm, multicenter, placebo-controlled study to assess the efficacy and safety of EN3324 (Axomadol) in subjects with moderate to severe chronic low back pain.

27. GlaxoSmithKline, Protocol MD 7110852, Phase IIIB, 2009-2012
Principal Investigator. A dose-ranging study of pazopanib eye drops vs. ranibizumab intravitreal injections for the treatment of neovascular AMD.
28. Genentech, Protocol FVF4579g (HARBOR), Phase III, 2009-2012
   Sub-Investigator. A double-masked, multicenter, randomized, active treatment-controlled study of
   the efficacy and safety of 0.5 mg and 2.0 mg ranibizumab administered monthly or on an as needed
   basis (PRN) in patients with subfoveal neovascular AMD.

   Sub-Investigator. A multicenter, double-masked, parallel group, placebo-controlled study to assess
   the efficacy and safety of Voclipsorin as therapy in subjects with active noninfectious intermediate,
   posterior or pan-uveitis.

30. Lpath, Protocol LT1009-Oph-003 (NEXUS), Phase IIA, 2011-Present
   Sub-Investigator. A prospective, multi-center, masked, randomized, comparator-controlled study evaluation
   Isonep™ (sonepicizumab [LT1009]) as either monotherapy or adjunctive therapy to Lucentis or Avastin
   versus Lucentis or Avastin alone for the treatment of subjects with choroidal neovascularization
   secondary to AMD.

   Sub-Investigator. An open-label, multi-center, extension study of the safety and utility of the new
   inserter of Iluvien® (Fluocinolone Acetonide Intravitreal Insert) 0.19mg and the safety of Iluvien® in
   subjects with DME.

32. EyeGate Pharmaceuticals, Protocol EGP-437-004, Phase III, 2012-2013
   Sub-Investigator. A prospective, multi-center, randomized, double-masked, positive controlled, clinical
   trial designed to evaluate the safety and efficacy of iontophoretic dexamethasone phosphate ophthalmic
   suspension (1%) in patients with non-infectious anterior segment uveitis

33. Quark Pharmaceuticals, Protocol QRK202 (MATISSE), Phase II, 2012-2013
   Sub-Investigator. An open-label dose escalation study of PF-04523655 (Stratum I) combined with a
   prospective, randomized, double-masked, multi-center, controlled study (Stratum II) evaluating the
   efficacy and safety of PF-04523655 alone and in combination with ranibizumab versus ranibizumab
   alone in diabetic macular edema

34. Xoma, Protocol X052130/CL3-78989-005, Phase III, 2012-Present
   Principal Investigator. A randomized, double-masked, placebo-controlled study of the safety and efficacy
   of gevokizumab in the treatment of active non-infectious intermediate, posterior, or pan-uveitis

35. Pfizer, Protocol B1181003-1050, Phase II, 2012-2013
   Sub-Investigator. A phase 2, multi-center, randomized, double-masked, placebo-controlled, multi-dose
   study to investigate the efficacy, safety, pharmacokinetics and pharmacodynamics of RN6G (PF-
   04382923) in subjects with geographic atrophy secondary to age-related macular degeneration

36. Xoma, Protocol X052131/CL3-78989-005 (EYEGUARD™-C), Phase III, 2012-Present
   Principal Investigator. A randomized, double-masked, placebo-controlled study of the safety and efficacy
   of gevokizumab in the treatment of subjects with non-infectious intermediate, posterior, or pan- uveitis
   currently controlled with systemic treatment

37. Regeneron Protocol VGFTe-AMD-1124 ((RE-VIEW), Phase IV, 2012-Present
   Sub-Investigator. Rigorous evaluation of vision and safety with intravitreal aflibercept injection dosed
   every 8 weeks over 2 years in neovascular AMD.

38. Merck Protocol MK8931—017 (SCH 900931, P07738), Phase 2/3, Collaborative Study, 2012-Present
   Ophthalmology Investigator. A randomized, placebo controlled, parallel-group, double blind efficacy and
   safety trial of MK-8931 in subjects with mild to moderate Alzheimer's disease
39. Ophthotech OPH1003, Phase III, 2013-Present
Sub-Investigator. *A randomized, double-masked, controlled trial to establish the safety and efficacy of intravitreous administration of Fovista™ (Anti-PDGF-B pegylated aptamer) administered in combination with Lucentis® compared to Lucentis® monotherapy in subjects with subfoveal neovascular macular degeneration*

ABSTRACTS


02. Wong CG, You TT, Carvalho RAP. *Natural history of progressive experimental CNV in the rabbit after sustained release of both VEGF and bFGF within the supra-choroidal space.* Association for Research in Vision and Ophthalmology Meeting, May 2009. Abstract

03. Wong CG, Bruce TC, You TT. *Experimental CNV after transcleral implantation of VEGF/bFGF-implant within the suprachoroidal space for defining potential long-term synergistic actions of ranibizumab (Lucentis) with small low-cost molecules in ameliorating wet AMD.* Association for Research in Vision and Ophthalmology Meeting, May 2008. Abstract

04. You TT, Wong CG, Fedoruk T, Bonakdar M. *Comparison of Lucentis and Avastin in the suprachoroidal VEGF/bFGF-implant rabbit CNV model provides a potential standardized pre-clinical approach in the rational development of more effective QSAR-based drugs, sustained release formulations, and drug delivery systems for ameliorating AMD.* Association for Research in Vision and Ophthalmology Meeting, 2007. Abstract

05. Gupta G, Donahue JP, Andorsky S, You TT. *Profile of the retina by optical coherence tomography in the pediatric age group.* Association for Research in Vision and Ophthalmology, Ft. Lauderdale, Florida; May 1, 2005. Abstract


PAPERS AND PUBLICATIONS

01. You TT, Youn DW, Chen S, Alexandrescu B, Casiano ME, Maggiano JM. Intraocular penetration by acupuncture needle. (submitted for publication, Retina)


POSTERS & PRESENTATIONS

01. Updates in Retina Care: Macular Degeneration and Implantable Miniature Telescope
Course Director. Retina Care Symposium, Costa Mesa, California; December 5, 2013.

02. Healthcare

03. Updates in Macular Degeneration
Invited speaker (JCAPHO). South Coast Eye Center, Laguna Hills, California; November 8, 2013.

Invited speaker. NVision Centers, Costa Mesa, California; August 22, 2013.

05. Retinopathy of Prematurity and Eye Care for Infants
Invited speaker. Anaheim Regional Medical Center, Anaheim, California; February 21, 2013.

06. Healthcare


08. Updates in Age-Related Macular Degeneration
Invited speaker. Forest Home Conference Center, Forest Falls, California; July 5, 2012.

09. Update on Retinal Venous Obstruction Diseases
Guest speaker (JCAPHO). South Coast Eye Medical Centers, Laguna Hills, California; March 9, 2012.

10. Healthcare

11. Management of Ophthalmic Emergencies
Invited speaker. Forest Home Conference Center, Forest Falls, California; July 5, 2011.

12. Retinal Disease Management
Invited Speaker, Fuentes de Gracia Hospital Grand Rounds. Chimaltenango, Guatemala; March 2011.

13. Diabetes and the Eye
Invited Speaker. St. Joseph’s Hospital, Orange, California; February 26, 2011.

14. Overcoming Retina Hurdles to 20/20 Vision for Your Patients
Invited Speaker. Orange County Optometric Society, Western Medical Center, California; August 8, 2010

15. Diabetes and the Eye

16. Retinopathy of Prematurity and Other Ocular Anomalies
Invited Speaker. Anaheim Regional Medical Center, Anaheim, California; October 27, 2009.

18. Retinopathy of Prematurity and Neonatal Eye Diseases
Invited Speaker. Children's Hospital of Orange at Mission Viejo, California; September 28, 2009.

19. Retinopathy of Prematurity and Neonatal Eye Diseases
Invited Speaker. Department of Neonatology, Children's Hospital of Orange County, California; July 13, 2009.

20. Updates in Ophthalmic Care
Invited Speaker, Fuentes de Gracia Hospital Grand Rounds, Chimaltenango, Guatemala; July 2009.

21. Updates on New Treatment for Retinal Diseases
Invited Speaker. TLC Annual Symposium, Anaheim, California; June 7, 2009.

22. Macular Degeneration
Invited Speaker, Foundation for Fighting Blindness. Low Vision Symposium, Southern California College of Optometry, Fullerton, California; May 9, 2009.

23. The Refractive Surgery Retinal Evaluation: Pearls and Pitfalls
Invited Speaker. TLC, Newport Beach, California; April 22, 2009.

24. Retinal Disease Update

25. Emerging Treatment Strategies for Exudative AMD
Novartis Speaker Program. Costa Mesa, California; March 12, 2008.

26. Emerging Treatment Strategies for Exudative AMD
Novartis Speaker Program. Newport Beach, California; February 20 2008.

27. Retinopathy of Prematurity and Other Ocular Anomalies

28. Toxoplasma Uveitis
Invited Speaker, Continuing Medical Education Lecture. Children's Hospital of Orange County, Orange, California; October 23. 2006

29. Retinopathy of Prematurity
Invited Speaker. Anaheim Regional Medical Center, Anaheim, California; March 14, 2006.

30. Retinopathy of Prematurity and Neonatal Eye Diseases
Invited Speaker. Hoag Presbyterian Hospital, Newport Beach, California; July 12, 2005.

31. The Great Debates: Controversies in Retinal Disease 2005
Invited Speaker, Medical Education Seminar. University of California, Irvine, Beckman Laser Center, Irvine, California; March 26, 2005.

32. Pediatrics Case Conference
Invited Speaker. Rhode Island Hospital, Providence, Rhode Island; January 20, 2003.

33. Advances in Retina
Rhode Island Eye Institute, Providence, Rhode Island; 2002.
34. *Posterior Segment*

35. *Medicine 2000*

36. *Retinal Diagnoses*
   Pacific Northwest Conference, Bend, Oregon; 2000.

37. *Retinal Surgery throughout the Ages*
   Lane County Optometric Society Meeting, Eugene, Oregon; 1999.

38. **You TT** and Arroyo JG. Surgical approaches to dislocated lenses. Annual Fellows' Conference, Massachusetts Eye & Ear Infirmary, Boston, Massachusetts; 1998.


45. *Cognitive Decision Making - A Computer Based Model*


47. *Bacterial Utilization of Dissolved Organic Matter in a Natural, Oligotrophic Aquatic System*
   California Academy of Science Meeting, Los Angeles, California; 1981.
John C. Hwang, M.D., M.B.A.

John Hwang, M.D., M.B.A. received his Doctor of Medicine degree from Columbia University, College of Physicians and Surgeons in New York, NY. In addition to his primary MD degree, he also received a Master of Business Administration from Columbia Business School. Dr. Hwang then completed his medicine internship at Queen’s Medical Center in Honolulu, HI. He subsequently completed his residency at the Edward S. Harkness Eye Institute at Columbia University, followed by a combined medical and surgical vitreoretinal fellowship at Doheny Eye Institute at the University of Southern California. Dr. Hwang has authored numerous papers in the peer-reviewed ophthalmic literature with expertise in the treatment of age-related macular degeneration and surgical management of proliferative diabetic retinopathy, retinal detachment, and macular hole. Dr. Hwang sees patients at the Newport Beach, Laguna Hills, and Santa Ana offices.

Dr. Hwang is an adjunct faculty member at the USC Eye Institute and serves as a Clinical Assistant Professor of Ophthalmology.

Credentials

<table>
<thead>
<tr>
<th>Medical School</th>
<th>Columbia University, College of Physicians and Surgeons</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internship</td>
<td>Queen’s Medical Center</td>
</tr>
<tr>
<td></td>
<td>University of Hawaii; Honolulu, Hawaii</td>
</tr>
<tr>
<td>Residency</td>
<td>Edward S. Harkness Eye Institute</td>
</tr>
<tr>
<td></td>
<td>Columbia University; New York, New York</td>
</tr>
<tr>
<td>Fellowship</td>
<td>Doheny Eye Institute</td>
</tr>
</tbody>
</table>
Professional Memberships

- American Academy of Ophthalmology
- American Society of Retina Specialists
- American Board of Ophthalmology
- Orange County Society of Ophthalmology
CV Resume
Curriculum Vitae

General Information
Maiden name: Madhu R. Chopra
Birthplace: Los Angeles, California

Board Certification:
American Academy of Ophthalmology

Languages:
Fluent in Spanish and Hindi

Private Practice
California Orbital Consultants, Redlands

Previous Employment
° Associate Professor of Ophthalmology, Loma Linda University Department of Ophthalmology
° Clinical Instructor in Ophthalmology, Doheny Eye Institute, University of Southern California

Education
Fellowship
° Neuro-ophthalmology and Orbital Surgery (Ophthalmic Plastics/Adult Strabismus) Doheny Eye Institute,
University of Southern California
Faculty: Alfredo A. Sadun, M.D., Ph.D. and Peter A. Quiros, M.D.

Residency
° Ophthalmology, Doheny Eye Institute, University of Southern California (7/2000-6/2003)

Internship
° Internal Medicine, University of California, Los Angeles-Olive View Medical Center, (7/1999-6/2000)
University of California, Los Angeles School of Medicine (8/1995-5/1999)
- Doctor of Medicine

University of California, Los Angeles (9/1992-6/1995)
Bachelor of Science in Biochemistry
Phi Beta Kappa, Magna cum laude

Professional Activities
- Scientific Reviewer, Frontiers in Neuro-Ophthalmology (2010- present)
- Co-Chair, NANOS Symposium at the American Academy of Ophthalmology Meeting, San Francisco (2009)
- Committee Member, Neuro-ophthalmology Planning Group for the American Academy of Ophthalmology Subspecialty Meeting (2009-present)
- Scientific Reviewer, Eye (2008-9)
- Panel Member/Editor, Practicing Ophthalmologists Committee/Recertification Curriculum in Neuro-ophthalmology for the American Academy of Ophthalmology (2009-2014)
- Committee Member, North American Neuro-ophthalmology Society Committee to the American Academy of Ophthalmology (2006-present)
- Committee Member, LLU Residency Selection Committee (2005, 2006, 2007)
- Committee Member, LLU School of Medicine Compliance (2005-date)
- Co-Director of Quality Assurance, LLU Department of Ophthalmology (2005-date)
- Committee Member, LLU Department of Ophthalmology Marketing (2006-date)
- Committee Member, LLU Department of Ophthalmology Compensation (2006-2007)
- Chair, LLU Department of Ophthalmology Resident Research Day (June 2006)
- Scientific Reviewer, Ophthalmology (2005)

Honors
- UCLA Medical Alumni Association Award for Distinguished Service
- UCLA Obstetrics and Gynecology Stipend for the Advancement of Breast Cancer Research
- American Heart Association Student Research Grant/Award
- Phi Beta Kappa Honors Society
- Golden Key National Honors Society
- Alpha Lambda Delta Honors Society
- UCLA Faculty Women's Club Scholarship liaison
- National Merit Scholarship
- UCLA Dean's Honor List All Quarters

Presentations
"Thyroid Eye Disease." Department of Medicine Grand Rounds. Loma Linda University. August 6, 2006.
"Oculoplastics." Lecture for Loma Linda University Housestaff. Loma Linda. February 8, 2006


"Clinicopathology of Tumors of the Ocular Adnexa." Annual Postgraduate Conference. Loma Linda University Medical Center. March 20, 2005.


Publications

- Tokuhara K, Agarwal MRA. Severe case of adult onset asthma associated orbital xanthogranuloma. Archives of Ophthalmology. Pending


Book Chapters

Professional Certifications
Board Certified, American Academy of Ophthalmology
North American Neuro-ophthalmological Society
American Academy of Ophthalmology
American Society of Cataract and Refractive Surgery
UCLA Association of Chemists and Biochemists

Volunteer Experience
Board of Directors, UCLA Medical Alumni Association (1995-1999)
UCLA Medical Center Career Conference Planning Committee (1995-1999)
Celebration of Sight at Cedars Sinai Medical Center (1998)
San Fernando Valley Health Fair- Ophthalmic screening exams (1998)
Camp Ronald McDonald for Good Times- Pediatric Oncology (1997-1999)
Umma Free Clinic- Downtown Los Angeles (1997-1999)
Salvation Army Homeless Clinic (1997-1998)

Personal Interests
Ballroom dance, cooking, running

Videos
Meet Dr. Agarwal Video

Popular reading
Dr. Agarwal’s Curriculum Vitae
Oculoplastic Surgery
Directions to Dr. Agarwal’s Office
Eyelid growths/lumps
Testimonials from Dr. Agarwal’s patients
Optic Neuritis
Dr. Agarwal’s Presentations
Double Vision
Entropion/Ectropion
Multiple Sclerosis

QUICK LINKS
Home
Forms
Photo Gallery
Testimonials

WHAT I DO
Ischemic Optic Neuropathy
Double Vision
Optic Neuritis
Multiple Sclerosis Related Eye Disease
Hemifacial Spasm
Graves Disease

RECENT POSTS
Lecture
(March 11, 2016)
Los Angeles Tonight
(February 23, 2016)
UCLA Stein Eye-Doheny Eye
(February 17, 2016)

CALIFORNIA ORBITAL CONSULTANTS
1200 California St., Suite 140
Redlands, CA 92374
Phone: (909) 792-6000
Fax: (909) 792-6001
dr@myeyelidsurgeon.com

360 San Miguel Dr, Ste 307
Newport Beach, CA 92660
Phone: (949) 441-5058
Fax: (949) 441-5059
dr@myeyelidsurgeon.com

North American Neuro-Ophthalmology Society
Golareh Fazilat, MD
16100 Sand Canyon Ave, Ste. 385
Irvin, CA 92618
Office Phone: (949)502-3333
Mobile: (949)836-0078
Gfazilat@hotmail.com

JOBS

Director of Pediatric Ophthalmology
Specialized in Strabismus and Amblyopia treatment
Children’s Eye Center of Orange County

Pediatric Ophthalmologist
Foot Hill Eye Medical Group

Assistant Professor of Clinical Ophthalmology
Specialized in Strabismus and Amblyopia treatment
Vision Center at Children’s Hospital Los Angeles
University of Southern California Keck School of Medicine

EDUCATION

Pediatric Ophthalmology Fellowship
University of Southern California
Children’s Hospital Los Angeles
2007-2008

Ophthalmology Residency
George Washington University
2005-2007

Ophthalmology Residency
Northwestern University Hospital
2003-2005

Internal Medicine Internship
Washington Hospital Center
2002-2003

Medical School
Howard University Medical School
MD
Class rank: top 10 % (AOA)
1998-2002

Undergraduate
George Mason University
BS Biology
1994-1997

Undergraduate
University of Cincinnati
Biology major
1992-1994
RESEARCH

Children's hospital Los Angeles / University of Southern California 2008
Clinical Characteristics of Pattern Exotropia in Children

Intravitreal Bevacizumab in the Treatment of CSME
Intravitreal Bevacizumab in the Treatment of Exudative ARMD
Intravitreal Bevacizumab in the Treatment of Retinal Vein Occlusion Associated CME
Effect of sleep Deprivation on the Performance of Simulated Cataract Extraction

National Institute of Health, National Eye Institute
Research assistant 1996-1998
Designed & developed a project in the role of Apoptosis & Aldose reductase activity in diabetic like corneal epitheliopathy in the galactose-fed rat. Involved in methods to improve the retinal digestion technique. Involved in DNA laddering technique to investigate the epitheliopathy in diabetic patients. Responsible for preparing & immunochemical staining of the slides

George Mason University
Research assistant: Biology Department 1994-1995

University of Cincinnati,
Research Assistant:
Psychiatry Department 1993-1994
Cardiac Surgery Department 1992-1994
Pharmacology Department 1991-1992
Environmental Health Department 1990-1991

PRESENTATIONS/ABSTRACTS

G.Fazilat, MD, A. Buffenn, MD, Clinical Characteristics of Pattern Exotropia in Children, 2009 AAPOS Annual Meeting (submitted)

G.Fazilat, MD, A. Prasad, MD, R.D. Patel, B.E. Jones, MD, Intravitreal Bevacizumab in the Treatment of CSME, ARVO 2006 Annual Meeting, program # 3833/B873


TEACHING ACTIVITIES
Childrens Hospital Los Angeles 2012
G. Fazilat, MD, CME course on Pediatric Ophthalmology for Pediatricians in the greater Los Angeles area
USC/LAC-USC/Childrens Hospital Los Angeles 2007-2012
G. Fazilat, MD, Ocular Trauma, Resident lecture, July 2008
Assisted in clinical teaching of residents and medical students in pediatric ophthalmology and strabismus
G. Fazilat, MD, OKAP review, Resident review
Assisted in clinical teaching of rotating medical students
Northwestern University Hospital 2003-2005
Assisted in clinical teaching of rotating medical students
Howard University Medical school 1999-2000
Hired instructor to medical students for summer course titled medical neuroscience.

AWARDS/HONORS
Howard University Medical School
National Honor Society (AOA) 1998-2002
Outstanding performances in the Pediatric & OB/GYN rotations 2002
Medical Alumni Association Scholarship 1999 & 2000
HCOP Summer directed Study Program teaching Award 2000
George Mason University 1994-1997
National Honor Society
University Scholarship
University of Cincinnati 1992-1994
National Honor Society
Four Academic Excellence Recognition Awards
National Collegiate Minority Leadership Award
T. Turner Scholarship Award
Member of Who is Who American Honor Society
My Autobiography was published in the United States Achievement Academy, vol. 4

PROFESSIONAL ORGANIZATION
AAPOS- active member 2007-Present
ARVO 2006-2007
American Academy of Ophthalmology 2003-Present
Women in Medicine 2000-2003

Licenses & Certifications
California State Medical License 2008-Present
DEA Practitioner Registration 2008-Present
Board certified Ophthalmologist 2008-Present

VOLUNTEER EXPERIENCE
Sea Change 2007
Surgical and medical ophthalmology mission trips to Philippines
Internal Medicine Private Practice office 2000-2001
Reston Hospital, VA Emergency Department 1995-1996
INTERESTS/LANGUAGES
Fluent in English & Farsi,
Studied Arabic & German
Traveling, sports & dancing
Participating in the community services

CITIZENSHIP
United States

REFERENCES

Mark S. Borchert, MD
Division head
Department of Pediatric Ophthalmology
Children's Hospital Los Angeles / University of southern California
(323)361-4510

Angela N. Buffenn, MD
Fellowship program director
Department of Pediatric Ophthalmology
Children's Hospital Los Angeles / University of southern California
(323)361-5603

Craig Geist, MD
Chairman
Department of Ophthalmology
George Washington University
(202)741-2800

Mohamad Jaafar, MD
Chairman
Department of Pediatric Ophthalmology
Children's Hospital Washington DC/George Washington University
(202)884-3017

Bahram Rahmani, MD
Professor of Clinical Pediatric Ophthalmology
Children's Hospital Chicago/Northwestern University
(773)880-4346
Dr. David J. Schanzlin

Dr. David Schanzlin is a past Professor and Director of Keratorefractive Surgery at the UCSD Department of Ophthalmology's Shiley Eye Center. Known as a leader in the field of keratorefractive surgery for more than 25 years, Dr. Schanzlin has devoted his career to developing corrective surgery procedures for the improvement of conditions such as nearsightedness, farsightedness, and astigmatism. Dr. Schanzlin has consistently been recognized as one of the Best Doctors in America®, and he is the recipient of the Jose I. Barraquer Award for exemplifying scientific dedication and making significant contributions to the refractive surgery field. Dr. Schanzlin has appeared as an expert on the Today Show, ABC News, Extra, and in a variety of features on local affiliates.

Dr Schanzlin earned his medical degree at the University of Chicago, and completed his residency at the same institution. He then obtained fellowships at the University of California-San Francisco’s Proctor Foundation. Dr. Schanzlin formerly served as Professor and Chairman at Saint Louis University’s Department of Ophthalmology. He is also a past Director of the Anheuser-Busch Eye Institute. An educator and innovator in his field, Dr. Schanzlin was the worldwide lead investigator over the 13 years of clinical studies and development for INTACS®. In fact, he is considered by many to be the leading authority on this procedure in the world.

Dr. Schanzlin was elected by his peers as President of the International Society of Refractive Surgery, in which he served from 1998 to 2000. He is listed as a co-inventor on the patent for use of ultrashort pulse laser cataract surgery, which is designed to provide enhanced accuracy for lens implant treatments. While refractive surgery is a major focus of his efforts here at Gordon Schanzlin New Vision Institute Institute, Dr. Schanzlin also specializes in cataract surgery and anterior segment disease.

Known as a global authority on refractive surgery, Dr. Schanzlin has lectured in Asia, South America, and Europe. He is also a prominent speaker at eye society conventions and conferences here in the US.
Education

- University of Chicago – MD, 1975
- University of Chicago – Residency; Chief Resident in Ophthalmology
- University of Pittsburgh – Fellowship
- University of California at San Francisco – Fellowship

Administration

Dr. Schanzlin was invited by the University of California-San Diego to join the Shiley Eye Center in La Jolla in order to form a center of refractive surgery that would be recognized worldwide. He went on to establish the Shiley Eye Center as a prominent educational resource for ophthalmologists across the globe. These skilled eye doctors are able to learn about the latest in clinical practice and research of laser eye surgery from the Center. During his time at Shiley Eye Center, Dr. Schanzlin built out the keratorefractive surgery fellowship experience so ophthalmologists who have already completed their initial training can specialize in this advancing field of vision care.

If you would like more information, or if you would like to schedule a consultation with one of our experienced ophthalmologists, please contact Gordon Schanzlin New Vision Institute Institute today.
Sanford Chen, M.D. is a board-certified vitreoretinal surgeon who has been a partner at Orange County Retina since 1993.

Dr. Chen received his medical degree at the age of 23 from an accelerated Premedical–Medical program at the University of Michigan. This was followed with an internship in internal medicine at Yale. Dr. Chen’s ophthalmology residency was completed at the Scheie Eye Institute – University of Pennsylvania. While performing his retina fellowship at the Massachusetts Eye Infirmary – Harvard Medical School, he was also granted an academic research fellowship at the Eye Research Institute.

Dr. Chen is a nationally and internationally recognized retina specialist who is actively involved in clinical research. He has participated as principal investigator in over 30 multicenter trials. Complimenting his research endeavors, Dr. Chen serves on numerous scientific advisory boards and is a frequent invited speaker at national and international conferences. He is also a consultant to many biotech, surgical, and pharmaceutical companies involved in the development of new treatments, surgical techniques, and instrumentation. He has particular expertise in age-related macular degeneration, diabetic retinopathy, retinal vascular disease, and surgical management of macular pathology.

Dr. Chen is also a contributor to medical literature having authored abstracts, original papers, and book chapters. He serves as a scientific editorial reviewer for Ophthalmology, Archives of Ophthalmology, and British Journal of Ophthalmology.

Dr. Chen has been widely recognized by his professional colleagues and peers, by being listed in “Physicians of Excellence,” “Best Doctors,” and “Who’s Who lists” on an annual basis. He has been featured on national syndicated television shows such as “The Doctors.” He also serves as a team retinal surgeon to the Anaheim Ducks (National Hockey League).

Dr. Chen lives in Laguna Beach, California with his wife and baby daughter. His hobbies include ice hockey, skiing, golf, and piano. He enjoys giving back to his community and participates in several volunteer organizations and has performed medical missionary services to Armenia and China.
CURRICULUM VITAE

SANFORD CHEN, M.D.

Fellow, American Academy of Ophthalmology
Fellow, American College of Surgeons

Mailing/Contact Address:
Orange County Retina Medical Group
1200 North Tustin Avenue, Suite 140
Santa Ana, California 92705
714-972-8432

PROFESSIONAL PRACTICE AFFILIATIONS

Orange County Retina Medical Group
Physician/Surgeon/Partner
Since 9/1/1993

<table>
<thead>
<tr>
<th>Address</th>
<th>Suite</th>
<th>City, State, Zip</th>
<th>Phone</th>
</tr>
</thead>
<tbody>
<tr>
<td>1200 North Tustin Avenue</td>
<td>140</td>
<td>Santa Ana, CA 92705</td>
<td>714-972-8432</td>
</tr>
<tr>
<td>1200 North Tustin Avenue</td>
<td>100</td>
<td>Santa Ana, CA 92705</td>
<td>714-972-8432</td>
</tr>
<tr>
<td>24022 Calle de la Plata</td>
<td>475</td>
<td>Laguna Hills, CA 92653</td>
<td>949-581-3618</td>
</tr>
<tr>
<td>320 Superior Avenue</td>
<td>160</td>
<td>Newport Beach, CA 92663</td>
<td>949-646-3242</td>
</tr>
<tr>
<td>333 W. Bastanchury Road</td>
<td>200</td>
<td>Fullerton, CA 92835</td>
<td>714-451-0801</td>
</tr>
<tr>
<td>31451 Rancho Viejo Road</td>
<td>101</td>
<td>San Juan Capistrano, CA 92675</td>
<td>949-496-0611</td>
</tr>
</tbody>
</table>

EDUCATION AND TRAINING

Vitreo-Retinal Fellowships
Clinical Fellow in Vitreoretinal Diseases and Surgery
Harvard Medical School, Massachusetts Eye and Ear Infirmary
Eye Research Institute of The Retina Foundation, Boston, Massachusetts, 1991-1993

Retina Research Fellow
Harvard Medical School
Scheeps Eye Research Institute, Boston, Massachusetts, 1991-1993

Residency in Ophthalmology
University of Pennsylvania School of Medicine

Internship in Medicine
Yale University School of Medicine
Yale-New Haven Hospital, New Haven, Connecticut, 1987-1988

Accelerated Pre-Medical/Medical Program
Bachelor of Science, Biomedical Sciences/Medical Doctorate
University of Michigan, Ann Arbor, Michigan, 1981-1987

Secondary Education
Wylie E. Groves High School, Birmingham, Michigan, 1979-1981

Revised: 19Dec2013 MC
S. Chen, MD
BOARD CERTIFICATION

National Board of Medical Examiners
American Board of Ophthalmology

LICENSURE

California, Issued 1993

HONORS AND ACHIEVEMENTS

Top Doctors, US News and World Report 2012

Castle Connolly Top Doctor 2012


Patients' Choice Physician Award, MDx Medical 2012, 2009

Volunteer Faculty Recognition Certificate for 16 Years of Service
Department of Ophthalmology, School of Medicine
University of California, Irvine, CA, April 2010


Super Doctors of Los Angeles, Key Professional Media, November 2008

Life Member, National Registry of Who's Who, 2001

Honored Member, Strathmore's Who's Who in America, 1999-2000

Outstanding Young Men of America, 1998

Golden Key National Honor Society

Frank Robbins Scholarship

University of Michigan Alumni Award Scholarship

State of Michigan Competitive Scholarship

Magna Cum Laude

Phi Beta Kappa

Who's Who in American Schools

Winner of American Association of Teachers of French National Language Contest

Certificate of High Scholarship

National Honor Society

MENSA

Revised: 19Dec2013.MC  S.Chen, MD
PROFESSIONAL BACKGROUND

2012-Present  Consulting Physician, Genentech, Inc., San Francisco, California
2012-Present  Consulting Physician, Regeneron Pharmaceuticals, Tarrytown, New York
2010-Present  Associate Clinical Professor in Ophthalmology, University of California, Irvine School of Medicine
2008-Present  Consulting Physician, Alimera Sciences, Alpharetta, Georgia
2005-Present  Reviewer, British Journal of Ophthalmology
2005-Present  Retinal Advisory Council II, Alcon Surgical, Irvine, California
May 2004      Honorary Professor, Liao Cheng People’s University & Hospital, Liao Cheng, China
2001-Present  Consulting Physician, Allergan, Irvine, California
2001-Present  Reviewer: Archives of Ophthalmology
2000-Present  Novartis Ophthalmics Advisory Board
2000-Present  Physician's Advisory Board, National Republican Congressional Committee, Washington, D.C.
2000-Present  Consulting Physician, Leerink, Swann, & Company / MEDACorp, Boston, Massachusetts
1995-2006  Consulting Physician, Veterans Administration Hospital, Long Beach, California
1994-2010  Assistant Clinical Professor in Ophthalmology, University of California, Irvine School of Medicine
1991-1993  Research Associate, Eye Research Institute of the Retina Foundation, Harvard Medical School, Boston, Massachusetts
1988-1991  Instructor in Ophthalmology, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania

Speakers Bureau
Alcon Laboratories
Allergan
Eyetech Inc.
Genentech
Inspire Pharmaceuticals
Novartis Ophthalmics
Pfizer Ophthalmics
Regeneron Pharmaceuticals

Advisory Boards
Alcon Laboratories
Allergan
Eyetech, Inc.
Genentech
Regeneron Pharmaceuticals
Thrombogenics

Revised: 19Dec2013.MC

S.Chen, MD

Page 3 of 15
PROFESSIONAL SOCIETY MEMBERSHIPS

1988 – Present  American Academy of Ophthalmology, Fellow
1989 – Present  Chinese American Ophthalmological Society
1989 – Present  Association for Research in Vision and Ophthalmology
1993 – Present  California Medical Association
1993 – Present  Orange County Medical Association
1993 – Present  California Association of Eye Physicians and Surgeons
1993 – Present  Orange County Society of Ophthalmology
                Executive Committee, Program Chairman, 1998-1999
                Secretary/Treasurer, 1999-2001
                Vice President, 2002-2003
                President, 2004-2005
1993 – Present  Schepens International Society
1994 – Present  American College of Surgeons
1995 – Present  American Society of Retina Specialists (The Vitreous Society)
1996 – Present  Western Retina Study Club
2004 – Present  Club Vit

HOSPITAL/SURGERY CENTER AFFILIATIONS

1993 – Present  Western Medical Center, Santa Ana, California
1993 – Present  Hoag Memorial Hospital Presbyterian, Newport Beach, California
1994 – Present  St. Joseph Hospital, Orange, California
1994 – Present  Children's Hospital of Orange County, Orange, California
1994 – Present  Medical Center - University of California, Irvine, California
1994 – Present  Pacific Hills Surgery Center, Laguna Hills, California
1997 – Present  Anaheim Regional Medical Center, Anaheim, California
2002 – Present  Children's Hospital at Mission, Mission Viejo, California
2010 – Present  Barranca Surgery Center, Irvine, California

Revised: 19Dec2013 MC

S.Chen, MD
PROFESSIONAL PRESENTATIONS

01. *The Acute Effect of Topical Epinephrine on Macular Blood Flow in Humans*  
    Association for Research in Vision and Ophthalmology, Sarasota, Florida; April 1990

02. *Does Topical Timolol Affect Human Macular Capillary Blood Flow?*  
    University of Pennsylvania Alumni Meeting, Philadelphia, Pennsylvania; April 1991

03. *Advances in Genetic Eye Diseases: Genetics of Retinoblastoma*  
    Harvard Medical School, Massachusetts Eye and Ear Infirmary, Boston, Massachusetts; January 1992

04. *Acute Myelogenous Leukemia Presenting as Central Serous Retinopathy*  
    Schepens Alumni Meeting, Boston, Massachusetts; June 1992

05. *The Mechanism of Optic Nerve and Posterior Pole Injury after Blunt Ocular Trauma*  
    American Academy of Ophthalmology, Dallas, Texas; November 1992

06. *The Acute Effect of Topical Timolol on Human Macular Capillary Blood Flow*  
    Association for Research in Vision and Ophthalmology, Sarasota, Florida; May 1993

07. *Current Treatment of Endophthalmitis*  
    *Advances in Pneumatic Retinopexy.*  
    *Surgical Management of Dislocated Lens*  
    Humanitarian Trip, Yerevan, Armenia; September 1994

08. *Techniques and Complications of Pneumatic Retinopexy*  
    American College of Surgeons: Indian Wells, California; January 1995

09. *New Advances in Diabetic Retinopathy*  
    Humanitarian Trip, Yerevan, Armenia; September 1995

10. *Age-related Macular Degeneration & Subretinal Neovascular Diseases*  
    Invited Lecturer to UCI Residents. University of California, Irvine, Department of Ophthalmology;  
    February 1997

11. *The Use of Silicone Oil in Pseudophakic Patients*  
    American Society of Cataract and Refractive Surgeons, Boston, Massachusetts; April 1997

12. *Age-Related Macular Degeneration and Subretinal Neovascular Diseases*  
    Invited Lecturer to UCI Residents. University of California, Irvine, Department of Ophthalmology;  
    February 1998

13. *Age-Related Macular Degeneration and Subretinal Neovascular Diseases*  
    Invited Lecturer to UCI Residents. University of California, Irvine, Department of Ophthalmology;  
    January 1999

14. *Unifocal Helioid Choroidopathy*  
    Western Retina Study Club, Newport Beach, California; March 1999

15. *Nursing Implications for Retinopathy of Prematurity*  
    St. Joseph Hospital, Orange, California; May 1999
16. Retinopathy of Prematurity Screening
Children's Hospital of Orange County, Orange, California; May 1999

17. Diabetes and the Eye - The Importance of the Seven Fields in Diabetic Retinopathy
Ophthalmic Photographers' Society, Los Angeles, California; June 1999

18. Retinopathy of Prematurity Screening
Martin Luther Hospital, Anaheim, California; July 1999

19. Retinopathy of Prematurity
Children's Hospital of Orange County, Orange, California; November 1999

20. Age-related Macular Degeneration & Subretinal Neovascular Diseases
Invited Lecturer to UCI Residents. University of California, Irvine, Department of Ophthalmology; February 2000

21. Innovations in Treatment of Macular Degeneration
EENT Department Presentation, St. Joseph Hospital, Orange, California July 2000

22. An Introduction to Photodynamic Therapy
Ophthalmic Photographers' Society, San Diego, California; August 2000

23. Latest Developments in Retinopathy of Prematurity
California Children's Services, Orange County, Santa Ana, California; May 2001

24. Multiple Cystic Granulomas as a Complication of Silicone Oil Use in Vitreoretinal Surgery
Association for Research in Vision and Ophthalmology, Sarasota, Florida; May 2001

25. Update and Review of Visudyne Photodynamic Therapy
The Western Association for Vitreoretinal Education, Maui, Hawaii; July 2001

26. Unique Cases of Visudyne Therapy
National Optometry Advisory Board, Key West, Florida; November 2001

27. Introduction to Photodynamic Therapy
Ophthalmic Photographers' Society 32nd Annual Educational Program, New Orleans, Louisiana; November 2001

28. Managing Patients' Expectations for Verteporfin Therapy
Royal Hawaiian Eye Meeting, Waikoloa, Hawaii; January 2002

29. Results of Clinical Trials and Adverse Events
South America Visudyne Launch "Introduction to Photodynamic Therapy", Lima, Peru; April 2002

30. Council on Optometric Practitioner Education Educators' Meeting: Carlsbad, California
Treatment of AMD with Photodynamic Therapy
April 2002

31. Clinical Decisions in Managing AMD
National Optometry Advisory Board, Colorado Springs, Colorado; June 2002
32. *Radial Optic Neurotomy for CRVO*
   *25g Transconjunctival Vitrectomy*
   XXXth Congreso Nacional de Oftalmologia, Cartegena, Colombia; September 2002

33. *New Treatment Strategies for AMD*
   American Academy of Optometry, San Diego, California; December 2002

34. *Update of New Treatment Options in AMD*
   Optometry Educator’s Meeting, Scottsdale, Arizona; March 2003

35. *Interpreting Data from Open Label Phase III AMD Trials*
   American Society of Retina Specialists Annual Meeting, New York, New York; September 2003

36. *Retinopathy of Prematurity*
   Resident Conference Lecture Children’s Hospital of Orange County; September 2003

37. *Treatment Trends in Macular Disease*
   Ophthalmic Photographers’ Society 34th Annual Educational Program, Anaheim, California; November 2003

38. *Retinopathy of Prematurity*
   Children’s Hospital of Orange County, Orange, California; May 2004

39. *New Advances in Surgical Retina*

40. *The Great Debates: Controversies in Retinal Disease 2005*
   Invited Speaker. Medical Education Seminar, University of California, Irvine, Beckman Laser Center; March 2005

41. *Retinopathy of Prematurity*
   Resident Lecture. Children’s Hospital of Orange County, Orange, California; March 2006

42. *Management of AMD: Looking to the Future*
   Rio Hondo Optometric Society, La Mirada, California; June 2007

43. *Short Term Outcomes of Multi-center 23g Vitrectomy*
   Club Vit Meeting, Bachelor Gulch, Colorado; July 2007

44. *Evolution Of AMD Management*
   Invited Speaker. QLT Meeting, Honolulu, Hawaii; October 2007

45. *New Clinical Trials for Age-Related Macular Degeneration*
   Rio Hondo Optometric Society, La Mirada, California; November 2007

46. *Strategies for Managing Patients with Neovascular AMD – A Case Study Series*
   Novartis Speaking Engagement, Los Angeles, California; September 2008

47. *Advances in Treatment for Exudative Age-Related Macular Degeneration*
   Novartis Speaking Engagement, Park City, Utah; April 2008
48. Alimera Sciences FAME Study. 36-Month Results of Iluvien: Single Insert Outcomes
   Club Vit Meeting, Santa Monica, California; 2011

49. Voclosporin: Overview and Clinical Development
   Lux Protocol LX211-11, Lux Biosciences, Costa Mesa, California; September 2011

50. Minimizing Intraoperative Hypotony during Vitrectomy. American Society of Retina Specialists, Las
    Vegas, Nevada; August 2012

51. Iontophoretic Dexamethasone Phosphate Ophthalmic Suspension in Patients with Non-Infectious
    Anterior Segment Uveitis: Introduction
   EyeGate Protocol EGP-437-004, EyeGate Pharma, Anaheim, California; October 3, 2012

52. Developments in the Treatment of Wet AMD
   Regeneron Educational Program, Retina Associates of Orange County, Laguna Hills, California;
   March 18, 2013

53. Developments in the Treatment of Wet AMD
   Regeneron Educational Program, Retina Institute, Orange, California; April 4, 2013

54. Current Treatments for Wet AMD
   Retina Care Symposium, Costa Mesa, California; December 5, 2013
PUBLIC PRESENTATIONS

01. *Diabetic Retinopathy*  
    Project Health, Western Medical Center, Santa Ana, California; October 1995

02. *Diabetic Retinopathy*  
    Project Health, Saddleback Medical Center, Laguna Hills, California; April 1996

03. *Complications of Diabetes*  
    Diabetes Education Series, Invited Speaker, Placentia Linda Hospital, Placentia, California; May 1996

04. *Diabetes and Eye Disease*  
    Diabetic Discussion Group, Invited Speaker, Costa Mesa Senior Center, Costa Mesa, California; March 1998

05. *Living Well with Diabetes*  
    Invited Speaker. Diabetes Education Lecture, Placentia Linda Hospital, Placentia, California; September 1998

06. *Photodynamic Therapy for Macular Degeneration*  
    Invited Speaker. Anaheim Community Center, Anaheim, California; October 2002

07. *Macular Degeneration*  
    Community Education Lecture, Mission Regional Medical Center, Mission Viejo, California; May 2003

08. *Macular Degeneration*  
    "The Doctors" CBS Television Production, Broadcast Airing: March 23, 2009

09. *Optic Nerve Abnormalities*  
    "The Doctors" CBS Television Production, Broadcast Airing March 11, 2009

10. *Optic Nerve Swelling*  
    "The Doctors" CBS Television Production, Broadcast Airing February 9, 2009

11. *Macular Degeneration and Diabetes Seminar*  
    Invited Speaker. Low Vision Council, Southern California College of Optometry, Fullerton, California  
    June 2011
CLINICAL RESEARCH

01. Wyeth-Ayerst Pharmaceutical, 1993
Sub-Investigator. Safety and efficacy of Tolrestat in the treatment of diabetic retinopathy.

02. CIBA/QLT PhotoTherapeutics, Protocol #BPD-OCR-005 (VAM), 1999
Principal Investigator. An open-label multicenter safety study of the treatment of predominantly classic subfoveal CNV secondary AMD using PDT with verteporfin for injection.

03. Eyetech Pharmaceuticals, Protocol #EOP 1004, Phase II/III, 2001-2005
Sub-Investigator. A randomized, double-masked, controlled, dose-ranging, multi-center comparative trial, in parallel groups, to establish safety and efficacy of intravitreal injections of EYE001 (anti-VEGF pegylated aptamer) in patients with exudative AMD.

04. Novartis Ophthalmics, Protocol #CBPD952A2201 (ADD-V), Phase II, 2002
Principal Investigator. Adjunctive Diclofenac therapy and Visudyne PDT (ADD-V): A three-month randomized, placebo-controlled, double-masked, multicenter study of the effect of adjunctive diclofenac therapy and Visudyne PDT in patients with predominantly classic subfoveal CNV secondary to AMD.

Sub-Investigator. A multicenter, double-masked, randomized, parallel groups study to demonstrate efficacy and safety of anecortave treatment relative to Visudyne for AMD.

Principal Investigator. A multi-center, randomized, double-masked, placebo-controlled, parallel group, evaluation of the safety and efficacy of combretastatin A4 phosphate infusion for treating subfoveal CNV in pathologic myopia.

Principal Investigator. A randomized trial comparing intravitreal corticosteroids and laser photocoagulation for DME.

08. Alcon Research, Ltd., Protocol C-02-60 (AART), Phase III, 2004-2009
Principal Investigator. Anecortave Acetate Risk Reduction Trial (AART): An evaluation of efficacy and safety of posterior juxtascleral administrations of anecortave acetate for depot suspension (15 mg or 30 mg) versus sham administration in patients (enrolled in study “A” or study “B”) at risk for developing sight-threatening CNV due to exudative AMD.

Principal Investigator. The Standard Care vs. Corticosteroid for Retinal Vein Occlusion (SCORE): Two randomized trials to compare the efficacy and safety of intravitreal injection(s) of triamcinolone acetonide with standard care to treat macular edema: one for CRVO and one for BRVO.

Sub-Investigator. A randomized, double-blind, parallel-design, placebo-controlled study to evaluate the effects of 5mg tadalafil (IC351, LY450190) and 50mg sildenafil administered once daily for 6 months on visual function in healthy subjects or subjects with mild erectile dysfunction.

Sub-Investigator. A trial using anecortave acetate 15mg administered every 3 months versus anecortave acetate 15 mg every 6 months versus anecortave acetate 30 mg administered every 6 months in patients with exudative AMD.
Principal Investigator. A randomized, active-controlled, double-masked, single dummy, multicenter comparative trial, in parallel groups, to compare the safety and efficacy of intravitreous injections of Macugen given every 6 weeks for up to 102 weeks, plus sham PDT, to Macugen plus PDT with Visudyne, in subjects with predominantly classic subfoveal CNV secondary to AMD.

Sub-Investigator. A 24-month randomized, double-masked, sham controlled, multicenter, phase IIIB study comparing PDT with verteporfin (Visudyne) plus two different dose regimens of intravitreal triamcinolone acetonide (1 mg and 4 mg) versus Visudyne plus intravitreal pegaptanib (Macugen) in patients with subfoveal CNV secondary to AMD.

Principal Investigator. Short term outcomes of 100 consecutive cases of Alcon 23 gauge surgery for posterior segment diseases (a retrospective, consecutive multicenter, multisurgeon, case series of the short term safety and efficacy of 23 gauge micro-incision pars plana vitrectomy [PPV] surgery using the Alcon 23gauge micro-incision system for a variety of retinal conditions on previously non-vitrectomized eyes).

15. (OSI) Eyetech, Protocol EOP1023 (LEVEL), Phase IV, 2006-2008
Sub-Investigator. An open label, multicenter trial of maintenance intravitreous injections of Macugen (pegaptanib sodium) given every six weeks for 48 weeks in subjects with subfoveal neovascular AMD initially treated with a different modality resulting in maculopathy improvement.

16. Novartis, Protocol #CBPD952A2308 (Denali), Phase IIIB, 2006-2010
Sub-Investigator. A 24-month randomized, double-masked, controlled, multicenter study assessing safety and efficacy of verteporfin (Visudyne) photodynamic therapy administered in conjunction with ranibizumab (Lucentis) versus ranibumab (Lucentis) monotherapy in patients with subfoveal CNV secondary to AMD.

17. Allergen Sciences, Protocol C-01-05-001 (FAME), Phase III, 2006-2011
Principal Investigator. Fluocinolone Acetonide in Diabetic Macular Edema (FAME): A randomized, double-masked, parallel group, multicenter, dose-finding comparison of the safety and efficacy of ASI-001A 0.5ug/day and ASI-001B 0.2 ug/day fluocinolone acetonide intravitreal inserts to sham injection in subjects with DME (Medidur®).

Principal Investigator. Clinical Evaluation of Anti-angiogenesis in the Retina - Intravitreal Trial 3 (CLEAR-IT 3): A randomized, double-masked, active-controlled phase III study of the efficacy, safety, and tolerability of repeated doses of intravitreal VEGF Trap in subjects with neovascular AMD.

Principal Investigator. COMbining Bevasirinib and Lucentis Therapy (COBALT): A randomized, double-masked, parallel-assignment study of intravitreal bevasirinib sodium, administered every 8 to 12 weeks as maintenance therapy following three injections of Lucentis compared with Lucentis monotherapy every 4 weeks in patients with exudative AMD.

Principal Investigator. A 52-week, masked, multicenter, randomized, controlled trial (with up to 13 weeks additional follow-up) to assess the safety and efficacy of 700 ug dexamethasone posterior-segment drug delivery system (DEX PS DDS) Applicator System in combination with laser photocoagulation compared with laser photocoagulation alone in the treatment of subjects with diffuse DME.
   Principal Investigator. A safety and efficacy study of Vitreosolve for ophthalmic intravitreal injection for
   inducing posterior vitreous detachment in subjects with NPDR.

   Ophthalmology Investigator. A safety follow-up study of patients previously exposed to MK-0634 (a
   beta-3 receptor antagonist developed for the treatment of overactive bladder). Subjects had previously
   been enrolled in a multicenter, double-blind, randomized, placebo-controlled, parallel group, dose-
   ranging study of L-000796568 in postmenopausal women with OAB.

23. Allergan, Protocol 206207-019-00, Phase II, 2008-2010
   Sub-Investigator. A 26-week, open-label study to assess the safety and efficacy of 700 μg dexamethasone
   posterior segment drug delivery system applicator system in conjunction with Lucentis® in the treatment
   of patients CNV secondary to AMD.

   Principal Investigator. An ascending dose and parallel group trial to establish the safety, tolerability and
   pharmacokinetic profile of multiple intravitreous injections of volociximab (α5β1 integrin antagonist) as
   monotherapy or in combination with Lucentis 0.5 mg/eye in subjects with neovascular AMD.

   Principal Investigator. A double-masked, randomized, controlled study of the safety, tolerability and
   biological effect of repeated intravitreal administration of VEGF Trap-eye in patients with DME.

26. NEI/Tufts Medical Center, The Family Study of Macular Degeneration, 2009-2010
   The goal is to evaluate genetic and non-genetic risk factors for AMD

27. Allergan, Protocol 206207-018-00, Phase II, 2008 - 2010
   Sub-Investigator. A 26-week, open-label study to assess the safety and efficacy of 700 μg dexamethasone
   posterior segment drug delivery system applicator system in the treatment of vitrectomized subjects with
   DME.

   Sub-Investigator. A randomized, multicenter, double-blind, parallel-group trial to assess the analgesic
   efficacy and safety of a new analgesic compared with placebo in subjects with painful diabetic
   peripheral neuropathy.

29. Endo Pharmaceuticals, Protocol EN3324-201, Phase IIb, Collaborative Study, 2010-2011
   Sub-Investigator. A randomized, multicenter, double-blind, two-arm, multicenter, placebo-controlled
   study to assess the efficacy and safety of EN3324 (Axomadol) in subjects with moderate to severe chronic
   low back pain.

   Sub-Investigator. A dose-ranging study of pazopanib eye drops vs. ranibizumab intravitreal injections
   for the treatment of neovascular AMD.

   Principal Investigator. A double-masked, multicenter, randomized, active treatment-controlled study of
   the efficacy and safety of 0.5 mg and 2.0 mg ranibizumab administered monthly or on an as needed
   basis (PRN) in patients with subfoveal neovascular AMD.
   Principal Investigator. A multicenter, double-masked, parallel group, placebo-controlled study to assess
   the efficacy and safety of Voclosporin as therapy in subjects with active noninfectious intermediate,
   posterior or pan-uveitis.

33. Lpath, Protocol LT1009-Oph-003 (NEXUS), Phase IIA, 2011-Present
   Principal Investigator. A multicenter, masked, randomized, comparator-controlled study evaluation
   Isonep™ (sonepecizumab [LT1009]) as either monotherapy or adjunctive therapy to Lucentis or Avastin
   versus Lucentis or Avastin alone for the treatment of subjects with choroidal neovascularization
   secondary to AMD.

34. Alimera Sciences, Protocol C-01-11-008, Extension Study, 2011-2013
   Principal Investigator. An open-label, multicenter, extension study of the safety and utility of the new
   inserter of Iluvien® (Fluocinolone Acetonide Intravitreal Insert) 0.19mg and the safety of Iluvien® in
   subjects with DME.

35. EyeGate Pharmaceuticals, Protocol EGP-437-004, Phase III, 2012-2013
   Principal Investigator. A prospective, multi-center, randomized, double-masked, positive controlled,
   clinical trial designed to evaluate the safety and efficacy of iontophoretic dexamethasone phosphate
   ophthalmic suspension (1%) in patients with non-infectious anterior segment uveitis.

36. Quark Pharmaceuticals, Protocol QRO202 (MATISSE), Phase II, 2012-2013
   Principal Investigator. An open-label dose escalation study of PF-04523655 (Stratum I) combined with a
   prospective, randomized, double-masked, multi-center, controlled study (Stratum II) evaluating the
   efficacy and safety of PF-04523655 alone and in combination with ranibizumab versus ranibizumab
   alone in diabetic macular edema.

37. Xoma, Protocol X052130/CL3-78989-005, Phase III, 2012-Present
   Sub-Investigator. A randomized, double-masked, placebo-controlled study of the safety and efficacy of
   gevokizumab in the treatment of active non-infectious intermediate, posterior, or pan-uveitis.

38. Pfizer, Protocol B1181003-1050, Phase II, 2012-2013
   Principal Investigator. A phase 2, multi-center, randomized, double-masked, placebo-controlled, multi-
   dose study to investigate the efficacy, safety, pharmacokinetics and pharmacodynamics of RN6G (PF-
   04382923) in subjects with geographic atrophy secondary to age-related macular degeneration.

39. Xoma, Protocol X052131/CL3-78989-005 (EYEGUARD™-C), Phase III, 2012-Present
   Sub-Investigator. A randomized, double-masked, placebo-controlled study of the safety and efficacy of
   gevokizumab in the treatment of subjects with non-infectious intermediate, posterior, or pan-uveitis
   currently controlled with systemic treatment.

40. Regeneron Protocol VGFTe-AMD-1124 ((RE-VIEW)), Phase IV, 2012-Present
   Principal Investigator. Rigorous evaluation of vision and safety with intravitreal aflibercept injection
   dosed every 8 weeks over 2 years in neovascular AMD.

41. Merck Protocol MK8931-017 (SCH 900931, P07738), Phase 2/3, Collaborative Study, 2012-Present
   Ophthalmology Investigator. A randomized, placebo controlled, parallel-group, double blind efficacy
   and safety trial of MK-8931 in subjects with mild to moderate Alzheimer's disease.

42. Ophthotech OPH1003, Phase III, 2013-Present
   Principal Investigator. A randomized, double-masked, controlled trial to establish the safety and efficacy
   of intravitreous administration of Fovista™ (Anti-PDGF-B pegylated aptamer) administered in
   combination with Lucentis® compared to Lucentis® monotherapy in subjects with subfoveal
   neovascular macular degeneration.
ABSTRACTS


PUBLICATIONS


12. Chen S, Freeman HM, Stroh EM, Wald KJ. Multiple cystic granulomas as a complication of silicone oil use. (submitted for publication 2012, ARVO)


JEFFREY JOSEPH, MD

Board Certified Ophthalmic Plastic and Reconstructive Surgeon.

ACADEMIC AND PRACTICE AFFILIATIONS

Ophthalmic Plastic and Reconstructive Surgeon
Skin Cancer and Reconstructive Surgery Center
Appearance Center of Newport Beach

Assistant Professor
UC Irvine
Department of Ophthalmology
Gavin Herbert Eye Institute

Ophthalmic Plastic and Reconstructive Surgeon
Inland Eye Specialists

EDUCATION

UC San Diego
Degree: General Biology (pre-med focus)
Minor: Health Care and Social Issues

Boston University School of Medicine
Degree: Medical Doctorate
Honors: Alpha Omega Alpha Honor Society
Pathology Honor Society

Post Graduate
Internship:
St. Vincent’s Hospital Manhattan- Transitional Intern
Residency in Ophthalmology:
NYU School of Medicine – Manhattan Eye, Ear, & Throat Hospital

Chief Resident: 2010-2011

Fellowship, Ophthalmic Plastic and Reconstructive Surgery:
University of California, Irvine – Gavin Herbert Eye Institute

RESEARCH & PUBLICATIONS

Textbook Contributions:

Enucleation
Jeffrey M. Joseph MD, Gary J. Lelli, Jr. MD, Christopher I. Zoumalan MD
Encyclopedic Reference of Ophthalmology
Springer Publishing; New York, NY USA
In Press

Evisceration
Jeffrey M. Joseph MD, Gary J. Lelli, Jr. MD, Christopher I. Zoumalan MD
Encyclopedic Reference of Ophthalmology
Springer Publishing; New York, NY USA
In Press

Orbital Implants
Jeffrey M. Joseph MD, Robert Peralta MD, Gary J. Lelli, Jr. MD, Christopher I. Zoumalan MD
Encyclopedic Reference of Ophthalmology
Springer Publishing; New York, NY USA
In Press

Ophthalmic Plastic Surgery: Essential Concepts
Joseph JM, Echegoyen J, Morgan P, Tao JP;
Ophthalmic Microsurgery: Principles, Techniques, and Applications;
Slack; Thorofare, NJ USA.
In press

Online Review Contributions:

Joseph JM, Zoumalan CI.
Lacrimal System Probing and Irrigation.

Joseph JM, Solomon JM.
Retrobulbar Block
Journal Publications:

External versus Endoscopic Dacryocystorhinostomy for Acquired Nasolacrimal Duct Obstruction in a Tertiary Referral Center.
Ophthalmology, Volume 112, Issue 8, Pages 1463 – 1468
G. Ben Simon, J. Joseph, S. Lee, R. Schwarcz, J. McCann, R. Goldberg
August 2005.

Oculocardiac reflex associated with a large orbital floor fracture.
November 2009.

Orbital Fractures: A Review
Clinical Ophthalmology, Volume 2011:5, Pages 95 – 100
Jeffrey M. Joseph, Ioannis P. Glavas,
January 2011

When A Pink Eye Is Not “Pink Eye”- The Low Flow Carotid-Cavernous Fistula
EyeNet
Jeffrey M. Joseph, Floyd A. Warren.
January 2011

Evaluation of the canalicular entrance into the lacrimal sac: An anatomic study.
July 2011

Antibacterial analysis of surgical adhesives.
Plastic and Reconstructive Surgery, Volume 129, Issue 2, Pages 402e-404e
JM. Joseph, A. Voldman, CI. Zoumalan, RD. Lisman, NM. Iovine
February 2012

Periorbital fat grafting and its effect on upper eyelid height
The American Journal of Cosmetic Surgery, Volume 29, No. 3
JM Joseph, BJ Lissauer, AN Kornstein
September, 2012

Needle decompression of acute orbital emphysema: case report with video
British Journal of Ophthalmology, Volume 96, Issue 10, Pages 1346-1347
G Chak, JM Joseph, JP Tao
October, 2012
A positive sentinel lymph node in periocular invasive squamous cell carcinoma: a case series.
Ophthalamic Plastic and Reconstructive Surgery. Volume 29, Issue 1, Pages 6-10
Garrick Chak MD, Payam V Morgan MD, Jeffrey M Joseph MD, Jeremiah P Tao MD, FACS.
January, 2013

The Efficacy of a Midfacial Seal Drape in Reducing Oculofacial Surgical Field Fire Risk
Jeremiah P. Tao MD, FACS, Kristin E. Hirabayashi BA, Brian T. Kim MD, Feilin A. Zhu MD,
Jeffrey M. Joseph, MD, William Nunery MD, FACS
March, 2013

Repair of eyelid retraction due to a trabeculectomy bleb: case series and review of the literature
Ophthalamic Plastic and Reconstructive Surgery.
Ann Shue MD, Jeffrey M Joseph MD, Jeremiah P Tao MD, FACS.
In Press

The Efficacy of a Novel Mobile Phone Application for Goldmann Ptosis Visual Field Interpretation
Ophthalamic Plastic and Reconstructive Surgery.
Robi N. Maamari, BS, Michael V. D’ambrosio, Ph.D, Jeffrey M. Joseph, MD, Jeremiah P. Tao,
MD, FACS.
Submitted

Massive Silicone-induced Orbital Granuloma: Case report and literature review.
Ophthalamic Plastic and Reconstructive Surgery.
Ann Shue, MD, Jeffrey M. Joseph, MD; Jeremiah P. Tao, MD, FACS,
Donald S. Minckler, MD, MS
Submitted

Lectures:

Trabeculectomy Bleb-Induced Eyelid Retraction Repair: Case Series and Review of the Literature
Ann Shue MD, Jeffrey M Joseph MD, Jeremiah P Tao MD, FACS.
ASOPRS 43rd Annual Fall Scientific Symposium on
Friday, November 9, 2012, Chicago, IL

Effect of Eyelash Ptosis on Visual Field
Tiffany S Liu MD, Jeffrey M Joseph MD, Jeremiah P Tao MD, FACS.
ASOPRS 43rd Annual Fall Scientific Symposium on
Thursday, November 8, 2012, Chicago, IL

Abstract Publications:

Oculocardiac reflex associated with a large orbital floor fracture: a case report.
Second International Orbital Society Symposium.
Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting.
Fort Lauderdale, FL. May 3 to May 7, 2009

Evaluation of the Canalicular System and Lacrimal Sac: An Anatomic Study.
American Society of Ophthalamic Plastic and Reconstructive Surgery (ASOPRS) Fall Scientific Symposium
Jeffrey M. Joseph MD, Christopher Zoumalan MD, Gary Lelli, Jr. MD, David Howard MD, Michael Kazim MD, Richard Lisman MD.
San Francisco, CA. October 21-22, 2009

Antibacterial Analysis of Surgical Adhesives.
American Society of Ophthalamic Plastic and Reconstructive Surgery (ASOPRS) Fall Scientific Symposium.

Podcasting And Its Effect On Traditional Resident Education
Association for Research in Vision and Ophthalmology (ARVO) Annual Meeting.
J.M. Joseph, J. Young.
Fort Lauderdale, FL. May 1 to May 5, 2011
Corneal Inlay Options vs. IOL for Presbyopia: When To Do What and Can They Co-exist?

Dan B. Tran, MD
Coastal Vision Medical Group

OUTLINE:

1. Presbyopia overview

2. Introduction of FDA approved corneal inlays for presbyopia correction
   a. Optical characteristics
   b. Biochemical and tissue compatibility
   c. FDA clinical results and indications for usage
   d. Potential complications

3. Introduction of FDA approved presbyopic correcting IOLs
   a. Overview of Tecnis MF IOL, ReStor MF IOL, Crystalens/Trulign IOL
   b. Clinical outcomes
   c. Potential complications

4. Patient selection and case study illustration
An Extraordinary "Retina" Tale of Great Egret Regret

Eisenhower Park, Orange CA

Eisenhower Park, Orange CA

History
History

History of Present Illness
- 37 year old male developed vision loss after being attacked by Egret
- PMHx: Bipolar disorder and ADHD
- Exam Va 20/25 OD  Va HM OS
- SLE: 10mm full thickness, stellate corneal laceration with prolapsed uveal tissue

Post Primary Repair  Va CF 2ft

B-Scan Retinal Detachment

Fundus OD

Fundus OS
**Herpes Zoster: The Master Masquerader**
Lisa D. Garbutt, M.D.
Coastal Vision Medical Group

**Herpes Zoster**

- Varicella Zoster Virus is the causative agent of the reactivation of Herpes Zoster (shingles).
- It interacts with the nasal mucosa area as Varicella ("Chicken Pox"), then within the sensory ganglionic nerves as Zoster ("Shingles").
- Contrary to popular belief, it does not infect chickens, just humans
- Only one serotype identified
- It has many common amino acid sequences with Herpes Simplex Virus I, these striking similarities indicate a common ancestral origin

**Herpes Zoster in its many phases**

- Rash/Sunburn
- Blepharoconjunctivitis
- Episcleritis/Scleritis
- Dry Eye/Punctate Epithelial Keratitis
- HSV (epithelial dendritic and stromal keratitis), Endotheliitis
- Iritis/Uveitis
- Uveitic Glaucoma

**Herpes Zoster**

- Headache
- GCA
- Neurotrophic cornea
- Retinitis/Optic Neuritis/Oculomotor palsies
- Chronic pain syndromes, depression, “just don’t feel good”

**Herpes Zoster Rash**

- Always UNILATERAL, respecting MIDLINE

**Blepharoconjunctivitis**

- Day 2-3 after skin rash
- Conjunctival edema/inflammation/injection, often with petechial hemorrhages
- Secondary infection of vesicles or conjunctiva can occur with Staphylococcus aureus

**Corneal surface**

- Punctate keratitis: Days 1-2
Corneal complications occur in approximately 65% of cases of HZO

8 Nummular keratitis, Stromal Keratitis

- Nummular keratitis (1-2 weeks, 25-30% of patients) = anterior stromal keratitis/multiple granular infiltrates in areas of previous pseudodendrites. (may represent Antigen-Antibody reaction)
- Stromal Keratitis - months to years after initial episode, mid to deep stromal inflammation, +/- Edema/AC rxn/Neovascularization. (may represent delayed cell-mediated hypersensitivity rxn)
- Corneal involvement can lead to significant visual loss

9 Neurotrophic Keratopathy

- Months to years after initial episode, indicates neurotrophic damage, is the end result of decreased corneal sensitivity from multiple episodes of herpes zoster virus-mediated destruction (decreased lacrimation, delayed epithelial healing)
- Diffuse severe punctate corneal surface erosions
- Persistent Epithelial defects, Stromal thinning, Perforation

10 Uveitis/Trabeculitis/Endothelitis

- Two weeks to years
- Inflammation and Sectoral Iris Atropy (moth-eaten appearance)
- IOP issues

11 Retinal Manifestations

- Acute Retinal Necrosis - Coalescent patches of retinal necrosis, Occlusive vasculitis
- Optic neuritis in patient with retinitis
- Don't forget the dilated exam

12 Post Herpetic Neuralgia

- Amitriptyline, Neurontin, Lyrica
- Managed long-term by Neurologist, Pain Specialist

13 Case Report

- 31 year old female, referred by St. Joseph ER
1 day of pain, erythema, light sensitivity OS
Reports a history years ago of a “viral” infection in her left eye
Two episodes of “shingles” as a child (on back), associated with the stress of her
move from England to the United States

14 Case Report
Va cc 20/60 (old glasses)
2+ injection, very large dendritic vs. pseudodendritic lesion just temporal to the pupil
with many branches, no infiltrate, light epithelial haze, no stromal haze
trace to bare1+ cell, no KP, IOP 13
Retinal exam normal

15 Case Report
No history of vesicular rash on her forehead ever, no forehead or scalp pain
Dx: HZO vs. HSV keratitis, more AC cell than one would expect for HSV, lesions
appeared more pseudodendritic to me although largest one I have ever seen. Patient
reports prior history of “viral infection on surface of eye”, she couldn’t tell me what
medication she was treated with. Symptoms have only been going on for 1 day.
Hmmmmm........to start steroids or to not start steroids on top of antivirals.
Decided that since it was 10pm at night, to start Antivirals immediately, and will take
look at her first thing in the morning, and we can start steroids at that time if needed,
as it “declares itself”

16 Case Report
Started that night Valtrex 1g PO TID, Viroptic gtt Q2 hours (prefer Zirgan gel gtt
5x/day), Vigamox gtt TID, Neurontin 300mg po TID

17 Case Report
8am Next morning: Pain is less than last night
However, Vision has clouded over
Va cc OS: Hand Motions
2++ Descemet’s folds/MCE, diffuse haze, the extremely large Medusa-like
pseudodendrite with many branches has broken up into many small scattered
pseudodendrites
2+ cells, trace hypopyon, IOP 13

18 Case Report
The Zoster has declared itself indeed: Started on aggressive steroids, Durezol gtt Q1
hour for 1 day, then Q2 hours (watch IOP), and switch to Pred Forte after 1 week.
Medrol dose pak.
Continue Valtrex 1g PO TID, Viroptic QID, Vigamox BID, Neurontin PO TID prn

19 Case Report
Within 2 days, Vision was back to 20/60
Within 1 week, at 20/40 with slowly improving stromal haze
20 Case Report

• Very slow taper of topical steroids over 2 months
• Taper Oral Valtrex, consider keeping her on maintenance dose (likely high risk of recurrence). Type A/affected by stress personality
• Va cc 20/30+2, central stroma clear with few scattered inflammatory cells

21 Understanding Herpes Zoster

• Although there is a vaccine against Shingles, cases of HZO are rising
• Herpes Zoster results in more than 1 million new cases in the U.S. each year, with 10-20% of those involving the trigeminal nerve.
• Incidence historically is approximately 1 in 3 overall above age 60, but rises to 1 in 2 by age 85, but interestingly the greatest number of cases occurs in people in their 50's

22 Understanding Herpes Zoster

• HZO/Herpes zoster is becoming more and more common, especially in younger patients - Why?
• Loss of "herd immunity": with the Varicella vaccine for children (first FDA approval 1995).
• This is the first generation of parents with kids that have never had chicken pox.
• I am more commonly seeing immunocompetent patients in their 20’s, 30’s and 40’s with HZO

23 Understanding Herpes Zoster

•
•
•
• Before chicken pox vaccination, adults continued to have their immunity against shingles "boosted" because of continual exposure to the varicella virus either through their children or through the community. This continued exposure has virtually disappeared.

24 Understanding Herpes Zoster

• Zostavax (Merck) is a live attenuated zoster vaccine that was approved almost a decade ago to prevent shingles in immunocompetent people over the age of 60.
• Is approved by the FDA for people ages 50-59, where it reduces zoster by 70%
• Clinical trials found the vaccine reduced the risk for shingles by 51% in people between the ages of 60 and 69, and the risk for postherpetic neuralgia by 67%
• With the reduction of chicken pox in vaccinated children, we must rely more on a zoster vaccine to substitute for the immune boost that came from natural exposure to exogenous wild type virus
• Research suggests the vaccine is effective for at least 6 years, but may last longer

25 Vaccinate in HZO??

• There is not a consensus among ophthalmologists whether to vaccinate after an episode of HZO.
• Most do not recommend vaccination after an episode of HZO, for fear of reactivating cell-mediated inflammatory reaction against any varicella zoster DNA still in the ocular tissues, causing a reactivation of HZO.
• Some believe HZO is indicative of an immune boost similar to that induced by the
vaccine, thus the vaccine is unlikely to offer any additional protection.

26 Vaccine
- Still others support vaccination after an episode, as long as the shingles occurred more than 12 months previously, and there were no signs of intraocular disease.
- Thought is that it may lessen the severity of another recurrence.
- It bolsters immunity in patients where age is depleting natural immunity

27 Why is continued immunity important??
- Latent Varicella Zoster virus (Chicken Pox) has affected everyone over the age of 40 whether they know it or not
- As many as 25% of HZO patients will develop Post Herpetic Neuralgia
- Post herpetic neuralgia is the most common cause of suicide due to pain in people 70 years and older
- Cardiovascular ramifications: HZO results in a 4.5-fold increase in the risk of stroke, and a 1.3-fold increase in the risk of stroke in patients with zoster in other locations.
- There is a 9-fold higher risk for cancer within a year of an HZO diagnosis. (Likely correlating with decreased immunity to fight off cancer cells)

28 V1 Distribution HZO
- Can cause acute and/or chronic recurring anterior segment disease
- HZO typically presents as a painful, unilateral, vesicular rash, can manifest most commonly in the eye 2-4 weeks later as stromal and intraocular inflammation, trabeculitis, increased IOP
- In severe cases (mostly immunocompromised patients), can lead to acute retinal necrosis
- Chronic/recurring cases can do increasing damage to CN V, decreasing sensitivity, and can lead to severe dry eye or neurotrophic cornea

29 HZO
- Pseudodendrites may be seen on the epithelium and are culture and PCR positive for HZV, indicating there is live virus (chronic active infection).
- Later findings may include iris transillumination defects and poor pupil reactivity.
- The most vision threatening components long term is usually immune stromal keratitis, uveitis/endothelial keratitis, and significant neurotrophic changes, which can be recurrent and progressive.

30 HZO
- One of the most feared long term consequences is PHN, which may occur permanently in up to 25%, varies in severity, and can be incredibly debilitating

31 Treatment
- Within 72 hours of the shingles rash, oral antivirals should be prescribed
- Valacyclovir 1g PO Q8 hours (TID) for 7 days, Famciclovir 500mg TID for 7 days, or Acyclovir 800mg /5x daily for 7 days (acyclovir has been shown to be less effective).
- +/- Oral steroids. HZO patients will need topical steroids, likely indefinitely
- Enthromycin ointment for vesicular lesions, or oral antibiotics if any secondary bacterial cellulitis of open skin lesions

32 HZO Treatment
- Start frequency of steroids based on amount of stromal involvement or anterior
chamber reaction; usually Q2 hours to QID to start, tapering very slowly over weeks.
- Some patients require 1 drop/week of steroid indefinitely
- PHN: Longer term neuropathic pain medication

33 Giant Cell Arteritis
- In recent studies (2013-2015), VZV has been implicated in triggering the inflammation associated with GCA, with GCA now being thought of as a VZV vasculopathy of the temporal artery
- Thus, Antiviral treatment may confer additional benefit to patients with GCA treated with corticosteroids
- One study by Gilden et al (Neurology. 2015 May), 61 out of 82 (74%) of temporal arteries pathologically positive for GCA were also positive for VZV antigen, compared with 1/13 (8%) of normal temporal artery biopsies

34 Future Trends for Treatment
- Treatment to enhance Immune system function. Instead of going after just the virus, enhance immune system function to control and prevent recurrence (like with newer cancer treatments).
- VZV in turn is now also being used in numerous studies as a vector for gene therapy and cancer therapy. The VZV viral medium is used to insert “suicide genes” into tumor cells.

35 Questions?
- The End
Cataract in the Glaucoma patient: What IOL should I choose?

Betsy Nguyen, MD
Coastal Vision Medical Group

- Cases presented to demonstrate options and considerations in glaucoma patients with co-existing cataracts

- patient with glaucoma suspect and cataract --- options: monofocal vs toric vs vs monovision vs crystalens or trulign vs multifocal

- patient with early glaucoma and cataract: options of iol-- Avoid multifocal ? consider Istent?

-patient with mod and advanced glaucoma and cataract: options of iol-- Avoid multifocal ? consider Istent? ? trabeculectomy ?
1. **Age-Related Macular Degeneration**
   John Hwang, MD, MBA

2. **John Hwang, MD, MBA**
   - MD: Columbia University
   - MBA: Columbia Business School
   - Eye Residency: Columbia University
   - Retina Fellowship: Doheny Eye Institute (USC)

3. **Retina Associates of Orange County**
   [www.retinaorangecounty.com](http://www.retinaorangecounty.com)
   Newport Beach, Laguna Hills, Santa Ana

4. **Agenda**
   1. What is AMD?

5. **Agenda**
   1. What is AMD?

6. **What is Macular Degeneration (AMD)?**
   - Central vision loss and legal blindness
   - #1 cause of severe vision loss in older adults
   - 2 million have advanced AMD; another 8 million are at risk in US

7. **What is Macular Degeneration (AMD)?**
   - Gradually destroys macula
   - Central vision loss
   - Peripheral vision preserved

8. **What are the Symptoms of AMD?**

9. **Agenda**
   1. What is AMD?

10. **Who gets AMD?**
    - Risk factors
      - Age
      - Smoking
      - Race
      - Family history
Age and AMD Risk
- Age-related macular degeneration
  - #1 risk factor
- Risk increases with age
  - 50s: 2% prevalence
  - 66-74 yrs: 10% prevalence
  - 75 and older: 30% prevalence
- #1 cause of severe vision loss in older adults

Race and AMD Risk
- Higher risk of AMD in Caucasians compared to African Americans
- Asians and Hispanics are medium risk

Smoking and AMD Risk
- Increased risk by 2-4X
  - Most important modifiable factor
    - Reduced risk in 1st year of quitting

Family History and AMD Risk
- Family history in 20% of pts with AMD
  - 2-3X higher risk of AMD if first-degree relative with AMD
  - 4X higher risk of AMD if first-degree relative with advanced AMD

Lifestyle and AMD Risk
- General health
  - Normal blood pressure
  - Good cholesterol levels
- Healthy diet
  - Green, leafy vegetables
  - Fish
- Exercising
  - Sunglasses

Agenda
1. What is AMD?
17 What is Macular Degeneration (AMD)?
   1. "Better" form
      • Slowly progressive
      • 10% of vision loss
      • Light-sensitive cells in macula slowly break down
   2. "Worse" form
      • Rapidly progressive
      • 90% of vision loss
      • New blood vessels under the macula leak blood and fluid

18 Dry Macular Degeneration

19 Wet Macular Degeneration

20 Agenda
   1. What is AMD?

21 How is AMD Diagnosed?
   • Dilated eye examination
     • Specialized testing
       – Fluorescein angiography
       – OCT (optical coherence tomography)
       – OCT angiography

22 Fluorescein angiography
   • Examine retinal vasculature
     • Steps
       – Pupil are dilated
       – Fluorescein dye injected into vein
       – Camera takes pictures as dye travels through retina

23 Optical Coherence Tomography (OCT)
   • Cross-section image created using light waves
     – Non-Invasive
     – Expensive equipment
     – Ultrafine macular evaluation

24 Optical Coherence Tomography (OCT)
   • Diagnosis of AMD
     • Assess treatment response

25 OCT Angiography
   • Noninvasive imaging of retinal vasculature
26 Agenda
1. What is AMD?

27 How is wet AMD Treated?
   • Wet AMD
     – 90% of vision loss
     – Mechanism
       • New blood vessels form under macula
       • Leak blood and fluid
     • Treatments
       – Laser
       – Injections
       – Surgery

28 Laser therapy for wet AMD
   • First FDA approved treatment
     – Focal laser
     – Photodynamic therapy
   • Largely outdated
     – Collateral damage
     – Recurrence
     – Efficacy
     •

29 Injection therapy for wet AMD
   • Mechanism
     – Regress abnormal blood vessels
     – Anti-VEGF
     •
   • Types
     – Macugen, Avastin, Lucentis, Eylea

30 Injection therapy for wet AMD
   • Most effective therapy to date
     – Previous therapies with vision loss
     – 95% maintained vision at 1 yr
     – 40% improved at 1 yr
     •
     • Excellent visual outcome
       – 20/40 = driving vision
       – 66% had 20/40 or better
       – vs 15% with previous treatments at 2 yrs
     •

31 Injection therapy for wet AMD
   • Source of patient anxiety
     – Before: "Sounds terrible!"
- After: "Much better than I thought!"

- Commonly performed
  - Steps to ensure comfort and safety

32 **Injection Procedure**
- Step 1
  - Numb the eye!
  - Instill drop of proparacaine

33 **Injection Procedure**
- Step 2a
  - Numb the eye MORE!
  - Instill drop of Tetravisc
- Step 2b
  - Numb the eye MORE again!
- Step 2c
  - Numb the eye MORE again and again!

34 **Injection Procedure**
- Step 3
  - Clean the eye!
    - Apply Betadine
      - Ocular surface
      - Eyelashes

35 **Injection Procedure**
- Step 4
  - Open the eye!

36 **Injection Procedure**
- Step 5
  - Re-clean the eye!
    - Re-apply Betadine

37 **Injection Procedure**
- Step 6
  - Administer medication
    - Pars plana injection
    - 30 gauge needle (0.3mm)
  - After injection
    - Activities
    - Artificial tears

38 **Surgery for wet AMD**
- Uncommon
• Massive submacular hemorrhage

39

• Surgery
  – Vitrectomy
  – Subretinal injection
    • t-PA clot lysis
    • 41-gauge cannula
  – 10% SF6 Gas

40 How is AMD Treated?
• Wet AMD
  – Laser
  – Injections
  – Surgery
  –
• Dry AMD
  – Vitamin

41 Vitamin Therapy for dry AMD
• Age-Related Eye Disease Study (AREDS)
  – NIH funded
  – Can multivitamins reduce risk of advanced AMD?
  – 2 part study
    • 2001 AREDS
    • 2013 AREDS2
  –
• Mechanism
  – Oxidative damage may lead to advanced AMD
    • Sunlight exposure
    • Normal metabolic processes
  – Antioxidant vitamins may reduce oxidative damage

42 AREDS – Original Formulation
• AREDS multivitamin
  – Vitamin C (500 mg)
  – Vitamin E (400 IU)
  – Beta-carotene (15 mg)
  – Zinc (80 mg)
  – Copper (2 mg)
  –
• 2001 Study Results
  – 25% risk reduction in progression to advanced AMD
    • For intermediate AMD, or advanced AMD in one eye (over 5 yrs)
    • No benefit for early AMD

43 Issues Evaluated in AREDS2
• Beta-carotene
  – Lung cancer risk for current smokers
• Eliminate beta-carotene
  • Add lutein and zeaxanthin
    – Green leafy vegetables may reduce AMD

44 Issues Evaluated in AREDS2
  • Omega-3-fatty acids
    – Dietary intake may reduce AMD
    – Fish oils
  • Add omega-3 fatty acids

45 AREDS2 bottom line...
  • 25% risk reduction for advanced AMD
    – 300,000 fewer patients with advanced AMD
    – NO beta-carotene for smokers
    – Lutein/Zeaxanthin with possible benefits
    – Omega-3 fatty acids do NOT confer benefit

46 AREDS2 for dry AMD
  • AREDS2 multivitamin
    – Vitamin C (500 mg)
    – Vitamin E (400 IU)
    – Zinc (80 mg)
    – Copper (2 mg)
    – Lutein (10 mg)
    – Zeaxanthin (2 mg)
  • 25% risk reduction in progression to advanced AMD
    – For intermediate AMD, or advanced AMD in one eye (over 5 yrs)
    – No benefit for early AMD

47 What to do?
  • Routine eye examinations
    – Dilated exams for age ≥ 50
    – Early diagnosis can prevents vision loss
  • Stop smoking
  • Lifestyle
    – Diet: low-fat diet, leafy green vegetables
    – Optimize BP and cholesterol
    – Sunglasses
• AREDS2 supplement if intermediate or advanced AMD
  – Other supplements claiming benefit should be taken with caution

48  Age-Related Macular Degeneration
John Hwang, MD, MBA

52  Vitamin Therapy for AMD
  • Zinc
    – Stomach upset
    – UTI and BPH risk
    – Stress incontinence
  • Reduce zinc
    –
    –
    –

53  Future of AMD Treatments
• RetinoStat® (Oxford Biomedica)
  – Phase I, gene therapy for wet AMD
• embryonic stem cell-derived RPE therapy (Advanced Cell Technology)
  – Phase I/II, dry AMD, transplants of RPE cells
• Encapsulated Cell Technology (Neurotech)
  – Phase II, dry AMD, capsule implanted into the eye, contains cells producing Ciliary Neurotrophic Factor (CNTF), a photoreceptors and preserving protein
• Feneretide (ReVision Therapeutics)
  – Phase II trial, dry and wet AMD
  – reduced toxin accumulation in retina associated with AMD
• iSONEP (Lpath and Pfizer)
  – Phase II trial, wet AMD
  – antibody against Sphingosine 1 Phosphate (S1P) resulting in anti-fibrosis and anti-inflammatory effect

54  Adaptive Devices for Low Vision
• Handheld magnifiers
• Video magnifiers
• Computers with large-print and speech-output systems
• Large-print reading materials
• Reading glasses with high-powered lenses
• Talking watches, clocks, and calculators
• Telescopic lens implant

55 Implantable Miniature Telescope
• Provides enlarged retinal image
  – image over 55° of the retina, versus the 5° by natural lens
  – retains 20°–24° field of view
• Visual outcome (at 12-months)
  – 90% gained two or more lines; 67% gained three or more lines
• Criteria
  – 75 years or older
  – Phakic
  – VA 20/160 to 20/800 with bilateral central scotomas due to end-stage AMD (GA or disciform)
  – No active wet AMD (no active CNV OU), and no treatment in past 6 mo

56 Changes in Vitamin Components
  • Vitamin C (500 mg)
  • Vitamin E (400 IU)
  • Copper (2 mg)
  • Zinc (80 mg)
  • Beta-carotene (15 mg)

  • Vitamin C (500 mg)
  • Vitamin E (400 IU)
  • Copper (2 mg)
  • Zinc (80 mg)
  • No beta-carotene
  • Lutein (10 mg) + Zeaxanthin (2 mg)
  • No Omega-3 fatty acids (1 g)

57 AREDS: Common questions
• Who should take?
  – Intermediate AMD
  – Advanced AMD in one eye
  – No benefit in healthy adults or early dry AMD
• Can I take a daily multivitamin if I am taking one of the AREDS formulations?
  – Yes. The AREDS is not a substitute for a multivitamin.
  – In AREDS trial, 66% took multivitamins and AREDS formulation
- In AREDS2 trial, 90% took multivitamins
  
  - What is the risk of lung cancer from taking beta-carotene?
    - AREDS2 trial excluded current smokers and those who quit <1 year
    - Despite this, lung cancers in 2% taking AREDS with beta-carotene, compared with 0.9% taking AREDS without beta-carotene
    - Across both groups, 91% who developed lung cancer were former smokers.
  
  58 Possible initiating events for Wet AMD
  - Hypoxia
  - Nutrient deprivation
  - Trauma to Bruch's membrane
  - Infection, inflammatory response
  - Oxidative stress to the retina and retinal pigment epithelium (RPE)

  59 What is a Retina Specialist?
  - Ophthalmologist
  - AND specialty training focused on the retina, macula, and vitreous
    - Surgery
    - Medical treatment

  60 What is a Retina Specialist?
  - Medical School (4 years)
    - Internship (1 year)
    - Residency in Ophthalmology (3 years)
    - Fellowship in Retinal surgery and diseases (2 years)
    -
ORBITAL LUMPS AND BUMPS

WHAT LIES BENEATH:
A LOOK AT LACRIMAL GLAND LESIONS

Madhu R. Agarwal, M.D.

NEURO
PLASTICS
STRAISMUS

Redlands- Inland Empire

WHO IS DR. AGARWAL??

- Neuro-ophthalmology
  - Cranial nerve palsies
  - Optic neuropathies
  - Brain tumors
- Ocular plastics
  - Lid lesions—Skin cancer
  - Ptosis
  - Orbital tumors
- Adult Strabismus

AC

- 64 year-old African-American female with swelling of right upper lid for past 10 days
  - Already attempted warm compresses and Keflex.
  - PMH: Hypertension

EXAM

- 20/30, 20/25
• Significant ptosis of the right upper lid
• PF 2, 6
• LF 14, 18
• Firm, palpable mass over entire right lid crease

CT SCAN

PATHOLOGY

ORBITAL SARCOID
• Autoimmune disease of multiorgan granulomas
  • Pulmonary disease
  • Hilar lymphadenopathy
  • Skin, Eye, Joint Disease

• 30% sarcoid cases are extrapulmonary

• Uveitis; lacrimal gland involvement.

• Some cases
  • Conjunctival granulomas
  • Optic nerve involvement
  • Extraocular muscle involvement

BILATERAL LACRIMAL GLAND DISEASE
• Last Month Ophthalmology:
  • 90 cases of bilateral lacrimal gland masses
  • 51 Inflammatory: IOIS, Sarcoid
  • 19 Lymphoproliferative
  • 20 Structural- prolapse
  • 7 Uncommon- Rosai, Erdheim.

DJ

• 54-year-old male with one year history of right-sided proptosis.
- Painless, progressing
- PMH: Thyroid disease
  Hypertension
  Hyperlipidemia

Unremarkable ROS, Surgical history, Family Hx

- 20/20 OU
- 3mm right-sided proptosis
- Palpable mass through temporal aspect of lid
- Full motility and normal anterior and posterior segments otherwise

CT SCAN

PATHOLOGY

MALTOMA
- Low Grade Bcell Lymphoma of Mucosa- Associated Lymphoid Tissue
- Third most common type of Non Hodgkins Lymphoma
- M=F
- Usually in 50's
- Usually treated with radiation and/or chemotherapy

DJ - no radiation but CVP-R chemotherapy x 6 mo
- CD 20 positivity of tissue-
- Started Rituxan - Improved outcomes if CD20+
- Discontinued Vincristine due to paresthesias
- Correlation with Chlamydia psittaci- Italian studies
  Patients treated with doxycycline- closely monitor

TJ
- 67-year-old Caucasian male with 6 mm of left proptosis and vision loss over one
Followed since 2009 for glaucoma. Had SLT

ROS: Arthralgias
PMH: DM, HTN, Hyperlipidemia, Graves disease, Atrial fibrillation, morbid obesity
Meds: Too many

EXAM
PSH: Hemorrhoids

Exam: OD 20/40; OS LP

6 mm left-sided proptosis
Keratinized chemosis

OPTIC ATROPHY AND CUPPING

PATHOLOGY

IDIOPATHIC ORBITAL INFLAMMATORY SYNDROME

IMAGING WORKUP
SURGICAL BIOPSY

STEROIDS
RADIATION
CYTOTOXIC AGENTS
IMMUNE-MEDIATED

IDIOPATHIC ORBITAL INFLAMMATORY SYNDROME
IgG4-Related Disease
Majority are middle-aged, older males
Elevated serum IgG4

Main findings:
Autoimmune Pancreatitis
Retroperitoneal Fibrosis
Sclerosing Sialadenitis
Orbital Disease---?MALToma

Multi-organ involvement - Check the tissue and serum

Obtain CT CAP and UA!

WOULD LOVE QUESTIONS!
Madhu Agarwal, MD.
Newport Beach (949)441-5058
Redlands – Inland Empire (909)792-6000

NEURO-PLASTICS-STRAB
www.myeyelidsurgeon.com
1. **Duane Syndrome**
   Golareh Fazlat, MD
   Pediatric Ophthalmologist
   Children's Eye Center of Orange County

2. **Overview**
   - Duane retraction syndrome
   - Described by Heuck in 1879
   - 1905 Duane published a paper of 54 cases
   - Congenital
   - Non-progressive

3. **Epidemiology**
   - Prevalence is 1-4%
   - 60% girls
   - 40% boys
   - 80% unilateral
     - Usually left eye
   - 15-20% bilateral
     - Asymmetric

4. **Overview**
   - 30% Associated with other disorders
     - Malformation of skeleton, ear, eye, kidneys, and nervous system
   - 70% Not associated with any other disorders
   - Anatomical changes
     - Fibrotic LR or MR
     - Anomalous Insertions
     - Bifid LR
     - Hypoplastic LR

5. **Overview**
   - Misinnervation of medial and lateral rectus muscle.
   - Agenesis of abducens nerve (CN6)
   - Abnormal Innervations of CN3
     - Inferior division of oculomotor nerve split
     - Innervates both medial and lateral rectus muscles
   - Disturbance during the embryonic development
     - Between 3-8 weeks of pregnancy

6. **Overview**

7. **Overview**
• 90% have no family history
  - Bilateral in cases with family history
• CHN1 gene associated with familial isolated DS
• Recessive and dominant cases
• Chromosome location is unknown
• Multiple chromosomes
  - 2, 4, 8, 22

8 General Characteristics
• Strabismus
• Head posture/ head turn
  - Eso-Duane- towards the affected eye
  - Exo-Duane- away from the affected eye

9 General Characteristics
• Amblyopia
  - 10%
  - Bilateral Duane
• Narrowing of the fissures in adduction
  - Affected eye (smaller eye)
• Globe retraction
• Enophthalmos
• Upshoot and downshoot in adducted position

10 Classifications
• Heuber in 1970
• Type I
• Type II
• Type III

12 Type I
• 78% of all cases
• CN 3 innervates mostly the MR muscle
  - MR>LRL
• Abduction defect
• Esotropia
• Head turn to the affected side
• Narrowing of the fissures in adduction
• Widening of the fissure in abduction
• Globe retraction in adduction
• Upshoot and downshoot in adduction

15 Type II
• 7% of all the cases
• Part of CN 6 and CN 3 innervate lateral rectus
• Adduction defect
• Narrowing of the fissures in adduction
• Globe retraction in adduction

Type III
• 15% of all the cases
• Split of CN 3 to both LR and MR
  – No significant head turn
    • LR=MR
  – Face turn towards the opposite site of Duane’s eye
    • LR>MR
    • XT
• Both adduction and abduction defect
• Narrowing of the fissures in adduction
• Globe retraction in adduction

Type IV
• Rare form
• Synergistic divergence
• Most of CN 3 aberrantly innervates lateral rectus
• Paradoxical abduction on the adduction attempt
  – Right synergistic divergence will have large exotropia on left gaze

Subgroups
• Subgroup A: esotropia
• Subgroup B: exotropia
• Subgroup C: orthotropia

Upshoot and Downshoot
• Adduction
• Alan Scott in 1976
  – Strong, inappropriate firing of the LR in adduction
    • Leash effect
    • Up or down after horizontal plane

Upshoot and Downshoot
• Usually seen in type II and III
EMG studies by Scott and Wong
- Vertical muscles aberrantly innervated by CN 3
- Coexisting oblique muscle dysfunction

Differential diagnosis
- Eso-Duane
  - Congenital 6th nerve palsy
    - Absence of retraction
    - Larger ET
    - No vertical anomalous movement
- Exo-Duane
  - 3rd nerve palsy
    - Absence of retraction
    - No vertical anomalous movement

Management
- Non-surgical treatment
  - Amblyopia treatment
  - Prism glasses
- Surgical treatment

Surgical Evaluation
- Significant misalignment in primary
- Abnormal head position
- Narrowing of palpebral fissure due to retraction
- Significant upshoot and downshoot
- Recurrent or intractable amblyopia

Surgery
- Goal:
  - Reduce head turn
  - Reduce or eliminate strabismus in primary position
  - Maintain the largest binocular visual field

Surgery
- Around age 3-8
- Good fusion
- Resection surgery is avoided

Surgery
- Esotropia
  - Ipsilateral face turn
  - Ipsilateral MR recession
- Exotropia
- Contralateral face turn
- Ipsilateral LR recession
- Consider Y split procedure with LR recession for upshoot or downshoot

31️⃣ Surgery
- Globe retraction
- Recession of both ipsilateral MR and LR
- Orthotropic: recession MR=LR
- Esotropic: recession MR>LR
- Exotropic: recession LR>MR

32️⃣ Surgery
- Upshoot and downshoot
- Y-splitting with recession of rectus muscle
  - DRS Type III with XT
    - Y-splitting with recession of LR
  - DRS orthotropic
    - Recess ipsilateral MR and recession and Y-split of ipsilateral LR
- Posterior fixation suture (Faden) of the LR and recession of horizontal rectus muscle

34️⃣ Surgery
- Vertical rectus transposition procedures

35️⃣ Conclusion
- Congenital and non progressive
- Type I: Abduction defect
- Type II: Adduction defect
- Type III: Both Abduction and Adduction defect
- Amblyopia treatment
- Surgical treatment
1. **Refractive Surgery Advances: Contura Vision**

   **Topography**
   **Driven Treatment**
   **A Paradigm Shift in Custom Refractive Surgery**

   DAVID J. SCHANZLIN, MD

2. **Disclosures**
   - DJS – None

3. **Goals for this Discussion**
   - To highlight the difference between Topography-guided treatments and other custom offers.
   - To share the WaveLight® FDA experiences with Contoura
   - To discuss what you can possible do to meet patient expectations using Topography

4. **Advances in Corneal Topography and Surgical Applications**

5. **What is new in corneal topography?**
   - NEW DEVICES
   - NEW METHODS
   - INCREASE PROCEDURES
   - MULTI-FUNCTIONALITY
   - TEAR FILM
   - BACK SURFACE ASTIGMATISM
   - TOPOGRAPHY GUIDED

6. **Key Factors Driving Topography Use and Development**
   - Higher patient expectations and new refractive surgical technologies are driving diagnostic development
   - More precise procedures demand more precise data input

   - Cataract toric IOL market increasing
     - Estimated >30% of cataract patients have 1.0D+ astigmatism
     - New toric IOLs – expanded range B&L Trulign™ Toric, AMO Tecnis® Toric

   - Femtosecond laser LRI and cataract incisions, refining SIA influence, bimanual phaco

7. **Key Factors Driving Topography Use and Development**
   - Surgical guidance systems using diagnostic inputs
     - TrueVision 3D, CALLISTO® eye

   - Increasing interest in corneal crosslinking utilizing topography diagnostics
     - Keratoconus treatments in US clinical trials
     - Post-refractive treatments
     - Intrastromal crosslinking early research
Corneal presbyopic inlays in US clinical trials

Positioning and postoperative topography analysis

Multifunction Topography Devices

- New growth areas in tear analysis, meibomian gland dysfunction (MGD) therapy

Eye Health Statistics at a Glance AAO 4/1/11 website – Largest Patient Segment within Eye Care Practices. 4.88 million Americans suffer from Dry Eye. They spend billions per year in the U.S. on symptom relief. Many sufferers are over the age of 50 in the U.S. alone.

Corneal Topography Methods

- Placido disk reflection
  - WaveLight® Topolyzer, OCULUS Keratograph 5M, ZEISS ATLAS, Nidek OPD-Scan III

- Slit-scanning
  - B&L Orbscan

- Scheimpflug imaging
  - OCULUS Pentacam®, Ziemer GALILEI™

- Color LED point source ray tracing
  - i-Optics Cassini

Surgical Application of Corneal Topography

- Many methods with individual strengths
  - Placido, slit-scanning, Scheimpflug, monochromatic and color LED topography

- Challenge is to provide more accurate data going into corneal ablation planning

- Goal is to reduce the number of variables going into surgical planning, which drives more accurate outcomes for patients and reduced outliers in a surgeon’s data set

Mathematical Reconstruction Basics Review

What devices are used for various mathematical reconstructions?

What is Wavefront Sensing?

- Method for Mapping the Refractive and Aberration Profile of the Eye

Aberrations at Retinal Plane

Wavefront Components
Clinical Symptoms Correlate with Convolved Aberrations?

PROBLEMS WITH WAVEFRONT MEASUREMENT
▶ Pupil dependent
▶ Accommodative variation
▶ Dependent on adequate tear film
▶ Measures whole eye - vitreous, post lens, lens, ant. lens, aqueous, cornea, tear film
▶ Most aberrations have minimal impact on visual performance, may increase
▶ Monochromatic – does not account for chromatic aberrations

Topo Driven Laser Refractive Surgery
▶ Elevation Map topography
▶ Determine desired post op sphere, asphericity
▶ Calculate laser pattern to reach desired shape.

Why Consider Wavefront Optimized® Ablation Instead of wavefront-guided in Myopic Femto-LASIK Eyes?

"Wavefront-Optimized®"

Wavefront Optimized® Potential Benefit
▶ Wavefront Optimized® = Designed to minimize the induction of spherical aberration by:
  ▶ Pre-compensating for the induction of SA
  ▶ Maintaining the corneal asphericity

Wavefront-Optimized® compensates for the loss of laser ablation efficiency in the mid-periphery

Results analysis
▶ In 83% of eyes with < 0.3 μm pre-op RMS HOAs:
  No difference in post operative Wavefront errors
▶ In eyes with > 0.3 μm pre-op RMS HOAs:
  wavefront-guided showed less post op RMS HOAs than Wavefront Optimized®

September 27, 2013 FDA Approval for T-CAT LASIK for Myopia and Myopic Astigmatism
▶ FDA Public Information Page for T-CAT states:
  ▶ The ALLEGRO® WAVE® EYE-Q laser system is approved for use in performing
Topography-guided LASIK treatments in patients who have nearsightedness with or without astigmatism. You would be a good candidate for Topography-guided LASIK if you are 18 years of age or older and your vision is:

- Up to -8.0 diopters of nearsightedness, or
- Up to -3.0 diopters of astigmatism, or
- Up to -9.0 diopters nearsightedness with astigmatism; and,
- The amount of nearsightedness with or without astigmatism in your eye did not change by more than 0.5 diopters during the year before your preoperative examination.

27 U.S. T-CAT Phase III Study
- Topography-based custom ablation
- Primary LASIK in healthy eyes with myopia and hyperopia with or without astigmatism
- ALLEGRETTO WAVE® Eye-Q 400 Hz laser system

28 T-CAT Required Equipment
- The three devices that are used to plan and perform the topography-guided LASIK treatments are the:
  - ALLEGRETTO WAVE EYE-Q® Laser System
  - ALLEGRO Topolyzer topography system
  - T-CAT software for treatment planning

29 Topographic Guided LASIK

WaveLight® U.S. T-CAT Study

30 Methods
- Prospective, IRB-approved, non-randomized, multicenter study for FDA PMA submission
- Topography-guided custom LASIK
  - Refractive correction based on preoperative MR
  - Correction of HOA and adjustment of asphericity based on topography
- LASIK flap creation using available approved femtosecond lasers or microkeratome
- 9 investigational sites in the U.S.

31 T-CAT Study Investigators Group
- William Bond, MD
- Ben Chotiner, MD
- Dan Durrie, MD
- Mickey Gordon, MD
- Albert Mialauskas, MD
- Charlie Moore, MD
- Brad Randleman, MD
- Steve Slade, MD
- Karl Stonecipher, MD
- Jonathan Woolfson, MD
Key Objectives of the Study

- Safety Criteria
  - Changes in Best Spectacle Corrected Visual Acuity
  - Incidence of Adverse Events
  - Induced Manifest Refractive Astigmatism
- Effectiveness Criteria
  - Refractive Predictability
  - Visual Acuity
  - Refractive Stability
- No retreatments were performed in the study

Study Design and Methods

- Study Enrollment - Myopia Cohort
  - Up to 250 myopic eyes with/without astigmatism
    - Up to -9.00 D sphere
    - Up to -6.00 D cylinder
    - Up to -9.00 D MRSE
  - Final Enrollment
    - Myopia 249 eyes (212 subjects)

Patient Demographics

Enrollment Demographics

Patient Demographics and Accountability

- Mean patient age 34 years (18 – 65)
- Accountability was excellent at each study visit, ranging from 95-100%. The accountability at the 12-month final visit was 95.0%.

Summary of Refractive Outcomes – Mean Values

Summary of Refractive Outcomes within Intended Target (MRSE)

Summary of Cumulative Post-op UCVA (ETDRS)

Postop BSCVA Compared to Preop BSCVA (Change in Lines)

Postop UCVA Compared to Preop BSCVA (Change in Lines)

Wavefront Analysis Magnitude of RMS (mean), 5.0 mm

Wavefront Analysis Magnitude of RMS (mean), 5.0 mm

Pre and postop refractive maps

Preop - -2.75+.50x43- 20/30-2- ghosting
Post op - -.75+.50x25- 20/20- 20/25 UCVA

Preop - -2.75 20/20
Post op- plano- UCVA- 20/15

Pre op- -7.25+ .75x60
post op- plano- 20/20 UCVA

Visual Symptoms

Visual Symptoms Questionnaire: Preop to 3M

1. Symptoms Showing Statistically Significant Improvements
   - 3.6% decrease in Light Sensitivity
   - 4.4% decrease in complaints of Difficulty Driving at Night
   - 6.4% decrease in Reading Difficulty
   - 2.4% reduction in complaints of Glare

2. Symptoms with No Statistically Significant Change
   - Double Vision
   - Fluctuation in Vision
   - Halos
   - Starbursts
   - Dryness
   - Pain
   - Foreign Body Sensation

Visual Symptoms: Preop to 3M

1. Light Sensitivity*
   - Difficulty Driving at Night*
   - Reading Difficulty*
   - Double Vision
   - Fluctuation in Vision
   - Glare*
   - Halos
   - Starbursts
   - Dryness
   - Pain
   - Foreign Body Sensation

2. All categories of complaints showed a reduction in severity after the T-CAT LASIK procedure compared to baseline, except double vision and foreign body sensation, both of which had a minimal increase in severity postoperatively. The 3.6% decrease in severity of light sensitivity, 4.4% decrease in complaints of difficulty driving at night, 6.4% decrease in reading difficulty, and 2.4% reduction in glare complaints were all statistically significant improvements in the severity of these visual symptoms in the T-CAT LASIK treated eyes.

Visual Symptoms: Preop to 3M, n=247

Visual Symptoms: Preop to 6M, n=244

Change in Refractive Status Vision Profile (RSVP) Score
   - Concerns Measured Using RSVP Scoring
   - Expectations
Physical/social functioning
Driving
Symptoms
Optical problems
Glare
Problem with corrective lenses
Total Score

Conclusion: Subjects who underwent T-CAT LASIK with the ALLEGRETTO WAVE® Eye-Q Excimer Laser in the clinical trial experienced an improvement in physical/social functioning, driving, visual symptoms, optical problems, and problems with corrective lenses that was evident at three months and continued to improve through 12 months postoperatively, compared to their habitual refractive correction method (glasses or contact lenses) preoperatively.

Visual Symptoms Summary

There was a decrease in the proportion of eyes with marked to severe ratings for light sensitivity, difficulty driving at night, reading difficulty, fluctuation in vision, glare, halos, starbursts, dryness and pain after T-CAT LASIK compared to before surgery. Statistical significance was achieved for light sensitivity, difficulty driving at night, reading difficulty and glare.

Eye dryness was the most commonly reported visual complaint that occurred in the first 3 month postoperative period.

98% of subjects indicated that they would have T-CAT LASIK again.

Visual symptoms and objective visual acuity measurements generally improved with time, through the end of the study (12 months postoperatively).

Contrast Sensitivity Testing (Mesopic Illumination)

Topography Use With T-CAT LASIK

Topography-guided LASIK (T-CAT) is the next frontier in personalized ablation profiles. The technology behind it offers multiple benefits for both surgeons and their patients.

These include:

First topography-guided treatment to receive FDA approval

Treatment incorporates refractive error of the eye and corneal irregularities into the custom laser ablation for myopia and myopic astigmatism

93% of FDA study eyes achieved 20/20 UCVA and 69% achieved 20/16 or better UCVA at 12 months

Study results showed a statistically significant improvement in visual symptoms traditionally associated with LASIK, such as glare, light sensitivity, difficulty driving at night, and reading difficulty

Summary

Topo Driven Laser Refractive surgery is here
We will be offering this to patients in early February!
Refractive surgery advances: SMILE

Dan B. Tran, MD
Coastal Vision Medical Group

OUTLINE:

1. Overview of the technology
2. FDA clinical study data presentation
3. Surgical technique illustration
4. Potential complications
5. Comparative to current LASIK technology
6. Biomechanical and corneal nerve impact on the cornea
OCT and Macular Disease

Mastering the Basics

Goal
- To increase your ability to identify retinal pathology on OCT

Paradigm Shifts in Macular Imaging

Outer Retinal Bands

Correlation of SD-OCT Bands With Anatomy

OCT Interpretation

Quantitative and Qualitative Assessment

OCT Artifacts
- Affect both Quantitative and Qualitative analyses
- Quantitative artifacts more likely to result in incorrect management

Causes of OCT Artifacts
- Misalignment
  Segmentation errors*: Incorrect identification of retinal boundaries
  Shadowing
  Blink
  Motion
  Out of Range Error

Misalignment
- Occurs in patients with poor fixation
- Results in inaccurate mapping of Central Macular Thickness
Look for off-center “blue spot” corresponding to misaligned foveal depression
I start my review of OCTs by looking for evidence of misalignment

Impact of Unidentified Misalignment
- Unnecessary treatment of incorrectly diagnosed “macular edema”
- Important pattern to recognize
- Most valuable use of Macular Thickness Map

Segmentation Error
- Segmentation lines automatically drawn by software
- Inner boundary = ILM
- Outer boundary = RPE/Bruch’s Membrane
- Lines guide macular thickness calculation by software

OCT Boundaries Vary by Machine
- All OCT machines use ILM as inner boundary
- Outer boundary varies:
  - Spectralis - Bruch’s membrane
  - Cirrus, RTVue - 100 - OS-RPE junction
  - Topcon 3D OCT-1000, Copernicus - photoreceptor OS tips
  - Stratus (time domain) - IS/OS line (Ellipsoid Inner Segment)

Segmentation Error
Retinal pathology “confuses” the software
- VMT, ERM, scars, blood, confluent drusen, PED’s
Properly place lines may incorporate pathology that artificially increases “retinal thickness” measurement

Segmentation Error

Quantitative Analysis - Segmentation Lines
Inaccurate line placement leads to incorrect quantitative measurements
Important to recognize line errors if basing treatment decisions on these numbers
Bottom Line: Confirm accuracy of macular thickness maps with review of B-scans

20 Qualitative Evaluation
  • Foveal depression or thickening
  • Abnormal areas of hyporeflectivity
  • Abnormal areas of hyperreflectivity
  • Look at all scans - pathology sometimes only in a single scan

21 Qualitative OCT Interpretation
  1. Reflectivity
  2. Location
  3. Shape/configuration

22 Relative Reflectivity
  • High
    • Epiretinal scar tissue, NFL
    • Ellipsoid inner segments
    • RPE, CNV
  • Moderate
    • Ganglion cell/Plexiform/ELM
    • Drusen, blood, choroid

23 Relative Reflectivity

24 Relative Reflectivity
  • Low/Moderate
    • Inner/outer nuclear layers
    • Myoid inner segments
    • Choroidal vessels
  • Low
    • Vitreous, retinal cysts
    • Serous PED, shadowing

25 Vitreomacular Interface Disorders
General Categories
1. Vitreomacular traction

26 Common Stages of Age-related PVD
27 Perifoveal PVD

Stage 1 PVD

30 Perifoveal PVD Complications

Vitreomacular Adhesion Size ≤ 500μ
- Vitreofoveal traction + macular edema and subretinal fluid
- Inner lamellar hole
- Outer lamellar hole / photoreceptor gaps
- Full-thickness macular hole

31 Perifoveal PVD Complications

Vitreomacular Adhesion Size ≥ 1500μ
- Vitreomacular traction syndrome
- Myopic traction maculopathy

32 Vitreomacular Traction

Variable Effects

33 Epiretinal Membranes

34 PVD’s Role in Development of ERM

3 Mechanisms
- Dehiscence in ILM allowing glial cell proliferation
- Vitreoschisis leaving large outer cortex remnant on ILM after PVD
- Proliferation/transdiff. of cortical hyalocytes in small remnant
Vitreofoveal Traction
(CMT 292u)

Epiretinal Membrane
(CMT 356u)

Spontaneous Release of VMT

Vitreoschisis

Macular Holes
1. Inner lamellar macular hole
2. Outer lamellar macular hole ("gap")
3. Full-thickness macular "micro-hole"
4. Full-thickness macular hole

Inner Lamellar Macular Hole

Defined by OCT
1. Irregular foveal contour
2. Break in inner retina
3. Intraretinal split
4. Intact foveal photoreceptors

Photoreceptor Layer Dehiscence
**Outer Lamellar Hole**
- Vitreomacular traction
- Foveal cyst
- Dehiscence of outer retina

**Macular Hole**

**True Inner Retinal Operculum**

- Began as subjective interpretation of small, red foveal lesion as a tiny hole
- OCT reveals foveal red spot associated with wide spectrum of anatomical changes

**Foveal Red Spots**
*(Very fine ERM)*

**Foveal Red Spots**
*(Inner Lamellar Hole)*

**Foveal Red Spots**
- Small gap in photoreceptors
  - Vit-mac traction
  - Healed macular holes
Challenging Refractive Surgery Cases: How to Manage Patient Outcomes with Advance Technologies

Dan B. Tran, MD
Coastal Vision Medical Group

OUTLINE:

1. Case study illustrating the application of advance refractive surgery technologies to clinical situation
   a. Aberrated cornea underwent cataract surgery
   b. Managing corneal ulcer with partial flap melt following PRK of previous LASIK patient
   c. Happy outcomes of a patient with cataract, glaucoma, astigmatism underwent lens replacement surgery with toric IOL and MIGS stents guided by ORA for toric IOL placement
   d. LASIK retreatment correcting HOA (coma) of previous LASIK patient
Cataract Surgery: To Femto or Not To Femto?
Lisa D. Garbutt, M.D.
Coastal Vision Medical Group

History
Over the last 50 years, physicians have found ways to apply laser technology to various areas of ophthalmology
Repairing retinal tears, creating corneal flaps, glaucoma treatments
Applying this technology to cataract surgery was the next step in a natural progression

Evolution

2001: Intralase (Irvine, CA) introduces the femtosecond laser for LASIK flap creation

January 2008

Intralase founders form LenSx Lasers (Aliso Viejo, CA), the first company to produce a femtosecond laser for cataract surgery

August 2009

LenSx laser platform receives U.S. Food and Drug Administration (FDA) Approval
In 2011, Dan B. Tran, MD performed the first LenSx assisted cataract surgery in California

March 2011

FDA approves LENSAR laser (Orlando, FL) for lens fragmentation and anterior capsulotomy

2015
More than 1,000,000 laser cataract procedures performed worldwide

**Goals**
- Increased Consistency and Predictability
- Better Refractive Outcomes
- Does not replace a good surgeon, but helps these surgeons attempt to achieve even better refractive results

**Benefits**
- Spend less time inside the eye (quieter, more comfortable eyes)
- 50% less phacoemulsification-ultrasound energy used
- Use fewer instruments, less fluid
- Overall, a more elegant and gentler surgery

**Early skepticism**
- How do you take an already consistent and highly evolved procedure and add expensive capital equipment, disrupting workflow, and adding additional steps and cost?
- However, many surgeons have adopted laser cataract surgery more quickly than they adopted phacoemulsification
- Patients are embracing the technology, despite its added cost, just as they did for refractive surgery

**Early changes “working out the kinks”**
- Making small changes to the software, patient interface, and OCT image quality after each case to increase the accuracy of the laser cuts
- After much trial and error, the current SoftFit interface was developed (LenSx), which provides better corneal wound structure, less postoperative conjunctival redness, and a free-floating capsulotomy in 97% of cases. (Earlier on, capsulotomy was not always complete)

**Importance of fine tuning the patient interface**
- Better, more peripheral incisions which induce less astigmatism, better patient comfort, and less docking time
- Strong, centered capsulotomies - less lens tilt with healing (less astigmatism induced), improved centration of intraocular lens (less higher order aberrations)

**Femtosecond cataract laser upgrades**
- Real-time OCT
- More sophisticated pre-op surgical planning systems
- Wireless transfer of data from imaging machines to laser
- Goal to make surgery easier, faster, and more precise

**Review of Technology (LENSAR)**
- Non-Applanating Fluid Filled Interface which maintains corneal integrity:
- Contributes to precision, Allows for clean imaging
- Minimizes patient discomfort
• Minimizes increase in IOP

**Superior Imaging**

•

•

•

•

• Combined advanced technologies for depth of field advantage:
  • Scheimpflug - rotating camera takes captures of 2 different angles at up to 8 different positions around the optical axis for a total of 16 images
  • Variable rate scanning - ensures optimal contrast to capture all optical structures
  • SLD (superluminescent diode) illumination - helps to generate an in-focus image from the anterior cornea to the posterior lens capsule

**Augmented Reality**

•

•

• Utilizes biometric data and optic ray-tracing technology to build a 3-D model of the anterior segment
  • Performs Lens Tilt Detection and Compensation to make sure all treatment is within capsular bag

**Precise Laser Placement**

•

•

•

•

• Accurate clear corneal incisions
  • Perfectly round capsulotomy of predictable size, increasing consistency in effective lens position which contributes to better refractive outcomes
  • Efficient lens softening for less phacoemulsification energy exposure

**LENSAR**

Streamline software upgrade became available April 2015:
Cassini corneal shape analyzer - Transmits patient data wirelessly to the laser system
Iris Registration - integrates pre-op data into the actual procedure so surgeons do not have to use manual markings

**LENSAR**

Arcuate Incision Planning Table - help define the location and depth of planned arcuate incisions, based on the patient’s own biometric factors.
Cataract Density Imaging - classifies the cataract based on density to a particular fragmentation pattern that would be most efficient. Surgeon can customize each pattern.

**LenSX**

Verion Image-Guided System -
1. Measures the cornea
2. Takes an image-guided picture of the scleral vessels and iris landmarks that can account for cyclorotation
This information is transferred to the laser, which helps orient clear corneal and AK incisions as well as TORIC IOL's in a precise and accurate fashion
Surgeon no longer has to mark the patient

**LenSX**

Verion Surgical Planner: Enter incision location, depth and arc length
Plan along with all patient data is transmitted wirelessly to the laser, avoiding transcription errors

**LenSX**

•
•
•
•
• VERION Digital Marker uses patient information and images from the VERION Reference Unit as a guide to provide accurate positioning
• Features a tracking overlay that enables surgeons to see all incisions and alignment in real time

**Advantages**

Less phacoemulsification energy is used
The laser can make consistently rounder capsulorrhexes (in 1.3 seconds as opposed to 20 seconds or more for a manual capsulorrhexis)
• Femtosecond laser cannot replace a skilled surgeon, but it can increase the consistency and reproducibility of an already skilled surgeon

**Complicated Cases Benefits**

Dense nuclei, hypermature lenses, fibrotic cataracts
Subluxated lenses, loose zonules
Pseudoxfoliation cases
Posterior polar cataracts
Fuchs' Dystrophy
Disadvantages

- COST
- Is the cost justified?
  - The consumers will decide
    - Patients
    - Surgeons
    - Referral Doctors

Refractive Advantage

Questions?

- THANK YOU!
Financial Disclosures

☐ None to declare

About Me

☐ My Practice
   ☐ Exclusively dedicated to Aesthetic and Reconstructive
     Oculoplastic Surgery
   ☐ Newport Beach, CA

☐ Ophthalmic Plastic and Reconstructive Surgeon
   ☐ Skin Cancer and Reconstructive Surgery Center
   ☐ Appearance Center of Newport Beach

☐ Assistant Professor - UC Irvine
   ☐ Department of Ophthalmology
   ☐ Gavin Herbert Eye Institute

Skin Cancer and Reconstructive Surgery Center

SCARS CENTER

Newport Beach, California

A group of independent specialists
dedicated to the multidisciplinary
treatment of skin cancers in the private
practice setting.

Skin Cancer and Reconstructive Surgery Center

SCARS CENTER

Specialties

- Dermatology
- Plastic Surgery
- Dermatopathology
- Otolaryngology
- Ophthalmology
- Radiation Oncology
- Oncology
- Anesthesiology
### Skin Cancer and Reconstructive Surgery Center

#### Treatments

- Mohs Micrographic Surgery
- Surgical Reconstruction
- Cauterization and Debulking
- Topical Chemotherapy
- Radiation Therapy
- Sentinel Lymph Node Biopsy
- Excision with Frozen Section
- Superficial Radiotherapy (SRT)
- Photodynamic Therapy (PDT)
- Skin Cancer Prevention

### Background

- From the American Optometric Association (AOA)
  - The American Optometric Association represents approximately 39,000 doctors of optometry, optometry students and paraoptometric assistants and technicians.
  - Optometrists serve patients in nearly 6,500 communities across the country, and in 3,500 of those communities are the only eye doctors.
  - Doctors of optometry provide two-thirds of all primary eye care in the United States.

#### The ratio of optometrists to ophthalmologists in the US is approximately

2:1

### Why the optometrist?

- The unique role and skills of the optometrist
  - Primary eye care provider
  - Many people see an optometrist more frequently than an MD, especially younger patients
  - Uninsured
  - In the United States, myopia has increased 66% (last 30 years)
  - 42% of people aged 12-54 are myopic.
  - Familiarity with the eye and eyelids
  - Proficiency with the microscopic slit lamp exam

### Background

- The role of evaluating or identifying eyelid-periocular lesions is shifting towards the optometrist and away from physicians (primary care-ophthalmology)

### 33 year old woman--5D myope
Why the optometrist?

- The unique role and skills of the optometrist
  - Primary eye care provider
  - Many people see an optometrist more frequently than an MD, especially younger patients
  - Untrained
  - Myopia
  - In the United States, myopia has increased 66% (last 30 years)
  - 43% of people aged 12-54 are myopic.
- Familiarity with the eye and eyelids
- Proficiency with the microscopic slit lamp exam

Why does it matter?

- Skin cancer incidence is increasing (most common cancer in US)
  - Aging population
  - Longer lifespan
  - Increased outdoor activities
  - Environmental changes
- Accurate diagnosis & management critical in achieving a cure
- Easier to treat when small in size
Why the optometrist?

- The optometric community must embrace this role for our population to have adequate identification and treatment of potentially malignant perilocular lesions.

Anatomy

- Skin
- Orbicularis oculi muscle
- Hair follicle
- Perifollicular glands
- Eyelash

If you don’t think about it, you won’t see it!

- Clinical Evaluation
  - My philosophy
  - History
  - Examination

If you don’t think about it, you won’t see it!

- Clinical Evaluation
  - My philosophy
  - History
  - Stereo
  - Structure

- DO IT THE SAME EVERY TIME
HISTORY

- Description of the symptoms
- Rate of progression
- Targeted review of systems

HISTORY

- Description of the symptoms
- Sensory: tenderness, itching, visual changes
- Motor: ptosis, lagophthalmos
- Structural: visible or palpable lesion, change in symmetry
- Functional: keratopathy or tearing
- Secondary: pigmentation, lymphadenopathy

HISTORY

- Description of the symptoms
- Rate of progression
- Targeted review of systems
- Risk factors and history of skin malignancy
- History of systemic malignancy

If you don’t think about it, you won’t see it!

- Clinical Evaluation
  - My philosophy
  - History
  - Examination

Examination

LESION EVALUATION
1. Look
2. Feel
3. Press
4. Move
5. Transillumination
6. Measure
7. Lymph nodes
Examination

- Press
  - Pulsatility (expansile pulsation, transmitted pulsation)
  - Compressibility (disappears on pressure and reappears on release)
  - Reducibility (reappears only on application of another force, e.g., rough)
  - Fluctuation (two fingers move apart when middle area is pressed)

Examination

- Feel
  - Tenderness
  - Surface (smooth, irregular, nodular)
  - Edge (well-defined, indistinct)
  - Consistency (hard, firm, rubbery, spongy, soft)

Examination

- Move
  - Fixation to skin or tarsus
  - Mobility (attempt to move the lump in two planes)

Examination

- Transillumination
  - Indicates presence of clear fluid; may be done with the slit lamp illumination beam or a muscle light

Examination

- Measure
  - Measure and draw
  - Record progression
  - Keep a visual impression of the lid tumor findings for subsequent evaluation
  - Photograph if able
Examination

- Lym
- Di

Submental nodes
Submandibular nodes
Pre-auricular and parotid nodes

Is It Cancer?

- History
  - Age & history of significant sun exposure are suggestive
  - History of skin or other malignancy
- Lesion growth or change
- Examination
  - Certain elements may favor a benign vs. malignant etiology
- Pattern recognition
- Clinical intuition

Concerning Features

- Size- recent onset or growth
- Color
- Borders- poorly defined with surrounding induration
- Vascularity
- Ulceration
- Loss of lesion (or misdirection)
- Disruption of normal lid or cutaneous architecture
- Signs of spread
  - Pain
  - Hyposthesia
  - Fixed to underlying structures or bone
  - Lymphadenopathy

Concerning Features

Concerning Features
Concerning Features

Periocular Cancer
- One of the most common sites for skin cancers
- 5-10% of all skin cancers
- Nonmelanoma skin cancers
  - Including basal cell carcinoma and squamous cell carcinoma
  - Highest incidence rates of any cancers in the US
- Rising incidence of melanoma
  - Currently the sixth most common cancer in men
  - The seventh most common for women
  - One of only three cancers with an increasing mortality rate in men.

Basal Cell Carcinoma
- Waxy papule
- Telangiectasia
- Destruction of lid architecture
  - Lashes
  - Meibomian glands
  - Notch
  - Rolled edges
  - Ulceration
Nodular Basal Cell Carcinoma

Nodular Basal Cell Carcinoma

Nodular Basal Cell Carcinoma

Nodular Basal Cell Carcinoma

Basal Cell Carcinoma

Squamous Cell Carcinoma

- Arises in sun-damaged skin (de novo or from actinic keratoses)
- Can appear as nodule or an indurated plaque
- Local metastasis
  - Direct
  - Perineural
- Distant metastasis
  - Lymphatic
Squamous Cell Carcinoma

Squamous Cell Carcinoma

Melanoma

- Eyelid melanomas are rare (<1%)
- Clinical features
  - Recent onset
  - Change in existing lesion (uncontrolled growth)
  - Asymmetric shape (cannot "fold" on itself)
  - Borders irregular (uncontrolled growth)
  - Color change or multiple colors within lesion
  - Diameter >6mm in diameter (large lesion)

Melanoma
Melanoma

*Leiopeno Malignum (Melanoma in situ)*

Melanoma

*Leiopeno Malignum (Melanoma in situ)*

Melanoma

*Leiopeno Malignum (Melanoma in situ)*

**When do I refer?**

- The simple answer: "When you think about it"
  - Worrisome features
  - Focal or unexplained issue
  - Inflammation/ulceration
  - Friction
  - Clinical intuition
  - Strong history or ROS

**Where do I refer?**

- Dermatologist
  - Good familiarity with monitoring of skin lesions
  - Limited experience with monitoring non-skin lid lesions
  - Variable experience/comfort with surgical intervention on lid or near eye
- General ophthalmologist
  - Excellent comfort/familiarity with lid and ocular surface
  - Variable familiarity/ability with monitoring of lesions
  - Variable experience/comfort with surgical intervention on soft tissue
Where do I refer?

- Ophthalmic plastic surgeon
  - Good familiarity with monitoring of skin lesions
  - Extensive experience with monitoring non-lid lid lesions
  - Excellent comfort/familiarity with lid and scleral surface
  - Photographic monitoring is a staple of the practice/EMR.
  - Specialty with most experience and training with regards to surgical intervention on lid or near eye

What I do

- Biopsy
  - I routinely biopsy any suspicious lesion
  - Done in office
  - Patients back to normal routine usually that day
  - Can place a small stent in the canaliculus if needed

What I do

- Ensuring no residual tumor
  - Frozen section
  - Mohs surgery

What I do

- Other options
Review

- The unique role and skills of the optometrist
- Primary eye care provider
- Be aware and systematic in perocular evaluation
- Remember the "red flags"
- Skin cancer incidence is increasing- especially in SoCal
- Oculoplastic specialists are the most ideal referral for questionable lesions
- Treatment both, surgical and medical can yield excellent functional and cosmetic results
Continuing Education Course Approval Checklist

Title: Time to Smile with KAMRA or Topoguided?
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No
☑ Detailed Course Description
☑ PowerPoint and/or other presentation materials
☑ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tune to SMILE with KERATICA or TOPIGUIDED?</td>
<td>01/26/10</td>
</tr>
</tbody>
</table>

Provider Name: Coastal Vision Medical Group

Gina Valdemar

Provider Mailing Address:

493 S. Main St. #100, Orange, CA 92860

Provider Email Address: gina.valdemar@coastal-vision.com

Will the proposed course be open to all California licensed optometrists? YES ☐ NO ☐

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? YES ☐ NO ☐

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

Instructor Name: Dan Tran

License Number: 037342

License Type: MD

Phone Number: 714-746-9074

Email Address: gina.valdemar@coastal-vision.com

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider: Dan Tran, MD Medical Director

Date: 6/30/10

Form CE-01, Rev. 2/16
Course Title: The LASIK Rebirth: Time to SMILE with KAMRA or Topoguided?

Course Presentation date: 1/28/16

Speaker: Dan B. Tran, MD

Target Audience: This lecture is intended for optometrist seeking continuing education

Course Description:

This lecture provides Optometrists education to the insight of the latest Topoguided LASIK technology, Kamra corneal inlay and new SMILE (small incision lenticule extraction) procedure in FDA clinical trial. It gives them the knowledge of the applications, risks and benefits it can provide to patients who they can identify as potential candidates. FDA clinical data is explained to the Optometrist to better help them communicate and educate their patients of the findings. With the advancement of the technology it is imperative that Optometrist gain knowledge of it in order to better serve their patients.

CE Credit: 1 CE Unit
Continuing Education Course Approval Checklist

Title: Update of Glaucoma Medical Treatments in 2016
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☒ Completed Application
   Open to all optometrists? ☒ Yes ☐ No
   Maintain record agreement? ☒ Yes ☐ No

☒ Detailed Course Description
☒ PowerPoint and/or other presentation materials
☒ Advertising (optional)
☒ CV for EACH course instructor
☒ License Verification for each course instructor
   Disciplinary History? ☐ Yes ☒ No
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Update of Glaucoma Medical Treatments in 2016</td>
<td>01/28/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Provider Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Name: Coastal Vision Medical Group</td>
</tr>
<tr>
<td>Gina (First) Valdemar (Last) (Middle)</td>
</tr>
<tr>
<td>Provider Mailing Address</td>
</tr>
<tr>
<td>243 S Main St. #100 Orange, CA Zip 92860</td>
</tr>
<tr>
<td>Provider Email Address: <a href="mailto:gina.valdemar@coastal-vision.com">gina.valdemar@coastal-vision.com</a></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists? X YES □ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? X YES □ NO

<table>
<thead>
<tr>
<th>Course Instructor Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor Name</td>
</tr>
<tr>
<td>Brother (Betsy) (First) Nguyen (Last) (Middle)</td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider: Dan Tran, MD—Medical Director

Date: 4-26-16
Course Title: Update on Glaucoma Medical Treatments in 2016

Course Presentation date: 1/28/16

Speaker: Betsy (Baothu) Nguyen, MD

Target Audience: This lecture is intended for optometrist seeking continuing education

Course Description:

This lecture offers optometrists with case studies to identify symptoms, progression of treatment options, and surgical intervention techniques in patients with Glaucoma. Also educates Optometrist on the short and long term expectations of patient treatments.

CE Credit: 1 CE Unit
Continuing Education Course Approval Checklist

Title: Cataract Surgery in Fuchs Dystrophy Patients
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☒ Completed Application
  ☑ Open to all optometrists? ☐ Yes ☑ No
  ☑ Maintain record agreement? ☐ Yes ☑ No

☒ Detailed Course Description
☒ PowerPoint and/or other presentation materials
☒ Advertising (optional)
☐ CV for EACH course instructor
☒ License Verification for each course instructor
  ☐ Disciplinary History? ☑ Yes ☐ No
# CONTINUING EDUCATION COURSE APPROVAL APPLICATION

**$50 Mandatory**

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

### Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract Surgery in Fuchs Dystrophy</td>
<td>01/16/2012</td>
</tr>
</tbody>
</table>

### Course Provider Contact Information

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>First</th>
<th>Middle</th>
<th>Last</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coastal Vision Medical Group</td>
<td>Gina</td>
<td></td>
<td>Valdemar</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street: 993 S Main St. #100</td>
</tr>
</tbody>
</table>

| Provider Email Address | gina.valdemar@coastal-vision.com |

### Will the proposed course be open to all California licensed optometrists?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>✗</td>
<td></td>
</tr>
</tbody>
</table>

### Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?

<table>
<thead>
<tr>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>✗</td>
<td></td>
</tr>
</tbody>
</table>

### Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>First</th>
<th>Middle</th>
<th>Last</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Garbutt</td>
<td>(Last)</td>
<td>(Middle)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>License Number</th>
<th>License Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>9129919</td>
<td>MD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>(714) 746-9679</td>
<td><a href="mailto:gina.valdemar@coastal-vision.com">gina.valdemar@coastal-vision.com</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct.

Signature of Course Provider  
Dan Tran, MD - Medical Director

Date: [Blank]

Form CE-01, Rev. 2/16
Course Title: Cataract Surgery in Fuchs Dystrophy Patients

Course Presentation date: 2/16/2016

Speaker: Lisa Garbutt, MD

Target Audience: This lecture is intended for optometrist seeking continuing education

Course Description:

This lecture educates Optometrist on the history, effects on vision, testing and surgical technique for treatment of patients with Fuchs Dystrophy and cataract surgery. It will also educate the Optometrists on the managing expectation related to patient treatment. Surgical techniques will be explained and also information about the use of a femtosecond laser.

CE Credit: 1 CE Unit
Continuing Education Course Approval Checklist

Title: Retinal Care of the Myopic Patient: Considerations for Refractive Surgery
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

- Completed Application
  - Open to all optometrists?  ☑ Yes  ☐ No
  - Maintain record agreement?  ☑ Yes  ☐ No
- Detailed Course Description
- PowerPoint and/or other presentation materials
- Advertising (optional)
- CV for EACH course instructor
- License Verification for each course instructor
  - Disciplinary History?  ☐ Yes  ☑ No
CONTINUING EDUCATION COURSE APPROVAL
APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Refusal Care of the Proprietary Patient: Considerations for Intraocular Surgery</td>
<td>03/15/2016</td>
</tr>
</tbody>
</table>

Provider Name
Coastal Vision Medical Group

Gina (First) Valdemar (Last) (Middle)

Provider Mailing Address
243 S. Main St. #100
Orange, CA 92860

Provider Email Address: gina.valdemar@coastal-vision.com

Will the proposed course be open to all California licensed optometrists?
X YES □ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?
X YES □ NO

Course Instructor Information

Instructor Name
Timothy You

License Number: 400 675
License Type: MD

Phone Number: (714) 244-9679
Email Address: gina.valdemar@coastalvision.com

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct.

Signature of Course Provider

Date: 3/20/16

Form CE-01, Rev. 2/16
Course Title: Retinal Care of The Myopic Patient: Considerations for refractive surgery

Course Presentation date: 2/25/2016

Speaker: Timothy You, MD

Target Audience: This lecture is intended for optometrist seeking continuing education

Course Description:

This lecture educates the Optometrists on the identification, treatment options and care in relation to patient diagnoses. It also provides them with the education of refractive surgery discussion to what considerations need to be taken for patients as it relates to their condition.

CE Credit: 1 CE Unit
Continuing Education Course Approval Checklist

Title: Management of Corneal Ulcers
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No

☑ Detailed Course Description
☑ PowerPoint and/or other presentation materials
☑ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No

186
CONTINUING EDUCATION COURSE APPROVAL
APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management of Corneal Ulcers</td>
<td>03/04/2016</td>
</tr>
</tbody>
</table>

Provider Contact Information

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Gina Valdemar Medical Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Mailing Address</td>
<td></td>
</tr>
<tr>
<td>Street</td>
<td>393 S Main St. #100</td>
</tr>
<tr>
<td>City</td>
<td>Orange</td>
</tr>
<tr>
<td>State</td>
<td>CA</td>
</tr>
<tr>
<td>Zip</td>
<td>92860</td>
</tr>
<tr>
<td>Provider Email Address</td>
<td><a href="mailto:gina.valdemar@coastal-vision.com">gina.valdemar@coastal-vision.com</a></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists?  

Will the proposed course be open to all California licensed optometrists?  

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?  

Course Instructor Information

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>(First)</th>
<th>(Last)</th>
<th>(Middle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lisa Garbutt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>License Number</td>
<td>909 09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>License Type</td>
<td>MD</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone Number</td>
<td>614-746-9679</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address</td>
<td><a href="mailto:gina.valdemar@coastal-vision.com">gina.valdemar@coastal-vision.com</a></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct.

Signature of Course Provider:  

Dan Tran, MD - Medical Director

Date: 04-06-16

Form CE-01, Rev. 2/16
Course Title: Management of Corneal Ulcers

Course Presentation date: 3/9/2016

Speaker: Lisa Garbutt, MD.

Target Audience: This lecture is intended for optometrist seeking continuing education

Course Description:

This lecture educates Optometrists on how to profile, culture and when to refer different types of corneal ulcers. Additionally, education of the types of infections and the symptoms it can cause the cornea to present. The advancement in treatment options will then be explained in relation to infectious and non-infectious ulcers.

CE Credit: 1 CE Unit
Continuing Education Course Approval Checklist

Title: The New Age of Refractive Cataract Patients
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No

☑ Detailed Course Description
☑ PowerPoint and/or other presentation materials
☑ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>The New Age of Refractive Cataract Patients</td>
<td>03/09/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Provider Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Name</td>
</tr>
<tr>
<td>First Name</td>
</tr>
<tr>
<td>Last Name</td>
</tr>
<tr>
<td>Provider Mailing Address</td>
</tr>
<tr>
<td>Street</td>
</tr>
<tr>
<td>City</td>
</tr>
<tr>
<td>State</td>
</tr>
<tr>
<td>Zip</td>
</tr>
<tr>
<td>Provider Email Address</td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists?  
[ ] Yes □ No

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?  
[ ] Yes □ No

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dan Tran Bai</td>
</tr>
<tr>
<td>(First) (Last) (Middle)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>License Number</th>
<th>License Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>83-70742</td>
<td>MD</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>(562) 746-9079</td>
<td><a href="mailto:gina.valdemar@coastal-vision.com">gina.valdemar@coastal-vision.com</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct.

Signature of Course Provider  
[Signature]  
Date: 03/09/2016  
Dan Tran, MD - Medical Director
Course Title: The New Age of Refractive Cataract Patients

Course Presentation date: 3/9/2016

Speaker: Dan B Tran, MD

Target Audience: This lecture is intended for optometrist seeking continuing education

Course Description:

Optometrist will be educated on the technology and expectations of today’s Cataract patient options, applications, expectations and techniques. Optometrists will be provided with the knowledge to better educate their patients on expected outcomes and different IOL types.

CE Credit: 1 CE Unit
Continuing Education Course Approval Checklist

Title: Diagnosing Glaucoma: To Start or Not to Start, That is the Question
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☒ Completed Application
  Open to all optometrists? ☒Yes ☐ No
  Maintain record agreement? ☒Yes ☐ No
☒ Detailed Course Description
☒ PowerPoint and/or other presentation materials
☒ Advertising (optional)
☒ CV for EACH course instructor
☒ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☒ No
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diagnosing Glaucoma: To start or not to start, that is the question.</td>
<td>02/25/2016</td>
</tr>
</tbody>
</table>

Course Provider Contact Information

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Coastal Vision Medical Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Name</td>
<td>Gina</td>
</tr>
<tr>
<td>Last Name</td>
<td>Valdemar</td>
</tr>
<tr>
<td>Middle Name</td>
<td></td>
</tr>
</tbody>
</table>

Provider Mailing Address

<table>
<thead>
<tr>
<th>Street</th>
<th>703 S. Main St. #100</th>
</tr>
</thead>
<tbody>
<tr>
<td>City</td>
<td>Orange</td>
</tr>
<tr>
<td>State</td>
<td>CA</td>
</tr>
<tr>
<td>Zip</td>
<td>92830</td>
</tr>
</tbody>
</table>

Provider Email Address

| Email Address | gina.valdemar@coastal-vision.com |

Will the proposed course be open to all California licensed optometrists? ☑ YES ☐ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? ☑ YES ☐ NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course.

If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>(First)</th>
<th>(Last)</th>
<th>(Middle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baohue C. (Betty)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

License Number

| License Number | 402069 |

License Type

| License Type | MD |

Phone Number

| Phone Number | (614) 746-9079 |

Email Address

| Email Address | gina.valdemar@coastal-vision.com |

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct.

Signature of Course Provider

| Signature | Tran, MD - Medical Director |

Date

| Date | 4-30-16 |
Course Title: Diagnosing Glaucoma: To Start or Not to Start, that is the question

Course Presentation date: 3/15/2016

Speaker: Baothu (Betsy) Nguyen, MD

Target Audience: This lecture is intended for optometrist seeking continuing education

Course Description:

This lecture seeks to educate optometrists on diagnosing glaucoma patients by presenting case studies and images that help identify findings. Discussion is had and options are presented. With this interactive presentation, the optometrists are then educated on when to start or not start treatment glaucoma regimens.

CE Credit: 1 CE Unit
Continuing Education Course Approval Checklist

Title: Retinal Imaging - OCT
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No

☒ Detailed Course Description
☒ PowerPoint and/or other presentation materials
☒ Advertising (optional)
☒ CV for EACH course instructor
☒ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retinal Imaging - OCT</td>
<td>03/15/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Coastal Vision Medical Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Name</td>
<td>Gina Valdemar</td>
</tr>
<tr>
<td>Street</td>
<td>232 S. Main St. #100</td>
</tr>
<tr>
<td>City</td>
<td>Orange</td>
</tr>
<tr>
<td>State</td>
<td>CA</td>
</tr>
<tr>
<td>Zip</td>
<td>92800</td>
</tr>
<tr>
<td>Provider Email Address</td>
<td><a href="mailto:gina.valdemar@coastal-vision.com">gina.valdemar@coastal-vision.com</a></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists? [ ] YES [ ] NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? [ ] YES [ ] NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eugene</td>
<td>774725</td>
<td>MD</td>
<td>(515) 746-9619</td>
<td><a href="mailto:gina.valdemar@coastal-vision.com">gina.valdemar@coastal-vision.com</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider

Signature

Date: 4-30-16
Course Title: Retinal Imaging-OCT

Course Presentation date: 3/15/2016

Speaker: Eugene Chang, MD

Target Audience: This lecture is intended for optometrist seeking continuing education

Course Description:

This lecture seeks to educate Optometrists on the current trends of retinal imaging. It provides history of optical coherence of Tomography. It goes into detail and explanation of the retinal fibers via OTC imaging. It discusses the interpretation of the images. The lecture then explains the advancements of imaging and the difference in systems. Sample images are shown to aid the Optometrist in understanding and identifying the finding of the images. Treatments are discussed along with expected outcomes for patients.

CE Credit: 1 CE Unit
Continuing Education Course Approval Checklist

Title: Myopic Treatment in Presbyopic Patients
Provider Name: Gina Valdemar (Coastal Vision Medical Group)

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No

☑ Detailed Course Description
☑ PowerPoint and/or other presentation materials
☑ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No
**CONTINUING EDUCATION COURSE APPROVAL APPLICATION**

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

### Course Title

| Migelie Treatment in Presbyopic Patients | 03/12/2012 |

### Course Provider Contact Information

- **Provider Name**: Coastal Vision Medical Group
- **Provider Mailing Address**: 243 S. Main St. #100, Orange, CA 92860
- **Provider Email Address**: gina.valdemar@coastal-vision.com

### Will the proposed course be open to all California licensed optometrists?

- **YES**

### Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?

- **YES**

### Course Instructor Information

- **Instructor Name**: Dan Tran Bco
- **License Number**: B3738
- **License Type**: MD
- **Phone Number**: (714) 746-4019
- **Email Address**: gina.valdemar@coastal-vision.com

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

[Signature of Course Provider]

Date: 03/10/16

Form CE-01, Rev. 2/16
**Course Title:** Myopic Treatment in Presbyopic Patients

**Course Presentation date:** 3/23/2016

**Speaker:** Dan Tran, MD

**Target Audience:** This lecture is intended for optometrist seeking continuing education

**Course Description:**

This lecture seeks to provide optometrists on the advancement of treatment options for Presbyopic patients. Myopic patients now have additional options for their vision options. The risk and benefits are discussed along with applications for the possible patient candidates. Given this knowledge, it prepares the Optometrist with ample information to educate and plan their patient care.

**CE Credit:** 1 CE Unit
Please join us for a:

FREE 2-Hour CE
Featuring
Dan Tran, MD & Betsy Nguyen, MD

The LASIK Rebirth:
Time to SMILE with KAMRA or Topoguided?
&

Update on Glaucoma Medical Treatments in 2016

WHEN:
Thursday
January 28th, 2016
6:30 PM

WHERE:
Roy’s Restaurant-Anaheim
321 W. Katella Ave.
Anaheim, CA 92802

RSVP TO:
Fax: 949.258.5085 OR ginavaldemar@coastal-vision.com

Affiliate Name:
Cell Number:
Email:
Please join us for a:

FREE 2-Hour CE

Featuring

Dan Tran, MD & Lisa Garbutt, MD

The LASIK Rebirth:
Time to SMILE with KAMRA or TopoGuided?

&

Cataract Surgery in Fuchs' Dystrophy Patients

WHEN:

Tuesday
February 16, 2016
6:30 PM

WHERE:

Oak Creek Golf Club
One Golf Club Drive
Irvine, CA 92618

RSVP TO:
Fax: 949.258.5085 OR gina@coastal-vision.com

Affiliate Name:
Cell Number:
Email:
Please join us for a:

FREE 2-Hour CE
Featuring

Dan Tran, MD & Timothy You, MD

The LASIK Rebirth: Time to SMILE with KAMRA or Topoguided?

&

Retinal Care of the Myopic Patient: Considerations for Refractive Surgery

WHEN:
Thursday
February 25, 2016
6:30 PM

WHERE:
Coyote Hills Golf Course
1440 E Bastanchury Rd.
Fullerton, CA 92835

RSVP TO:
Fax: 949.258.5085 OR ginavaldemar@coastal-vision.com

Affiliate Name:
Cell Number:
Email:
FREE 2-Hour CE

Featuring

Dan Tran, MD & Lisa Garbutt, MD

Management of Corneal Ulcers &

The New Age of Refractive Cataract Patients

WHEN:

Wednesday
March 9th, 2015
6:30 PM

WHERE:

Vellano Country Club
2441 Vellano Club Drive
Chino Hills, CA 91709

RSVP TO:

Fax: 949.258.5085 OR ginavaldemar@coastal-vision.com

Affiliate Name: ____________________________
Cell Number: ______________________________
Email: ________________________________
FREE 2-Hour CE

Featuring

Betsy Nguyen, MD & Eugene Chang, MD

Diagnosing Glaucoma:
To Start or Not to Start? That is the Question.
&
Retinal Imaging – OCT

WHEN:
Tuesday
March 15, 2016
6:30 PM

WHERE:
Aliso Viejo Conference Center
(Next to Aliso Viejo Country Club)
31 Santa Barbara Dr.
Aliso Viejo, CA 92656

RSVP TO:
Fax: 949.258.5085 OR GinaValdemar@coastal-vision.com

Affiliate Name: ____________________________________________
Cell Number: ____________________________________________
Email: __________________________________________________
Please join us for a:

FREE 2-Hour CE
Featuring

Dan Tran, MD & Betsy Nguyen, MD
Myopic Treatment in Presbyopic Patients &
Diagnosing Glaucoma:
To Start or Not to Start? That is the Question.

WHEN:
Wednesday
March 23, 2016
6:30 PM

WHERE:
Brodard Château
9100 Trask Ave.
Garden Grove, CA 92844

RSVP TO:
Fax: 949.258.5085 OR ginavaldemar@coastal-vision.com

Affiliate Name: ______________________
Cell Number: _______________________
Email: ____________________________
1. **Time to 'SMILE' with KAMRA**  
   Or Should We Topoguided  
   Contoura Vision  
   Dan B. Tran, MD  
   Medical Director – Coastal Vision Medical Group  
   Irvine, Long Beach, Orange - California

2. **FINANCIAL DISCLOSURES**  
   - Consultant and Study Grant Recipient  
     - Alcon  
     - ReVision Optic  
     - Ivantis  
   - Principal Investigator FDA clinical trials  
     - AMO  
     - ReVision Optic  
     - Ivantis  
     - Transcend Medical  
     - ReFocus Group

3. **Excimer Lasers**  
   - Excimer lasers were developed in the 1970s by IBM to etch microchips  
   - Use in the eye postulated in 1983  
   - Employs a cold beam of light that DOES NOT BURN  
   - Can treat myopia, hyperopia and astigmatism  
   - Will not cause or treat cataracts

4. **Excimer Laser: Used on a Human Hair**

5. **Picosecond Intrastromal Ablation**  
   - Intrastromal bubbles coalesce to cleave tissue  
   - Clinically failed to get PRK-like refractive effect in 1995 U.S. FDA Trial

6. **History**  
   - 1998: First clinical Femtosecond laser in cornea  
   - 2000: Initial U.S. use of Femtosecond Laser keratome for LASIK  
   - 2001: Commercial launch of IntraLase FS (1st generation)  
   - 2003: 2nd generation IntraLase FS Laser  
   - 2005: 3rd generation IntraLase FS Laser  
   - 2006: 4th generation IntraLase FS Laser  
   - 2016: FS200 & Ziemer & Intralase & VisuMax & LenSx

7. **IntraLase Patient Interface**

8. **Energy Dependent Mechanisms in Photodisruption Process**
DOES PUPIL SIZE MATTER?

Depth of focus is a function of pupil size

The Total Aberrations of the Eye

Tran, Sarayba, et al
JCRS Jan 2005

- Randomized, prospective
- Contralateral - Blade vs IntraLase
- 9 patients, 18 eyes
- Flap cut only
- Measure flap-induced HOA
- Excimer treatment 10 weeks after flap

Durrie, Kezirian
JCRS Jan 2005

- Randomized, prospective, contralateral eye
- Blade vs IntraLase
- 102 eyes

LASIK Visual Outcome

US NAVY Study
Schallhorn, Tanzer

- Comparison of Visual Outcomes with Femtosecond and Mechanical Keratomes for WFG LASIK
- Return to flight status sooner
  - Best technology for flap creation

LASIK ENHANCEMENT RATE

Microkeratome cut

- 
- 
- 
- 
- 
- Lamellar structure of the cornea
• Microkeratome cuts deep in periphery with poor diameter and centration control

23 **IntraLase cut**

•
•
•
•
•
•

• Lamellar structure of the cornea
• IntraLase cuts thin planar flap with precise depth, diameter and centration control

24 **Biomechanical Evidence**

**Strength of Inverted Side Cut Angle**

Purpose:
• To determine biomechanical strength effect of varied side cut angles (100° to 150°) on strain changes during corneal incision

25

26 **Results of Comparative Measurement of Flap Tensile Strengths in New Zealand White Rabbits (3 months post-op)**

27 **Technology Updates**

WaveLight Refractive Suite

28

29 **FDA Approvals**

**Various Custom Options:**
• Lamellar corneal flaps
• Intracorneal ring segments
• Lamellar keratoplasty
• Penetrating keratoplasty

30

31 **Variable Hinge**
• 30 to 90 degrees length
• Position 0 to 360 degrees
  – Perfect custom fit to ablation profile

32 **Conclusion**

• Advanced Suction Technology
  A. Enhanced Suction Ring Design - < IOP
  B. Two Vacuum Pumps - < manipulation
• Beam Control Check – > flap predictability
• Enhanced OBL Management - < OBL
- Speed – quicker procedure
- Customization Versatility -> variety of cutting

34 [The WaveLight® Allegretto Wave® Excimer Laser Difference: Speed and Spot Size]

ALLEGRETTO WAVE® Laser System
- 200 Hz ablation rate
- Approximately 4 seconds per diopter ablation
  - 0.95 mm Gaussian laser beam

ALLEGRETTO WAVE® Eye-Q Laser System
- 400 Hz ablation rate
- Approximately 2 seconds per diopter ablation
  - 0.95 mm Gaussian laser beam

EX500 Laser System
  - 500 Hz ablation rate
  - 1050 Hz eye tracker
  - Approximately 1.4 seconds per diopter ablation
    - 0.95 mm Gaussian laser beam

35 [The WaveLight® Allegretto Wave® Excimer Laser Difference: Optimized Shot Distribution]
- Only every 5th pulse overlaps a previous one
- Minimizes thermal effects

36 [Why Does Speed Matter?]
- Reduces stromal dehydration
- Reduces exposure to temperature and humidity factors
- Reduces effects of altitude
- Shortens patient fixation time
- Improves patient throughput
ReLEx-Smile preserves corneal biomechanics
- Anterior and central stromal lamellae are stronger\(^1\)
- Vertical cuts weakening the cornea strain much more
  than horizontal cuts\(^2\)
  Goal: preserve most of the anterior stroma,
  minimize vertical cuts/sidecuts (length & depth)

Advantage of ReLEx-Smile vs F-Lasik:
\(\rightarrow\) Intact anterior stromal lamellae and no anterior corneal sidecut
\(\rightarrow\) 50-70\(\mu\) of the anterior stroma additionally contribute to corneal tensile strength
\(\rightarrow\) Better corneal biomechanical stability

Dry Eye Study

VisuMax Sphero-cylindrical Study
- Study Objective:
  \(\rightarrow\) To evaluate the safety and effectiveness of the Carl Zeiss Meditec VisuMax\textsuperscript{TM}
  Femtosecond Laser lenticule removal procedure for the reduction or elimination of
  myopia from \(\geq -1.00\) D to \(\leq -10.00\) D with \(\leq -3.00\) D cylinder and MRSE \(\leq -11.50\) D
  \(\leq -0.50\) D cylinder not treated as part of this clinical trial
  \(\rightarrow\) Treatment on one eye only

- Study Update:
  \(\rightarrow\) Enrollment initiated February, 2015
  \(\rightarrow\) 100 eyes treated across 5 U.S. study sites (90 sphero-cyl treatments)
3-month safety and effectiveness data on 69 eyes (59 of which were treated for astigmatic myopia) submitted to FDA for consideration of study expansion to full cohort of up to 360 eyes.

Uncorrected Visual Acuity (ETDRS) Outcomes at 3 Months

Change in Best Spectacle Corrected Visual Acuity (ETDRS) at 3 Months (N = 69)

An Aging Population Means Increasing Presbyopia Prevalence

Future Global Projection

- 1.4 billion presbyopia patients by 2020
- 1.8 billion presbyopia patients by 2050

Current (FDA) Presbyopia Treatment Options

- Non-Surgical Options
  - Corrective eyewear
    - Glasses (reading glasses)
    - Specialty contact lenses

- Surgical Options
  - Monovision LASIK / PRK
  - Corneal Inlay KAMRA
  - Refractive Lens Exchange / Cataract

Introduction to the KAMRA® Inlay

The KAMRA® Inlay

Inlay Design

The KAMRA® Inlay Indications for Use

The KAMRA® inlay is indicated for intrastromal corneal implantation to improve near vision by extending the depth of focus in the non-dominant eye of phakic, presbyopic patients between the ages of 45 and 60 years old who have cycloplegic refractive spherical equivalent of +0.50 D to -0.75 D with less than or equal to 0.75 D of refractive
cylinder, who do not require glasses or contact lenses for clear distance vision, and who require near correction of +1.00 D to +2.50 D of reading add.

51 Corneal Physiologic Principles
   • Oxygen enters from the tears
   • Glucose & other metabolites enter from the aqueous humor
   • Catabolites exit to the aqueous humor

52 Depth of Focus without Correction

53 Depth of Focus with the Inlay
   Depth of focus and image quality of a KAMRA® inlay eye of a 49 Year Old Presbyope

54 Inlay Placement Guidance
   • The AcuTarget HD™ instrument provides pre-op and post-op centration information:
     – Identifies unique optical landmarks to assist with inlay centration planning
     – Confirms achieved inlay placement
     – Assists with managing vision complaints post-operatively
     – Advanced features:
       • Pre-op result also identifies purkinje vs pupil by location (i.e. inferior temporal)
       • Pre-op print out includes additional ocular landmark graphics, patient demographic, time and date information

55 Results

56 Uncorrected Near Visual Acuity:
   Inlay Eye – Data from US IDE
   • On average patients experienced a gain of 3.4 lines of near acuity between pre-op and the 36 month follow-up visit

57 Uncorrected Intermediate Visual Acuity: Inlay Eye

58 Uncorrected Distance Visual Acuity:
   Inlay Eye
   • Monocular uncorrected distance acuity in the inlay eye remained unchanged at 20/20

59 UCNVA at 5 Years
   • UCNVA improved from a mean of J8 to J2 in the inlay eye (IE) between pre-op and 1 month and is maintained out to 5+ years.
   • Vision in the inlay eye and with both eyes (BE) is unaffected by the progression of presbyopia
   • UCNVA in the untreated other eye (OE) shows an mean loss of 1 line over the same time period

60 Summary of Results
   • Near vision of J2 achieved on average
Clinical Impact of the KAMRA® Inlay on Ophthalmic Assessments

KAMRA® Inlay Clinical Impact

- How does the inlay impact ophthalmic assessments?
  - Cornea
  - Anterior chamber
  - Lens
  - Retina

HRT Confocal Image

Chamber Angle Imaging

Lens

Macula

Fundus Exam: Center & Periphery

Optic Nerve Imaging

(6-months Post-Op)

Visual Field

The VisAbility U.S. Clinical Trial (FDA)

- Now enrolling: Multi-Center 2 year study to generate data for a U.S. submission and possible approval
- Safety is paramount and the foremost priority of the study
- Investigating significant improvements in instrumentation and technique
- Early access to the newest technology
  - Longstanding history
  - Developed by Refocus Group, Inc. (founded in 1996)
  - CE Marked in the E.U.
- Procedure provided at no cost
  - Open to only 360 patients
    - Limited to 28 patients are each site
    - Available (in the U.S.) for a limited time

73  How does VisAbility™ work?
- Implants may help the focusing muscles of the eye work better and improve near vision

74  What are VisAbility Implants?
- Tiny clear implants made of PMMA polymer
  - Sterile, single-use, and biologically inert
  - Same material that has been implanted in other surgical procedures for over 50 years

75  What happens during the VisAbility Procedure
- Numbing drops and antianxiety medications given to keep you comfortable and relaxed

  - 4 (four) VisAbility Implants are placed just below the surface of the white of the eye through tiny incisions
  - The outpatient procedure is minimally invasive and typically takes 15-20 minutes per eye.
  - OR staff will observe patients immediately after surgery for any potential complications

76  What to expect after the VisAbility Procedure
- Improvement in near vision
- Slight irritation that usually goes away in a few days
- Temporary redness that goes away after a 3-4 week healing period
  - After healing period patients should feel confident to pursue any normal activities
1. **UPDATE OF GLAUCOMA MEDICAL TREATMENT 2016**
   Betsy Bao-Thu Nguyen, M.D.

2. **CASE PRESENTATION**
   - RM is a 73 yo active WM with POAG, treated with a prostaglandin for 3 years, presents with possible progression on HVF and has an IOP of 21 mm Hg. Repeat VF confirms the defect.
     
     WHAT IS YOUR NEXT TREATMENT STEP?

3. **HVF 24-2 SITA STANDARD**

4. **CASE PRESENTATION: RM**
   - 73 yo WM, POAG x 3 yrs, on Lumigan OU qhs
   - Va : 20/30 OU, low hyperope
   - IOP (applanation) 9 am: 21 OD, 22 OS
   - 2+ Nuclear sclerosis OU
   - Pachy: 510 OD and 505 OS
   - Gonio: Grade IV, open to CBB
   - Fam history: mother

5. **CASE PRESENTATION**
   - What is your next treatment step?
     - A. Followup in a month: repeat VF & recheck IOP.
     - B. Start on a second medication
     - C. Selective Laser trabeculoplasty
     - D. Cataract surgery alone & referral to Dr. Nguyen
     - E. Cataract surgery with MIGs & referral to Dr. N
     - F. Traditional Glaucoma surgery (Trabeculectomy or tube)
     - G. Wait for approval of new glaucoma medication

6. **THE TREATMENT GOAL:**  
   Consistently
   **Lowering intraocular pressure with flat diurnal curve = LESS progression**

   - Our paradigm shift in glaucoma treatment
     1) Target intraocular pressure range: 25-30% goal?? (AAO Preferred Practice Pattern: at least 25% from pretreatment IOP)
     2) Shift to switching medications vs. adding medications
     3) Shift to less medications (need compliance !)-- perform SLT, or Cataract surgery, or Cataract surgery with MIGS
     4) Other strategies, in addition to IOP lowering, may be required to prevent visual field loss (ie: neuroprotection)

7. **IOP increases at night with supine position**
• Beta blockers probably ineffective at night
• May explain glaucoma progression in patient whose IOP is consistently low in the office
• Future: contact lens for monitoring 24-48 hr continuous

8)

History of Glaucoma Medications
• Parasympathomimetics (1877)
• Beta Blockers (1978)
• Oral Carbonic Anhydrase Inhibitors (1978)
• Selective Alpha-adrenergic agonists (1987)
• Topical Carbonic anhydrase inhibitors (1995)
• Prostaglandin analogues (1996)
• Combination (Cosopt 1998, Combigan 2007, Simbrinza 2013)

9)

FUTURE Glaucoma Medications
• Rhokinase inhibitors (ROCK) (2017?)
• Selective Adenosine agonists (Trabodenoson) (2017?)
• Nitric oxide (NO) relax TM \(\rightarrow\) increase TM aqueous outflow (FDA review by 7/2016?)
  -(Vesneo= latanoprostene bunod, NO-donating PG F2-alpha analog)

10)

GLAUCOMA MEDS LOWERING IOP: MECHANISM OF MEDICATION
• 1) Reduce aqueous humor production
  - Beta-blockers
  - Carbonic anhydrase inhibitors
  - Alpha adrenergic agonists

11)

GLAUCOMA MEDS LOWERING IOP: MECHANISM OF MEDICATION
• 2) Increase fluid outflow (uveoscleral outflow vs. trabecular outflow)
  - Prostaglandins
  - Alpha adrenergic receptor agonists
  - Pilocarpine
  _FUTURE: Rho Kinase inhibitors (ROCK), adenosine agonists (Trabodenoson), NO (Vesneo)

12)

Prostaglandin analogues are the 1st line /GOLD standard for monotherapy
• Xalatan 0.005% (since 1996) (latanaprost) - BAK
• Lumigan 0.01% (bimatoprost) - BAK
• Travatan-Z 0.004% (travoprost) - SofZia
• Zioptan 0.0015% (tafroprost) - preservative free
• (Rescula - prostamide)- ineffective. DISCONTINUED.
•
• TOLERABILITY TO ONE PROSTAGLANDIN MAY BE DIFFERENT THAN TO OTHERS!
- Flat diurnal curve
- 28 – 33% IOP lowering (Want monotherapy)
- Zioptan slightly less effective IOP lowering

### Prostaglandin GENERICS: reality of 2016
- Latanaprost -BAK.
- Bimatoprost .03% - BAK... more hyperemic than Lumigan .01%.
- Travoprost – BAK.

- NOT all generics are created equal...
- Will it lower IOP consistently between different manufacturers?

### OLD GOLD STANDARD: B blockers (decrease aqueous humor production)
- 1) Well known that may cause bradycardia, respiratory distress, DECREASED exercise tolerance, impotence, depression, congestive heart failure, and mask hypoglycemia
- 2) Tachyphylaxis
- 3) Ineffective at night (NOT flat diurnal curve)
- 4) Less effective w/concurrent systemic Beta Blocker
- 5) Adjunct to PG- only 1-2 more additional IOP lowering
- 6) Nonselective B blocker may decrease ocular blood flow, due to vasoconstriction
- 7) But if tolerated and effective, the generic medication can be cost effective.

### Carbonic Anhydrase Inhibitors (CAI): (decrease aqueous humor production)
- Trusopt
- Azopt
- Generic Dorzolamide
  - TID dosing, adjunctive therapy

- Oral Diamox 250 mg, 500 mg, 500 mg SR
- Oral Neptazane 25 mg, 50 mg
  - Short term use for high IOP (NVG, acute angle closure, PXE) and non-surgical candidate
  - Avoid in sulfa allergy

### Alpha 2 Adenergic Agonist: dual mechanism of decrease aqueous humor production & increase uveoscleral outflow
- Alphagan-P .01%
• Generic Brimonidine .15 % and .20%
  • TID dosing, adjunctive therapy
  • Controversial /never proven that it increases ocular blood flow

• Allergic eyelid dermatitis
• Chronic conjunctivitis

Parasympathomimetics: increase TM outflow
• Pilocarpine 1%, 2%, 4%, 6% -QID dosing
• Carbachol

• Side effects: miosis, worsens vision with cataracts, retinal detachments
• Still role in narrow angle patients

SOME PATIENTS ARE ALLERGIC TO BAK PRESERVATIVE FREE
• Ziophtan
• Cosopt PF
• Timoptic Ocupose
• Leiter's Pharmacy: compounded

Combination Medications: can increase compliance
• Combinations: Simbrinza, Combigan, Cosopt, Dorzolamide-Timolol, Cosopt PF
• May be good adjunctive therapy to Prostaglandin
• May improve compliance (less bottles), less toxic to conjunctiva and cornea, less cost?
• NOT available in USA: PG-beta block, PG-CAI

HOW OFTEN IS 1 MEDICATION NOT ENOUGH?
• OHTS TRIAL: 49 % patients required 2 or more medications to reach target IOP
• CGTTS TRIAL: >75 % patients required 2 or more medications to reach target IOP
• 30 % patients starting meds require adjunctive therapy within 1 year

SECOND bottle choices: Combination meds can increase compliance and be more effective
- Combinations (Simbrinza, Combigan, Cosopt or its generic)
- Alpha adrenergic agonists = Alphagan-P 0.1% vs generic brimonidine 0.15 & 0.2%
- Topical carbonic anhydrase inhibitors = Trusopt, generic dorzolamide, Azopt
- Beta Blockers
Patients often do not remember: A Medication Chart can be given to the patient each visit.

FUTURE Glaucoma Medications

- Rhokinase inhibitors (ROCK) (2017?)
- Selective Adenosine agonists (Trabodenoson) (2017?)

- Nitric oxide (NO): relax TM \( \rightarrow \) increase TM aqueous outflow (FDA review by 7/2016?)
  - (Vesneo= latanoprostene bunod, NO-donating PG F2-alpha analog)

Rhokinase inhibitors (ROCK Inhibitors) : increase TM outflow

- Multiple medications in different stages of development (none have been FDA approved)
- Increases TM outflow, by Rho kinase inhibition (relax TM and disrupt adhesions in TM and Schlemm's canal)... ? Does it improve ocular blood flow??
- Rhopressa (Aerie Pharmaceuticals)-Phase 3 trial
  - Qd dosing. Side effect: conj hyperemia
  - Lowers IOP 5-6 pts
  - ROCK/NET-also decreases fluid production by inhibiting Norepinephrine transporter
- Roclatan (Aerie Pharmaceuticals)-Phase 3 trial
  - Combination of Rhopressa and latanaprostone
- Ripasudil 0.4% -Phase 3 trial (approved in Japan)

Selective adrenergic agonists (Trabodenoson) : increase TM outflow

- Trabodenoson (Inotek Pharmaceuticals)
- Increases TM outflow, by selectively targeting A1 receptors on TM \( \rightarrow \) stimulate proteases, that can lyse protein that is clogging TM
- In Phase 3 trial (09/2015) MATRIX-1: qd and BID dosing
  - less conj hyperemia than PG
  - Phase 2: Lowers IOP 7 pts
- ALSO in trial: Trabodenoson-latanoprost

Nitric Oxide(NO) : increase TM outflow

- Latanoprostene bunod- NO-donating prostaglandin F2-alpha analog ( Bausch & Lomb Vesneo)
- Increases TM outflow, by relaxing TM.. ?Increase ocular blood flow??
- Completed Phase 3 trial (07/2015)
  - Phase 3: Lowers IOP 7 - 9 pts
- FDA review by 07/2016?

FUTURE DELIVERY SYSTEMS OF MEDICATIONS
- A novel prolonged delivery (month) of medications (contact lens, punctal plugs)
- Subconjunctival injections, Subtenon depots
- Conjunctival fornix inserts
- Nanoparticles, microspheres, liposomes – release medications slowly

28 [SELECTIVE LASER TRABECULOPLASTY (SLT)]
Is an excellent choice in lowering IOP, if target goal not reached with monotherapy!
- COMPLIANCE IS NOT AN ISSUE!
  - 100% COMPLIANCE with SLT !!!!
- In general, cost-effective.
- In general, no side effects.
- No negative impact on quality of life.
- No peak/through IOP fluctuations. FLATTENS DIURNAL CURVE.
- SLT decrease IOP an additional 3-4 mm Hg, on patients on topical PGs

29 [CATARACT SURGERY: lowers IOP]
- Lowering IOP:
  - 1-4 mm Hg decrease (Shingleton BJ et al, J Glaucoma 2006; 15:494-498.) Can be sustained for 3-5 years
  - 8 mm Hg decrease (Samuelson et al, Ophthalmology 2011; 118:459-467)
- Proposed mechanism: Enhance TM outflow
- Degree of IOP lowering correlates with extent of AC deepening. So, in patients with PACG or narrow angles: even more IOP lowering.

30 [CATARACT SURGERY + IStent]
("Phaco +") Lowers IOP 2-3 mg more
- Additional lowering IOP with 1 IStent:
  - 2-3 mm Hg additional decrease to cataract surgery
  - only FDA approved for 1 IStent, in conjunction with cataract surgery
  (2-3 IStents in Canada & Europe)
- Safety profile: SAFE! (compared to traditional glaucoma surgeries)

31
Cataract Surgery in Fuchs' Dystrophy Patients
Lisa D. Garbutt, M.D.
Coastal Vision Medical Group

What Is Fuchs' Dystrophy? Dystrophy
- Autosomal Dominant Corneal Endothelial Dystrophy
- Usually affects both eyes
- Slightly more common in Females than in males
- early signs are seen in the 30’s and 40’s, but not usually clinically significant until the 50’s and 60’s

Professor Ernst Fuchs (1851-1930)
- Dr. Ernst Fuchs, an Austrian ophthalmologist and head of the clinic of ophthalmology at the University of Vienna
- His “Textbook of Ophthalmology”, published in 1889, was considered the bible of ophthalmology for over 50 years
- He was considered the master of his profession, who’s extensive clinical studies provided the first descriptions and definitions of many conditions and diseases of the eye, over a dozen of which bear his name

Fuchs' Dystrophy
- In 1910, Fuchs first reported 13 cases of central corneal clouding, loss of corneal sensation, and the formation of epithelial bullae
- he labeled this condition “dystrophia epithelialis corneae”
- characterized by late onset, slow progression, decreased visual acuity in the morning, lack of inflammation, diffuse corneal opacity, and vesicle-like formation of the epithelium

Fuchs' dystrophy
- It wasn’t until the 1920’s that a full understanding that Fuchs' dystrophy was in fact an endothelial disease and not an epithelial disease was made, i.e. the endothelial changes preceded the epithelial changes

guttatae
- reflect a decrease in density of the major “pump” cells of the corneal that allow stromal clarity
- Progressive endothelial cell loss causes a relative influx of aqueous humor leading to corneal stromal edema
- The dystrophy is classified into different stages, ranging from early signs of guttatae, to end-stage subepithelial scarring

effect on vision
- The mechanism of potential visual compromise is really twofold: the thickness of the cornea and the optical reflectivity of the endothelium
specular microscopy

- Normal = uniform, small, hexagonal
- abnormal = decrease in cell density, larger cells which secrete excess amounts of descemet's membrane

Anterior segment OCT

- Endothelium produces excessive amounts of an abnormal basement membrane material resulting in a thickened Descemet's membrane
- Accumulations of this material result in mushroom-like formations, called guttatae

ultra high resolution OCT

do.

endothelial cell trivia

- Human endothelial cell density is 6,000 cells/mm² during the first month of life, but decreases to 3,500 cells by 5 years of age, and to 2,300 cells by 85 years of age
- They are arrested in the G1 phase of the cell cycle, and do not divide

do.

endothelial cell trivia

- contributes to the cornea as an exquisite example of natural engineering;
- It must control hydration while at the same time must be permeable to nutrients from the aqueous humor
- acts as a partial leaky barrier to fluid and nutrient movement into the cornea and as an active pump that moves ions and draws water out of the cornea ("pump-leak mechanism")

cataract surgery and the corneal endothelium

- after initial cell losses (usually within 5 days after surgery), the cell density decreases at an average rate of 2.5% per year for at least 10 years after surgery (4 times the rate of the unoperated eye)

cataract surgery in fuchs' corneal dystrophy

- a thorough diagnostic workup is essential, as is pre-op counseling and expectation management
- cataract surgery alone vs. combined CEIOL and DSAEK

cataract surgery in fuchs' corneal dystrophy

- corneal pachymetry (>640), as pachymetry is variable in the normal population, it should not be used as the sole determinant of corneal edema
- Endothelial cell count and morphology (specular microscopy), AS-OCT, UHR-OCT
- clinical exam with documentation of amount of guttatae, visible edema, +/- bullae,
+/- subepithelial haze, degree of visual loss and effect on activities of daily living and quality of life (patient’s visual needs)
- density of cataract

16 managing expectations
- “but all my friends said they saw perfectly right after cataract surgery”
- educate your patient and establish honest expectations for them: a well-informed patient is the best determinant of a positive outcome
- #1: recovery time with fuchs’ dystrophy may be slower than other typical patients
- #2: there is a chance the cornea may decompensate, necessitating a DSAEK

17 surgical technique
- bss plus
- "soft-shell" technique with viscoelastic: dispersive viscoelastic first followed by a cohesive viscoelastic to spread it over the endothelial cells
- low threshold for adding more viscoelastic if there is prolonged irrigation or ultrasound time
- maintaining a safe distance from the endothelium

18 soft-shell technique

19 surgical technique
- therapeutic femtosecond laser assisted surgery: can section the lens without ultrasound energy, dropping the amount of phacoemulsification energy considerably, making the procedure kinder to the endothelium
- aim -1.00 in anticipation of future DSAEK if risk higher (hyperopic shift with addition of tissue)

20 femtosecond laser assisted for fuchs’ dystrophy

21 DSAEK?
- Most patients have pretty decent endothelium, specular counts between 500 and 1,200/mm², and pachymetry between 580 and 650 um, so cataract surgery alone may be enough

22 decision to dsaek
- If patients are outside those parameters, they may benefit from either a combined or sequential procedure
- However, there are a select few patients that are within the parameters for cataract surgery alone, but are still bothered by the endothelial reflectivity even before their cataract formed (glare with driving, lights, etc.)

23 dsaek/dmek
•
•
•
• 170, 80, 20 microns

24 questions
• thank you!!
Retinal Care of the Myopic Patient Considerations for Refractive Surgery

Timothy You, MD
Orange County Retina Group
February 25, 2016

Background

Definitions

• Greek: μύωνια, μυωπία, from myein "to shut (like a mole - myos/mus in Greek)" – ops (gen. opos), "eye, sight), literal meaning "trying to see like a mole"
• Low myopia 0.00 to -3.00 diopters
• Moderate myopia: -3.00 to -6.00 dptrs
• High myopia: > -6.00 diopters

Background

• Global refractive error: 800 million to 2.3 billion
• Highest in Asia (70-90% Asian countries; 30-40% Europe and US; 10-20% Africa)
• Which country has highest prevalence?
• Lasik – 20 million since 1990
• US – 1 million procedures annually

Retinal Exam

Slit Lamp Biomicroscopy to Assess Macula

Indirect Ophthalmoscopy

Depressed Sclera Examination
Scleral Depressors

#1: Retinal Tears and Detachments
Case

Lattice Degeneration

- Prevalence 7-8% of general population
- Prevalence 11-16% autopsy series
- Bilateral in 45% of cases; associated with myopia
- Risk for RD with lattice is 1%
- Risk for RD with lattice and holes 2%
- Risk for RD with symptoms 40%

Lattice Degeneration w/ atrophic holes

Lattice Degeneration w/ Pigmentation

Case

Peripheral White Without Pressure

Peripheral White Without Pressure

Case

Retinal Hole w/ Operculum
- Subretinal Fluid

Retinal Hole w/ Operculum

Retinal Detachment

- Annual incidence 1:10,000-15,000
- OC 300-400
- Prevalence 45 in 15,000
- Risk Factors: Myopia > 6dptr, Aphakia, Trauma, Vitreous Loss, Family Hx, Syndromes
- Risk for Fellow Eye is up to 15%
- Symptomatic PVD 6-12% Risk
- Vitreous Hemorrhage 70% Risk
Retinal Care of the Myopic Patient
• Ruiz-Moreno (2003)
• N= 9,253 patients
• RD risk 1:10,000 (<0.0001%) general pop
• RD risk 0.15% after PRK
• RD risk 0.36% after LASIK
• RD risk 4.08% after IOL
• RD risk 8.10% after IOL for pt > -10dptr
• Colin (2008)

Retinal Detachment
Retinal Detachment
Retinal Detachment
Horseshoe Retinal Tear
Horseshoe Retinal Tear
Treated Retinal Tear
Pneumatic Retinopexy
SF6 or C3F8 Gas Tamponade
Cryo/Laserpexy
Retinal Surgery
Retinal Surgery
Scleral Buckling
Traction Retinal Detachment
Alcon Constellation Vitrectomy

#2 : Posterior Slaphyioma

Background

Myopic Macular Degeneration
Myopic Fundus with Geographic Atrophy

Case
Lacquer Cracks
Lacquer Cracks
Forster-Fuchs' Spots
Staphyloma
Hsalang et al, AJO 2008

Posterior Staphyloma

Degenerative Myopia

Staphyloma
Shinohara et al, 2013

B-scan Posterior Staphyloma

CT Scan Posterior Staphyloma

OCT of Myopic Eye

Anatomy of Myopic Eye

External Staphyloma

Uveal Melanoma
Desai et al, JAMA 2013

Myopic Macular Retinoschisis
Shimada et al, BJO 2008

Myopic Macular Detachment

Myopic Macular Detachment
Brian Ward, 2015

Myopic Macular Detachment
Posterior Pole Buckling
Ward, Retina 2013

#3 : Myopic CNVM

Myopic CNVM
• mCNV risk is approx 5.0% in myopes
• mCNV range from 3.7% for diffuse atrophy range to 29% lacquer cracks
  • mCNV risk 0.01% after PRK
  • mCNV risk 0.33% after LASIK
  • mCNV risk 2.38% after IOL
  • Retinal Hemorrhages and mac holes

Myopic Choroidal Neovascularization CNVM

Myopic Choroidal Neovascularization CNVM

Myopic Choroidal Neovascularization CNVM

Myopic Choroidal Neovascularization CNVM

Myopic Choroidal Neovascularization CNVM

Case

Macular Hole

Macular Pucker

Vitreomacular Traction

Clinical Pearls
  • Symptomatic PVD w/o breaks – see patient within one month or refer
  • Symptomatic PVD w/ break – refer within 48 hours
  • Symptomatic PVD w/ heme – see patient within 1-2 weeks or refer – high risk for RD

Clinical Pearls
  • Loss of central vision (inability to refract better than baseline) - refer
  • Metamorphopsia – get OCT and look for CNVM or atrophy
  • Patient with Multiple Questions – refer or decline elective surgery

Guatemala
Zika Virus
Microcephaly
Microcephaly
JAMA Ophthalmology
2-month-old girl
1-month-old boy
1-month-old infant
1-month-old infant
20-day-old infant
Rubella

Thank You!
1. **Management of Corneal Ulcers**
   Lisa D. Garbutt, M.D.
   Dan B. Tran, M.D.
   Coastal Vision Medical Group

2. **Profiling the Ulcer**
   Infectious vs. Non-Infectious
   Infectious: Bacterial (Staph, Pseudomonas), Fungi (Candida, Fusarium), Viral (Herpes), Parasitic (Acanthamoeba)
   Non-Infectious: Neurotrophic, Autoimmune, Toxic, Allergic, Mechanical

3. **Profiling the Ulcer: Detailed Patient History**
   - ? Contact Lens Wearer
   - ?Pain and Quality of Pain
   - FBS/ "Stick in the eye": Bacterial with Epithelial Defect
   - "Toothache in Eye", "Only when light hits my eye does it really hurt": Non-Bacterial or Non-Infectious
   - Pain out of proportion to exam: Acanthamoeba
   - Less pain than one would expect from findings: Herpes

4. **Profiling the Ulcer: Context**
   - ? Contact lens wearer
   - Do you swim in your contacts or wash in tap water?
   - Have you been gardening, been exposed to vegetation, dirt, wood?
   - History of previous episodes (herpes)

5. **Culturing the Ulcer**
   With the introduction of fluoroquinolone antibiotics, some clinicians have dropped culturing as part of their diagnostic practice
   - Ok for small peripheral ulcers
   - You'll want to culture central ulcers or ulcers larger than 2mm at presentation

6. **When to Refer**
   - No improvement in 1-2 days if peripheral
   - Ulcer larger than 2mm, especially if located in visual axis, +/- stromal melting, anterior chamber inflammation, scleral involvement, or any suspicious or atypical presentation

7. **BACTERIAL**
   Relatively straight forward in most cases: CTL wearer, severe pain started 2 days ago, injected eye with epithelial defect over a small, round infiltrate, +/- purulent discharge.

8. **BACTERIAL**
   For small peripheral ulcers - frequent dosing of topical fluoroquinolones (Vigamox). 1 drop every 5 minutes for first 30 minutes (loading dose), then every hour around the clock.
   For ulcers >2mm or near visual axis, or a peripheral ulcer that is not responding:
   Fortified Antibiotics (Vancomycin, Tobramycin) - one drop on the hour, the other drop
on the 1/2 hour around the clock for the first 48 hours). After 24, hours, may ease up on overnight drops to every 2 hours if see improvement

9 BACTERIAL
Steroids: Use with extreme Caution and only once response to antibiotics and control of infection is established. Epithelial defect is starting to close, usually within first 48 hours if there is marked haze/inflammation near visual axis.
Steroids inhibit the inflammatory response and reduce corneal scarring

10 Staphylococcal

11 MRSA

Classic-looking bacterial ulcer not responding to fluoroquinolones
At risk groups: Nursing home residents, In-patients, hospital or health-care worker

12 Pseudomonas

Characteristically soupy, necrotic, +/- hypopyon

13 FUNGAL ULCERS

More indolent appearing, chalky, long-standing, possible history of agricultural injury or CTL wear in humid conditions
Molds: Feathery borders, +/- satellite lesions
Yeast: More distinct borders and localized, resemble bacterial ulcers
Neovascularization (reflecting chronicity)
Pain and inflammation not as severe as bacterial

14 Fungus
Natamycin: Every hour initially, then taper according to response.
Does not penetrate intact epithelium, so may need to debride first
More activity against Fusarium Molds, less activity against Candida Yeasts
For Candida, may need to compound Amphotericin or Voriconazole
Requires medication for six weeks on average
Cannot penetrate intact epithelium that well, so need to remove epithelium. Natamycin more efficacious against Fusarium mold. Less efficacy against Candida yeast. May need to go with a compounded Amphotericin or Voriconazole. Treatment for 6 weeks on average.

**Parasitic: Acanthamoeba**

CTL wearer, History of swimming in pool with CTL’s, washing lenses with tap water, agricultural injury

Initially may masquerade as a stromal Herpetic Lesion

In contrast to Herpes, the pain is out of proportion to the clinical findings with exquisite light sensitivity

**Acanthamoeba**

"Jacket-over-the-head" sign

Epithelial irregularity early on, later a ring infiltrate with perineural infiltrates

Very difficult to culture. Other options are Confocal Microscopy and Corneal Biopsy

**Acanthamoeba: Double-walled cyst**

Light Microscopy and Confocal Microscopy

**Confocal Microscopy**

- Aims to overcome some limitations of traditional wide-field fluorescence microscopes.
- Confocal Microscopy uses point illumination and a pinhole to eliminate out-of-focus light, improving optical resolution.

**Confocal Microscopy**

- Only one point in the sample is illuminated at a time, so 2D or 3D imaging requires scanning over a regular raster (a rectangular pattern of parallel scanning lines) in the specimen.
- Image comes from a thin section of your sample (small depth of field).
- By scanning many thin sections, you can build up a very clean three-dimensional image of the sample.

**Confocal Microscopy**

- Acanthamoeba cysts appear as small, round transparencies, and Fusarium hyphae appear as linear transparencies
Treatment: Compounded Chlorhexidine and Polyhexamethylene biguanide (PHMB). Organisms are difficult to eradicate, requiring medications anywhere from 3 months to a year. Most patients require corneal transplantation.

<table>
<thead>
<tr>
<th>22</th>
<th>HSV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Typical dendrite</td>
<td></td>
</tr>
<tr>
<td>+/- Decreased Corneal sensitivity</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>23</th>
<th>HSV Spectrum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epithelial keratitis: Live virus invades and replicates in corneal epithelium</td>
<td></td>
</tr>
<tr>
<td>Stromal keratitis: Not an infection with live virus, but rather an inflammation caused by the immune response to dead viral particles. May have an endotheilitis with increased pressure</td>
<td></td>
</tr>
<tr>
<td>Neurotrophic keratitis: a few bouts of active keratitis kills off more nerves that supply corneal sensitivity</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>24</th>
<th>HSV Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epithelial: Topical Viroptic (Trifluridine) every 2 hours (9x/day), vs. Topical Zirgan (Gancyclovir) 5 times a day</td>
<td></td>
</tr>
<tr>
<td>+/- Oral Acyclovir, Valacyclovir, and Famciclovir may shorten course or provide prophylaxis of future episodes</td>
<td></td>
</tr>
<tr>
<td>Topical antibiotic vs. antibiotic ointment at bedtime to prevent bacterial superinfection</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>25</th>
<th>HSV Treatment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stromal: Topical Steroids</td>
<td></td>
</tr>
<tr>
<td>Oral Antivirals usually given as prophylaxis to prevent spontaneous recurrence of epithelial disease while patient on steroids</td>
<td></td>
</tr>
<tr>
<td>Do not need topical antivirals in Stromal disease (no live virus)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>26</th>
<th>HSV Treatment - Special Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td>HSV Necrotizing Keratitis: both stromal inflammation and live virus present - epithelial defect and stromal thinning. Tightrope management of anti-virals and steroids.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>27</th>
<th>Non-infectious ulcers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staph Marginal Keratitis: associated blepharitis</td>
<td></td>
</tr>
<tr>
<td>Auto-Immune related Keratitis: Rheumatoid arthritis, Sjogren’s Syndrome</td>
<td></td>
</tr>
<tr>
<td>Neurotrophic Ulcers: Diabetes, HSV, chemical burns, overuse of topical anesthetics (anything that can cause decreased corneal sensitivity)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>28</th>
<th>Staph Marginal Keratitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Multiple small peripheral sterile infiltrates, separated from limbus by clear space</td>
<td></td>
</tr>
<tr>
<td>May see meibomian gland disease, scurf, etc.</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>29</th>
<th>Staph Marginal Keratitis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Very responsive to steroids</td>
<td></td>
</tr>
</tbody>
</table>
Tobradex vs. Maxitrol QID OU
Contact Lens Vacation
Treat lid margin disease: Erythromycin ointment or Azasite to lashes QHS OU, gentle lid hygiene 2-3x/week

30 Auto-Immune Keratitis
(PUK - Peripheral Ulcerative Keratitis)

Imperative to get Rheumatologist on board for Oral Prednisone vs. Steroid-Sparing Systemic Medication. Need to treat underlying systemic disease ASAP. (Rheumatoid Arthritis most common)

31 Autoimmune Keratitis
Can progress rapidly to stromal melting and perforation
Systemic modulation is required, topical steroids are contraindicated. May support surface with gentle topical antibiotics and aggressive lubrication
+/- Oral Doxycycline to slow down melting

32 Autoimmune disease in Clinical Practice
- Never place a patient (post op or otherwise) with a history of Rheumatoid Arthritis on topical NSAIDS.
- Those patients more than anybody else can develop a corneal melt very quickly

33 Neurotrophic Ulcers

Boat-shaped epithelial defect with rolled, gray edges, usually long-standing, minimal inflammation but possible haze
Poor corneal sensation

34 Neurotrophic ulcers
- Decreased production of tears
- Damaged Corneal nerves cannot produce the necessary growth factors necessary for healing
- Lifelong battle, can recur over and over again
- HZO, hx HSV, Diabetes, Multiple surgeries can damage CN V, Anesthetic abuse, Severe Sjogren's syndrome

35 Neurotrophic Ulcers
Lubrication with artificial tears, ointments, +/- punctal plugs. (Prevent initial breakdown which gets cycle going)
Bandage contact lenses
Topical antibiotics to prevent superinfection
Oral Vitamin C
+/- Oral Doxycycline if stromal thinning evident

36 Adjunctive Approaches
Providing surface support:
Amniotic Membrane graft/Prokera lens
Punctal occlusion
Autologous serum tears
Gentle steroids if HZO
Bandage contact lenses
Tarsorrhaphy

Thank You
Questions
THE NEW AGE
OF
REFRACTIVE CATARACT PATIENTS
Dan B. Tran, MD
Anterior Segment – Cataract – Cornea – Refractive Surgery Specialist
Medical Director Coastal Vision Medical Group
Lisa D. Garbutt, MD
Anterior Segment – Cataract – Cornea – Refractive Surgery Specialist
March 2016

Acknowledgement
• My special thanks to Dr. Tim You, Orange County Retina Group, for the slides on retinal pathology

Getting to Know Today’s Presbyopic Patient
• Large, rapidly growing demographic (i.e., baby boomers)
• Educated, financially secure
• Increased life expectancy
• Longer working careers
• Are unwilling to compromise active lifestyle
• Embrace demand-driven healthcare
• Demand high quality vision (e.g., reading, distance, night)
• Have new requirements for intermediate vision (e.g., computers)

LENSES REPLACEMENT SURGERY:
PRESBYOPIA PATIENTS CANDIDACY?

How Accurate is IOL Refractive Outcomes?
• Axial length of the eye
• Average Corneal Power and Astigmatism
  – Corneal Astigmatism (for outcomes)
• Effective IOL position prediction
  –
• For advanced formulas
  – White-to-white
  – Lens thickness
  – Anterior chamber depth
9 Importance of Preop Biometry and Keratometry
   • 43-67% of large refractive surprise due to inaccurate preoperative measurement (axial length or keratometry)\textsuperscript{1,2}
   • 1mm AL error = approx. 3 D error
     -- In a normal axial length eye at 23mm
   • 1D K error = 1 D IOL error
   • Remove hard contact lens > 2 weeks before measuring corneal power

10 Myopic LASIK

11 Factors Affecting IOL Predictability\textsuperscript{4}
   • If IOL is 0.5 mm posterior to the assumed plane, a 21 D lens will produce only 20 D of correction
   •
   •
   • If IOL is 0.5 mm anterior to the assumed plane, a 21 D lens will produce 22 D of correction

12 IOL Choices 2016
   • Monofocal IOL
     -- Spherical IOL
     -- Aspheric Spherical Aberration Reduction IOL
     -- Toric IOL
   • Multifocal IOL
     -- Alcon ReStor\textsuperscript{TM} Apodized Diffractive Optic
     -- AMO Tecnis\textsuperscript{TM} Multifocal Diffractive Optic
   • Accomodative IOL
     -- Bausch + Lomb Crystalens\textsuperscript{TM} and Trulign\textsuperscript{TM}

13 Toric IOL: AcrySof and AMO Tecnis
   • Single-Piece IOL effectively addresses astigmatism when correctly positioned in the eye
   • superior stability and centration
   • low secondary complication rate
   • AcrySof Spherical Power Range - +6 to +30 D

14 Simulated vision to illustrate the effect of astigmatism on monovision

15 Toric IOL Case
   • Patient E.S.
     -- 75 yo M with 3+ NSC OS
   • Pre-Op Refraction: -5.75 +2.50 x 176\textdegree
   • Pre-Op Biometry
     -- IOL Master 1.34@176\textdegree
     -- Pentacam 1.64@173\textdegree
     -- Galilei 0.95@169\textdegree
- Atlas 1.31@176°

16  □  Toric IOL Case
  • IOL Placed
    - Alcon SN6AT4 in the bag at 175 to correct 1.5D cyl

17  □  Toric IOL Case
  • POM 1
    - UCVA: 20/60
    - Post-Op Refraction: -2.25 +1.00 x 165
    - BCVA 20/20
    - Undercorrection by 1D

18  □  Factors to Toric IOL Implantation
  • 1. Measuring the magnitude and axis of astigmatism in the cornea
  • 2. Finding the correct axis on the patient's cornea intraoperatively
  • 3. Lining up the IOL accurately in that axis

19  □  Stability and Precision
(1° = 3.3% loss of cylinder power)

20  □  Preoperative Keratometry: Why do Measurements Differ?
  • Manual and autokeratometry
    - 4 points, 3-3.2 mm zone
  • IOL Master
    - 6 points, 2.5 mm zone
  • Lenstar
    - 32 points, 2 zones (1.65mm/2.3mm)
  • Topography
    - >500 points, values averaged over central 3-4mm
  • Scheimpflug Imaging combined with placido disc topography
    - Pentacam, Galilei

21  □  Which is method best?
  • Topography
    - Pros: accurate anterior surface contour
    - Cons
      • No posterior surface information
      • Data dropout in distorted/irregular corneas

22  □  Tomography
  • Pros
    • Posterior surface information
    • Accurately measures distortions and aberrations
- Cons
  - Topography map derived from corneal section slices

23 Which method is best?
- Color LED topographers
  - Cassini, i-Optics
- Pros
  - Does not use edge detection
  - Regular or irregular corneas
  - Poor tear film
  - Instantaneous capture
  - Axis accuracy
- Cons
  - No posterior surface information
  - Requires further clinical validation studies

24 Which method is best?
Am J Ophthalmol, 2009

25 Which method is best?

26 Which method is best?
- Measurement errors can be dramatically reduced by averaging measurements from manual keratometry with any automated technology

27 Effect of posterior corneal astigmatism
- With age, anterior corneal astigmatism trends towards ATR astigmatism
- Posterior corneal astigmatism remains relatively constant
- Effective minus lens \(\rightarrow\) additional ATR
- Corneal astigmatism calculated from anterior corneal surface measurements only
  - WTR group: mean over-correction of 0.5 D
  - ATR group: mean under-correction of 0.3 D

28 How accurate are we?
1. FDA Clinical Trial for Alcon AcrySof IQ Toric IOL available at: http://www.alconsurgical.com/pdfs/TOR240.pdf

29 Room for Improvement
• Image overlay intraoperatively
  – Verion System at La Veta Surgery Center in Orange
  – First in Southern California
• Intraoperative aberrometry
  – ORA (WaveTec Vision)
  – Holos (Clarity Medical Systems)
• Even with these devices, we still need a pre-operative IOL plan

30 ▶️ MANAGING ASTIGMATISM
  • Don’t over look manual keratometry
  • Use multiple devices
  • Remember posterior corneal astigmatism
  • Push for new technologies

31 ▶️ ORA System® w/VerifEye™: Designed to Optimize Every Cataract Procedure
ORA’s all new Optiwave™ technology takes intraoperative wavefront aberrometry to a
new level of precision providing surgeons a higher level of confidence

32 ▶️ Keratometric vs. Refractive Cylinder
  • Recent Work Using Devices That Measure Both the Anterior and Posterior Corneal Curvature Shows a Cylinder Contribution From the Posterior Corneal Surface (first
  recognized by Javal in 1890)
    • ARVO 2011 Presentation by Li Wang, Shazia Ali, Mariko Shirayama, Mitchell
      Weikert and Douglas Koch

33 ▶️ How Well Would Baylor Nomogram Work on This Data Set?!

34 ▶️ Sample Case 1 – WTR Astigmatism

35 ▶️ Sample Case 2 – ATR Astigmatism

36 ▶️ The ORA Toric IOL Rotation

37 ▶️ Improved astigmatic outcomes with VerifEye®

38 ▶️ Improved astigmatic outcomes with VerifEye®

39 ▶️ Presbyopia Correcting IOL
  Dan B. Tran, M.D.
  COASTAL VISION MEDICAL GROUP
  Long Beach – Newport Beach - Orange

40 ▶️
TRULIGN™ Toric IOL

Now we have a new member of the Crystalens family that builds on the AO model but adds astigmatic correction.

AcrySof® IQ ReSTOR® IOL

Allocating Light Energy According to Activity

Mean Visual Disturbances
3 Month Data

TECNIS® Multifocal Acrylic IOL
Model ZMA00 Specifications

- Full diffractive posterior surface
  - Pupil-independent
  - Designed to reduce chromatic aberration at near
- Wavefront-designed aspheric anterior surface
  - Designed to correct spherical aberration to zero
- Optical power add +4.0D
  - To optimize acuity at preferred reading distance of 33 cm

Full Diffractive Surface = Pupil Independence

Depth of Focus: Mean Visual Acuity for Multifocal Subjects by Pupil Size

TECNIS® Multifocal Family of IOLs

TECNIS® Multifocal Family of IOLs
Clinical Outcomes

TECNIS® Multifocal IOLs +3.25 D and +2.75 D

TECNIS® Multifocal IOLs +3.25 D and +2.75 D
Clinical Outcomes

TECNIS® Multifocal IOLs +3.25 D and +2.75 D
Clinical Outcomes

TECNIS® Multifocal IOL +4.0 D
(ZMB00)

TECNIS® Multifocal IOL +4.0 D

TECNIS® Multifocal IOL +3.25 D
TECNIS® Multifocal IOL +2.75 D

TECNIS® Multifocal Family of IOLs
Binocular Defocus Curve at 6 Months

LASIK Retreatment Rate
The Need for Improvement

Alcon LenSx Laser
- Femtosecond Laser
- Integrated OCT
- Universal Curved Patient Interface
- First femtosecond laser cleared for an indication in cataract surgery
- FDA approvals
  - Capsulotomy
  - Laser Phacofragmentation
  - Cataract Incisions
- CE mark
  - Capsulotomy
  - Laser Phacofragmentation
  - Cataract Incisions

Laser Refractive Cataract Surgery – LenSx® Laser System Docking and FS Laser Treatment

Femtosecond Laser Cataract Surgery
Does Capsulotomy Size Impact ELP?
Consistent capsulorhexis diameter is critical to Effective Lens Position

- A 4 mm capsulorhexis results in longer post-operative ELPo than does a 6 mm capsulorhexis for the type of IOL used
- To ensure that an IOL’s position in the bag matches the anticipated formula used to calculate its power, the capsulorhexis should be round, centered and smaller than the IOL optic

Comparative IOL Refractive Outcomes with Femtosecond Laser Assisted Refractive Cataract Surgery
Dan B. Tran, M.D.
Accuracy to Target distribution

Accuracy to Target distribution – Accommodating

6 Months Postop Aberration Comparison

Inflammation: A Common Concern
- Approximately 5 million ophthalmic surgeries are performed annually in US
  - Postoperative inflammation is a common occurrence after these procedures
- Despite surgical advances, most patients will present with some degree of postoperative inflammation
  - Some patients are more susceptible
  - Every patient displays inflammation differently
  - Cannot predict severity
- Under-treatment, delayed treatment, or lack of treatment can lead to:
  - Decreased visual acuity
  - Pain & discomfort
  - Photophobia
  - Corneal edema
  - Cystoid Macular Edema
  - Glaucoma

The Inflammatory Cascade

Refractive Challenging Cases
Dan B. Tran, M.D.

Long Beach – Newport Beach – Orange

Assessing Topography

Case Study 1...
- 63 y/o male contractor needs better near vision, glasses are difficult to work with, contact lens is not an option with dust etc...
- MR OD +2.00 20/20 OS +2.00 20/20
- Right eye dominant

...Case Study 1
- Refractive Lens Exchange
  - ReStor 3 Add OS
  - Not enough near vision J2
  - ReStor 4 Add OD
  - Near vision 20/20 OU
TOTAL ABERRATIONS

- Uncorrected distant visual acuity 20/15-2 OD; 20/15-1 OS

Right Eye 5.31mm pupil
- MR Plano-0.25x089  20/15-2
- WF HOA Coma 0.10 SA 0.03  Other 0.19
- Cornea HOA Coma 0.130

Left Eye 5.65mm pupil
- MR Plano-0.25x122  20/15
- WF HOA Coma 0.28  SA 0.14  Other 0.40
- Cornea HOA Coma 0.181

Case Study 2 - Post Myopic LASIK
- 55 y/o male with polyopia from cataract
- S/P LASIK OU 1997
- Keratoconus suspect 2005
- OCT Corneal Thickness
  - 176 Microns Flap; 323 Microns Stromal Bed OD
  - 148 Microns Flap; 320 Microns Stromal Bed OS
- OD: -2.25-1.50x067; K's 41.75/42.75x147 20/30
- OS: -1.75-1.75x108; K's 42.75/45.00x020 20/40

Corneal Analysis iTrace Right Eye

Corneal Analysis iTrace Left Eye

Post Op with Toric IOL
- OD UCVA 20/20+  BSCVA 20/15-2
  - MR +0.25-0.25 x 070  SN6AT3  18.5D
- OS UCVA 20/25  BSCVA 20/20
  - MR +0.25-0.75 x 096  SN6AT5  19.5D
- OU UCNVA 20/25

S/P ALK—Topo-Guided PRK followed by LenSx Cataract Surgery ORA"™Guided IOL Selection
- EO 57 y/o Male Dentist
- S/P Myopic ALK in Mexico over 20 years ago
- UCVA  CF at 2ft
- SCL -2OD OU with 20/200 OD
- Over-refraction -16.0D
  - -3.50-3.00 x 060 20/50 “Blurry” with 2+ NS
  - -3.25-2.50 x 127 20/50

OrbScan Pre-Op

OrbScan Pre & Post Topo Guided PRK

Recommendations on Approaches for Clinical Practice Adaptation
- Refractive Surgery Practice
  - More similarity to LASIK practice
  - Patients education and informed consent process are critical
• Patient Selection
  - No ocular co-morbidity
  - Candidacy similar to candidate for multifocal IOL or toric IOL
    • Aggressively treating any peri-operative ocular co-morbidity
      - Dry eyes, blepharitis, residual refractive errors if present
      - Monitor for any evidence of CME closely
  • Do NOT make excuses for suboptimal refractive outcomes... FIX IT!
    - LASIK enhancement as needed

88. How to discuss these technologies
1) Assess the patient’s medication condition
   a) Ensure no ocular pathology except cataract
   b) 
2) Determine patients visual needs
   a) IOL choices to match up with lifestyle needs
      a) Monofocal vs. toric vs. multifocal IOL
      b) Monovision candidate
      c)
   b) Discuss the benefits and risks of femtosecond laser refractive surgery
   c) 
3) Discuss surgical approach
   a) Astigmatism Management
   b) Discuss the benefits and risks of femtosecond laser refractive surgery
   c) 
4) Discuss intra-operative aberrometry (ORA™)

5) Discuss the need for other methods to hit refractive target
   a) LASIK Treatment at 3 months if needed

89. Preoperative Evaluation
• Detailed History with Lifestyle Assessment
• Complete Eye Exams Including Evaluation
  - Dry Eyes and External Diseases Assessment
  - Pupil Size Evaluation
  - Corneal Topography and Pachymetry
  - OCT of Macular
  - Fundus Exam of Macular and Peripheral Retina
    • Retina Clearance for High Myopes
  - Visual Field and OCT Nerve Fiber Layer Analysis for Glaucoma Patients
• Informed & Consent Process Discussing Expectations, Risks and Benefits, Potential for Enhancement Surgery
• Prophylactic Use of Topical Antbiotics, NSAIDS
  - Dry Eye and Blepharitis Treatment as Needed

90. Postoperative Management
• Visual Acuity and Manifest Refraction
• Dry Eye and Blepharitis Assessment
• Corneal Status Assessment
• IOP MONITORING WHILE ON STEROIDS DROPS
• CYSTOID MACULAR EDEMA MONITORING WITH OCT
• VISUAL SYMPTOMS DISCUSSION AND REASSURING
• DISCUSS ANY SPECTACLES NEEDS
• DISCUSS TIMING AND NEEDS FOR SECOND EYE SURGERY
• TRANSFER OF CARE PROCESS
• POSTOPERATIVE MEDICATIONS INCLUDING ANTIBIOTIC, STEROIDS, NSAID, IOP LOWERING MEDS MOSTLY TOPICAL

91

92

93 Retinal Detachment

94 Retinal Detachment
• Annual incidence 1:10,000-15,000
• OC 300-400
• Prevalence 45 in 15,000
• Risk Factors: Myopia >6dptr, Aphakia, Trauma, Vitreous Loss, Family Hx, Syndromes
• Risk for Fellow Eye is up to 15%
• Symptomatic PVD 6-12% Risk
• Vitreous Hemorrhage 70% Risk

95 Retinal Detachment

96 Retinal Detachment

97 Treated Retinal Tear

98 Lacquer Cracks

99 Lacquer Cracks

100

101 Macular Hole
Macular Pucker

Vitreomacular Traction

Clinical Pearls

- Symptomatic PVD w/o breaks – see patient within one month or refer
- Symptomatic PVD w/ break – refer within 48 hours
- Symptomatic PVD w/ heme – see patient within 1-2 weeks or refer – high risk for RD

Clinical Pearls

- Loss of central vision (inability to refract better than baseline) - refer
- Metamorphopsia – get OCT and look for CNVM or atrophy
- Patient with Multiple Questions – refer or decline elective surgery

Cystoid Macular Edema

Hypopyon

Loose Sutures

Dendrite

Irregular Astigmatism

Bullous Keratopathy

Corneal Graft Rejection

Today's Cataract Patient is Complex
CURRENT TRENDS IN RETINAL IMAGING
Eugene Chang, MD, MBA
March 15, 2016

Optical Coherence Tomography
• First introduced in 1996 as a research tool
• Gained wide acceptance in 2002
  • 3rd generation Stratus
• Further advancement with spectral domain OCT - 2006
  • Resolution = 3-7 microns
  • 20,000 – 52,000 A-scans/second

Optical Biopsy
OCT Layers of the Retina
Outer Retinal Bands
Interpretation
• Quantitative
  • Color coded and numerical displays
  • Reflect calculated thickening or thinning
• Qualitative
  • B-scan slices
  • General appearance

Qualitative Evaluation
• Foveal depression or thickening
• Abnormal areas of hypo-reflectivity
• Abnormal areas of hyper-reflectivity
• Look at all scans - pathology sometimes only in a single scan

Different Systems (SD-OCT)
Different Systems
3-D reconstruction
EDI
Examples
Non-neovascular AMD
Geographic Atrophy
Neovascular AMD
17 **Choroidal Neovascular Membrane**
   • Look for "highly reflective sub-retinal/sub-RPE" material
18 **Pigment Epithelial Detachment (PED)**
   • Represents neovascular activity
   • Reflectivity
     • Hyper = drusenoid
     • Mixed = fibrovascular
     • Hypo = serous
   • Resistant to anti-vegf
   • Usually doesn’t reflect vision potential
19 **RPE Tear/Rip**
   • Spontaneous or following treatment
   • May present with sudden drop in VA
   • Often occurs at apex of PED
   • Treatment
     • Continue treating neovascularization
20 **Outer Retinal Tubulation (ORT)**
   • Represents rearrangement of photoreceptors in response to injury
   • Seen in several retinal conditions
     • AMD most common
   • Hyper-reflective border = ellipsoid layer
21 **Angioid Streak**
22 **Vitreomacular Adhesion**
23 **Vitreomacular Traction**
24 **Macular Hole**
25 **Lamellar Macular Hole**
26 **Epiretinal Membrane**
27 **Patient HC**
29 **Patient HC**
30 **Patient HC**
31 **Patient HC**
32 **Patient HC**
33 **Fundus Autofluorescence**
34 **Fundus Autofluorescence (FAF)**
   • Derived from lipofuscin accumulation within the RPE
• Incomplete degradation/processing of photoreceptor outer segments
• Affected by absorbing or autofluorescent material anterior to RPE
  • Excitation = 488 nm  Filter = 500 nm
  
35 FAF Utility
• Provides information beyond what’s obtained from fundus photography, FA, and OCT
• Simple, efficient, and noninvasive
• Understanding pathophysiologic mechanisms
• Diagnosis
• Phenotype-genotype correlation
• Identifying predictive markers for disease progression
• Monitoring new therapies

36 FAF
• Normal
  • Increases with age
  • Maximum intensity 7 to 15 degrees from fovea
  • Fovea is appx. 1/3 the intensity of max
    • Lutein and zeaxanthin absorption
  • Optic disc and blood vessels = dark

37 Normal FAF
38 Drusen
39 Geographic Atrophy
40 Optic Disc Drusen
41 Plaquenil Toxicity
42 Atypical Plaquenil Toxicity
43 Future Direction of Retinal Imaging
44 Ultrawidefield Imaging
  • First fundus camera = 20°
  • Standard = 55°
  • Heidelberg = 102°
  • Optos = 200°
45 Swept Source Technology
• Longer Wavelength Imaging
  • Use wavelength of 1050nm
- Reduced attenuation from scattering
- Allows imaging through dense lens opacities
- Photodetectors vs. CCD
- Scan speed 2x
- Images vitreous, retina, and choroid – from nerve to macula

46 Swept Source Technology
47 En face Imaging
48 OCT Angiography
1. **DIAGNOSING GLAUCOMA: THAT IS THE QUESTION**

Betsy Bao-Thu Nguyen, M.D.

2. **CASE PRESENTATION #1**
   - CH is a 44 yo active Asian male lawyer referred by his optometrist, with a new optic disc hemorrhage OD with IOP of 17 mm Hg.
   - IS THIS GLAUCOMA?

3. **CASE PRESENTATION**
   - Va : 20/20 OU, myope (-5.50 OU)
   - IOP (applanation): 17 OU @ 1pm (Tmax = 18)
   - Pachy: 587 microns OD and 584 OS
   - Gonio: Grade IV, open to CBB
   - Slit Lamp: unremarkable, except mild SPK and blepharitis OU (no Krukenberg spindle, no pseudoexfoliation).
   - Denies Family History Glaucoma
   - NO steroids/no trauma.

4. **Fundus Photos**
   - OD
   - OS

5. **OPTIC DISC HEMORRHAGE DIFFERENTIAL DIAGNOSIS**
   - Glaucoma—usually indicates active disease and possible sign of progression ("Drance hemorrhage"—splitter heme)
   - Diabetes
   - Hypertension
   - Acute vitreous detachment
   - Trauma
   - 
   - 
   - 
   - 
   - 
   - 
   - 
   - Diurnal variations
   - Dependent on central corneal thickness
   - Other IOP measurement inaccuracies (LASIK, PKP, tight Asian lids)
   - NCT vs. tonopen vs. applanation

6. **OPTIC DISC HEMORRHAGE**
   - "Drance Hemorrhage"
  – Typical: flame or splinter shaped, with feathered ends, radially oriented, and perpendicular to disc margin
  – Often occur adjacent to an area of previous damage, at the border of disc in NFL, or at notch, or at area of PPA
  – 2/3 of them occur inferotemporally
  – (NOT related to glaucoma, if swollen disc as in ischemic optic neuropathy, or seen with Diabetic retinopathy, or BRVO /CRVO)

7 OPTIC DISC HEMORRHAGE
  "Drance hemorrhage"
  • Seen in all types of glaucoma: OHT, NTG, advanced POAG, early POAG, CNAG, PXG
  • Is it more common in NTG & adv POAG??
  • Is it more common in glaucoma pt with thin CCT?
  • Resolves spontaneously within 1-6 months (avg= 2-3 months)
  • Can be easily missed on exam, unless you are looking for it
    (OHTS study: 4x as many Disc Heme found on FUNDUS photos as on standard exam)

8 OPTIC DISC HEMORRHAGE
  "Drance hemorrhage"
  • Take Fundus photos to document and compare
  • Think definite glaucoma in previous POAG suspect?
  • Think progression in NTG and adv POAG
  • Think diurnal fluctuation?
  • Think resetting the target pressure range?
  • Think non-compliance?
  • Change and Modify current treatment: More glaucoma meds vs. ?SLT vs. glaucoma trabeculectomy
  •
  •
  •
  •

• Diurnal variations
• Dependent on central corneal thickness
• Other IOP measurement inaccuracies (LASIK, PKP, tight Asian lids)
• NCT vs. tonopen vs. applanation
9 **OPTIC DISC HEMORRHAGE**

"Drance hemorrhage"

- Think need for closer Follow-up
- Monitor for recurrent optic disc hemorrhage
- Recurrent disc heme
  - Observed in 67% patients with NTG
  - Observed in 29% patients with POAG
  - Observed in 67% patients with glaucoma suspects
- W/U for Anemia
- W/U for Sleep apnea
- W/U for Nocturnal hypotension

10 **Fundus Photos**

1. OD
2. OS

11 **CIRRUS OCT-RNFL**

12 **HVF 24-2 SITA STANDARD**

(1st one ever taken by patient)

1. OD
2. OS

13 **CASE PRESENTATION**

TO START OR NOT TO START?

14 **THE RISK FACTORS ARE IMPORTANT IN THE DIAGNOSIS OF POAG**

- Increasing AGE
- Ethnic group
- Family History
- Thin Central Corneal Thickness
- IOP
- Low Ocular Perfusion Pressure (Sleep apnea, nocturnal hypotension)
- DM II
- Myopia
- Steroids, Trauma

15 **Nuances about Intraocular pressure measurements**

- 15-40% population with POAG may have consistent IOP below 21 mm Hg
Normal tension glaucoma (esp. Japanese, Koreans)

- 2/3 glaucoma patients have peak IOP outside of office hours
  - Diurnal variations
  - Dependent on central corneal thickness

CASE PRESENTATION

What are your next treatment steps?

1. YES, I DID START! Start Prostaglandin—Lumigan .01% qhs OU, educate proper use, and potential side effects, and incorporate into daily evening activity.
2. Have patient tell all family members to get checked for glaucoma and also to request parents on family history
3. Followup in a month: Recheck IOP at different time of day and ONH, consider repeat HVF.

CASE PRESENTATION

What happened to CH?

1. After 3 months Lumigan .01% qhs OU, IOP was about 15 OU. Disc heme resolved.
2. He found out that mom and sister in Taiwan do have glaucoma.
3. No DM II, HTN.
4. Repeat HVF 24-2 SITA STD scheduled for future visit.

CASE PRESENTATION #2

NS is a 56 yo Caucasian male radiologist, on routine exam with a new optic disc hemorrhage OD with IOP of 20 mm Hg.

IS THIS GLAUCOMA?

CASE PRESENTATION

- Va: 20/25 OD, 20/50 OS myope (-10.5 OU)
- IOP (applanation): 20 OU @ 8am (Tmax= 20 )
- Pachy: 515 microns OD and 510 OS
- Gonio: Grade IV, open to CBB
- Slit Lamp: unremarkable, except trace NS cataracts OU (no Krukenberg spindle).
- Mom has Glaucoma—uncertain if had surgery.
- NO steroids/no trauma.

Fundus Photos

1. OD
2. OS

CIRRUS OCT-RNFL

HVF 24-2 SITA STANDARD
23 CASE PRESENTATION #2
   • NS is a 56 yo WM, risk factors: high myopia, family history, disc hemorrhage OD.
   • Tilted myopic disc—difficult to measure C/D=
     ?? OD, .2 OS?

24 OPTIC DISC HEMORRHAGE
   DIFFERENTIAL DIAGNOSIS
   • Glaucoma—usually indicates active disease and possible sign of progression ("Drance hemorrhage"—splinter heme)
   • Diabetes
   • Hypertension
   • Acute vitreous detachment
   • Trauma
   • Diurnal variations
   • Dependent on central corneal thickness
   • Other IOP measurement inaccuracies (LASIK, PKP, tight Asian lids)
   • NCT vs. tonopen vs. applanation

25 CASE PRESENTATION
   TO START OR NOT TO START?

26 CASE PRESENTATION
   • What are your next treatment steps?
     —1. NO, I DID not START! (But I think there’s nothing wrong with “Starting now” either)
     —2. I thought he had a PVD OD, associated with disc heme OD.
     —3. Followup in 2 month: Recheck IOP at different time of day and recheck for recurrent optic disc heme.
     —4. HVF 24-2 SITA SWAP to detect earlier defects

27 CASE PRESENTATION
   • What happened to NS?
     —I have now followed NS for 14 years. He has not had a recurrent optic disc heme.
     —His optic nerve cupping has remained stable, with annual fundus photos.
     —His IOP is in range of 17-20, repeat HVF 24-2 SITA SWAP are normal.
Still has risk of developing glaucoma though, as he ages. (Risk factors: mom, high myopia, thin CCT)

**HVF SITA SWAP**
- Swedish Interactive Threshold Algorithm Short-Wavelength Automated Perimetry
- Blue-on-yellow Perimetry (blue lights on yellow background): isolating blue cones & their associated bistratified retinal ganglion cells.
- Takes about 5-7 minutes /eye
- Can detect VF defect 3-5 years before standard automated (white-on-white) perimetry
- NOT useful in elderly, cataracts, and poor concentration.
- In my practice: I do these on patients who have normal HVF 24-2 SITA Standard.

**CASE PRESENTATION #3**
- AF is a 57 yo Caucasian female professor referred by her optometrist, with abnormal repeatable visual fields with IOP of 18 mm Hg. IS THIS GLAUCOMA?

**CASE PRESENTATION**
- VA: 20/25 OU, hyperope (+1.50 OU)
- IOP (applanation): 18 OD, 17 OS @ 4pm
- Pachy: 520 microns OD and 512 OS
- Gonio: Grade IV, open to CBB
- Slit Lamp: unremarkable, except trace NS OU
- No family history of glaucoma.
- NO steroids/no trauma.
- Decreased vision with night driving.

**Fundus Photos**
1. OD
2. OS

**OCT-RNFL**
1. 12.17.13
2. 1.19.16

**HVF 24-2 SITA STANDARD**
1. OD
2. OS

**CASE PRESENTATION**
TO START OR NOT TO START?

**CASE PRESENTATION**
- What are your next treatment steps?
  - 1. NO, I DID not START!
  - 2. HER optic nerves did not look like glaucoma.
3. There are buried ONH drusen OU, which are likely causes of Nasal visual defects OU.
4. OCT may be useful for detecting progression?
5. HVF 24-2 SITA STD- repeat annually to follow progression of defects
6. Not likely to develop glaucoma, but VF defects can progress.

**OPTIC NERVE DRUSEN**

- Often incidental findings during routine eye exam—yellow deposits on and around optic nerve.
- What are they: deposits of mucopolysaccharides and proteinaceous material that accumulate anterior to the lamina cribosa within the optic nerve head.
- Typically seen in crowded optic nerve heads.
- Found in approx 1% general population.
- Often bilateral (75-85%).
- More common among Caucasians (AD pattern of inheritance).

**OPTIC NERVE DRUSEN**

- 2 main types
  - Visible drusen
  - Buried Drusen (Bumpy/lumpy Optic nerve)
- Optic disc can appear to have no “cup”, and can look like papilledema.
- As patients get older into adulthood, drusen can become more visible, and protrude from edge of disc, esp. inferonasal
- Asymptomatic, more commonly.
- Earliest symptoms: peripheral VF defects or transient visual obscurations (“flickering” or “graying out”) –8.6% report these obscurations.
- Most common VF defects: enlarged blind spot, inferior nasal VF defects
- May need neuroimaging, if cannot distinguish between real papilledema.

**OPTIC NERVE DRUSEN**

- Diagnosis
  - B scan echo: highly reflective
  - Fluorescein angiography: auto-fluorescent, in late phase-Hyperfluorescent
  - OCT: can show RNFL thinning
  - CT scan: can show calcified drusen
- Complications: (? ON Drusen enlarge → compress /compromise nerve fibers and vascular supply)
  - Risk of Anterior Ischemic Optic Neuropathy
  - Risk of vascular occlusion (i.e. CRAO, CRVO)
  - Risk of juxtapapillary choroidal neovascularization, with hemorrhage
- Treatment: serial VF, serial FF, serial OCT, IOP checks, consider IOP lowering?? But there is no definitive treatment.
MYOPIC TREATMENT
PRESBYOPIC PATIENTS
Dan B. Tran, MD
Anterior Segment – Cataract – Cornea – Refractive Surgery Specialist
Medical Director Coastal Vision Medical Group
Lisa D. Garbutt, MD
Anterior Segment – Cataract – Cornea – Refractive Surgery Specialist
March 2016

Acknowledgement
- My special thanks to Dr. Tim You, Orange County Retina Group, for the slides on retinal pathology

MYOPIA & ASTIGMATISM & PRESBYOPIA
- Correcting Myopia
  - Corneal base surgery
    - LASIK
  - Lens base surgery
    - Lens replacement
- Correcting Presbyopia
  - Corneal base surgery
    - Corneal inlays
    - Presbyopic LASIK & Monovision LASIK
  - Lens base surgery
    - Multifocal IOL
    - Accommodative IOL
    - Monofocal IOL w/ monovision
  - Scleral base surgery
    - VisAbility™ scleral implants (FDA clinical trial)
- Correcting Astigmatism
  - All modalities above except corneal inlays and scleral implants

Current (FDA) Presbyopia Treatment Options
1. Non-Surgical Options
   - Corrective eyewear
     - Glasses (reading glasses)
     - Specialty contact lenses
2. Surgical Options
   - Monovision LASIK / PRK
   - Corneal Inlay KAMRA
   - -
   - -
   - -
   - -
Getting to Know Today's Presbyopic Patient

- Large, rapidly growing demographic (i.e., baby boomers)
- Educated, financially secure
- Increased life expectancy
- Longer working careers
- Are unwilling to compromise active lifestyle
- Embrace demand-driven healthcare
- Demand high quality vision (e.g., reading, distance, night)
- Have new requirements for intermediate vision (e.g., computers)

LENS REPLACEMENT SURGERY: Presbyopic Patients Candidacy?

How Accurate is IOL Refractive Outcomes?

- Axial length of the eye
- Average Corneal Power and Astigmatism
  - Corneal Astigmatism (for outcomes)
- Effective IOL position prediction
- For advanced formulas
  - White-to-white
  - Lens thickness
  - Anterior chamber depth

Importance of Preop Biometry and Keratometry

- 43-67% of large refractive surprise due to inaccurate preoperative measurement (axial length or keratometry)\textsuperscript{1,2}
- 1mm AL error = approx. 3 D error
  - In a normal axial length eye at 23mm
- 1D K error = 1 D IOL error
- Remove hard contact lens > 2 weeks before measuring corneal power

Factors Affecting IOL Predictability\textsuperscript{1}
If IOL is 0.5 mm posterior to the assumed plane, a 21 D lens will produce only 20 D of correction.

If IOL is 0.5 mm anterior to the assumed plane, a 21 D lens will produce 22 D of correction.

---

**IOL Choices 2016**

- Monofocal IOL
  - Spherical IOL
  - Aspheric Spherical Aberration Reduction IOL
  - Toric IOL
- Multifocal IOL
  - Alcon ReStor™ Apodized Diffractive Optic
  - AMO Tecnis™ Multifocal Diffractive Optic
- Accomodative IOL
  - Bausch + Lomb Crystalens™ and Trulign™

**Toric IOL: AcrySof and AMO Tecnis**

- Single-Piece IOL effectively addresses astigmatism when correctly positioned in the eye
- superior stability and centration
- low secondary complication rate
- AcrySof Spherical Power Range - +6 to +30 D

**Toric IOL Case**

- Patient E.S.
  - 75 yo M with 3+ NSC OS
- Pre-Op Refraction: -5.75 +2.50 x 176°
- Pre-Op Biometry
  - IOL Master 1.34@176°
  - Pentacam 1.64@173°
  - Galilei 0.95@169°
  - Atlas 1.31@176°

**Toric IOL Case**

- IOL Placed
  - Alcon SNGAT4 in the bag at 175 to correct 1.5D cyl

**Toric IOL Case**

- POM 1
  - UCVA: 20/60
  - Post-Op Refraction: -2.25 +1.00 x 165
  - BCVA 20/20
  - Undercorrection by 1D
Factors to Toric IOL Implantation

1. Measuring the magnitude and axis of astigmatism in the cornea
2. Finding the correct axis on the patient’s cornea intraoperatively
3. Lining up the IOL accurately in that axis

Stability and Precision
($1^\circ = 3.3\%$ loss of cylinder power)

Preoperative Keratometry: Why do Measurements Differ?

- Manual and autokeratometry
  - 4 points, 3-3.2 mm zone
- IOL Master
  - 6 points, 2.5 mm zone
- Lenstar
  - 32 points, 2 zones (1.65mm/2.3mm)
- Topography
  - >500 points, values averaged over central 3-4mm
- Scheimpflug imaging combined with placido disc topography
  - Pentacam, Galilei

Which is method is best?

- Topography
  - Pros: accurate anterior surface contour
  - Cons
    - No posterior surface information
    - Data dropout in distorted/irregular corneas

- Tomography
  - Pros
    - Posterior surface information
    - Accurately measures distortions and aberrations
  - Cons
    - Topography map derived from corneal section slices

Which method is best?

- Color LED topographers
  - Cassini, I-Optics
  - Pros
    - Does not use edge detection
    - Regular or irregular corneas
    - Poor tear film
    - Instantaneous capture
    - Axis accuracy
  - Cons
• No posterior surface information
• Requires further clinical validation studies

25 Which method is best?
Am J Ophthalmol, 2009

26 Which method is best?

27 Which method is best?
• Measurement errors can be dramatically reduced by averaging measurements from manual keratometry with any automated technology

28 Effect of posterior corneal astigmatism
• With age, anterior corneal astigmatism trends towards ATR astigmatism
• Posterior corneal astigmatism remains relatively constant
• Effective minus lens → additional ATR
• Corneal astigmatism calculated from anterior corneal surface measurements only
  – WTR group: mean over-correction of 0.5 D
  – ATR group: mean under-correction of 0.3 D

29 How accurate are we?
1. FDA Clinical Trial for Alcon AcrySof IQ Toric IOL available at:
   http://www.alconsurgical.com/pdfs/TOR240.pdf

30 Room for Improvement
• Image overlay intraoperatively
  – Verion System at La Veta Surgery Center in Orange
    • First in Southern California
• Intraoperative aberrometry
  – ORA (WaveTec Vision)
  – Holos (Clarity Medical Systems)
• Even with these devices, we still need a pre-operative IOL plan

31 MANAGING ASTIGMATISM
• Don't overlook manual keratometry
• Use multiple devices
• Remember posterior corneal astigmatism
• Push for new technologies

ORA System® w/VerifEye™: Designed to Optimize Every Cataract Procedure
ORA's all new Optiwave™ technology takes intraoperative wavefront aberrometry to a new level of precision providing surgeons a higher level of confidence

Keratometric vs. Refractive Cylinder
• Recent Work Using Devices That Measure Both the Anterior and Posterior Corneal Curvature Shows a Cylinder Contribution From the Posterior Corneal Surface (first recognized by Javal in 1890)
  • ARVO 2011 Presentation by Li Wang, Shazia Ali, Mariko Shirayama, Mitchell Weikert and Douglas Koch

How Well Would Baylor Nomogram Work on This Data Set?!

The ORA Toric IOL Rotation

Improved astigmatic outcomes with VerifEye®

Improved astigmatic outcomes with VerifEye®

Presbyopia Correcting IOL
Dan B. Tran, M.D.
COASTAL VISION MEDICAL GROUP
Long Beach – Newport Beach - Orange

TRULIGN™ Toric IOL

Now we have a new member of the Crystalens family that builds on the AO model but adds astigmatic correction.

AcrySof® IQ ReSTOR® IOL

Allocating Light Energy According to Activity

Mean Visual Disturbances 3 Month Data

TECNIS® Multifocal Acrylic IOL
Model ZMA00 Specifications
  • Full diffractive posterior surface
    – Pupil-Independent
– Designed to reduce chromatic aberration at near
• Wavefront-designed aspheric anterior surface
  – Designed to correct spherical aberration to zero
• Optical power add +4.0D
  – To optimize acuity at preferred reading distance of 33 cm

46 Full Diffractive Surface = Pupil Independence
47 TECNIS® Multifocal Family of IOLs
48 TECNIS® Multifocal IOLs +3.25 D and +2.75 D Clinical Outcomes
49 TECNIS® Multifocal IOLs +3.25 D and +2.75 D Clinical Outcomes

50

51 TECNIS® Multifocal IOL +4.0 D
52

53 TECNIS® Multifocal IOL +3.25 D
54

55 TECNIS® Multifocal IOL +2.75 D
56 TECNIS® Multifocal Family of IOLs Binocular Defocus Curve at 6 Months

57 LASIK Retreatment Rate
58 The Need for Improvement

59 Alcon LenSx Laser
  • Femtosecond Laser
  • Integrated OCT
  • Universal Curved Patient Interface
  •
  • First femtosecond laser cleared for an indication in cataract surgery

  • FDA approvals
    • Capsulotomy
    • Laser Phacofragmentation
    • Cataract Incisions

  • CE mark
    • Capsulotomy
    • Laser Phacofragmentation
    • Cataract Incisions
Laser Refractive Cataract Surgery — LenSx® Laser System Docking and FS Laser Treatment

Femtosecond Laser Cataract Surgery

Does Capsulotomy Size Impact ELP?
Consistent capsulorhexis diameter is critical to Effective Lens Position\(^1,2\)

- A 4 mm capsulorhexis results in longer post-operative ELPo than does a 6 mm capsulorhexis for the type of IOL used \(^3\)
- To ensure that an IOL's position in the bag matches the anticipated formula used to calculate its power, the capsulorhexis should be round, centered and smaller than the IOL optic\(^2\)

Comparative IOL Refractive Outcomes with Femtosecond Laser Assisted Refractive Cataract Surgery
Dan B. Tran, M.D.
Long Beach — Newport Beach - Orange

Accuracy to Target distribution

Accuracy to Target distribution — Accommodating

6 Months Postop Aberration Comparison

Inflammation: A Common Concern
- Approximately 5 million ophthalmic surgeries are performed annually in US\(^1\)
  - Postoperative inflammation is a common occurrence after these procedures\(^2\)
- Despite surgical advances, most patients will present with some degree of postoperative inflammation\(^2,3\)
  - Some patients are more susceptible
  - Every patient displays inflammation differently
  - Cannot predict severity
- Under-treatment, delayed treatment, or lack of treatment can lead to:\(^3\)
  - Decreased visual acuity
  - Pain & discomfort
  - Photophobia
  - Corneal edema
  - Cystoid Macular Edema
  - Glaucoma
Recommendations on Approaches for Clinical Practice Adaptation

- Refractive Surgery Practice
  - More similarity to LASIK practice
  - Patients education and informed consent process are critical

- Patient Selection
  - No ocular co-morbidity
  - Candidacy similar to candidate for multifocal IOL or toric IOL
    - Aggressively treating any peri-operative ocular co-morbidity
      - Dry eyes, blepharitis, residual refractive errors if present
      - Monitor for any evidence of CME closely
  - Do NOT make excuses for suboptimal refractive outcomes... FIX IT!
  - LASIK enhancement as needed

How to discuss these technologies

1) Assess the patient’s medication condition
   a) Ensure no ocular pathology except cataract
   b) 

2) Determine patients visual needs
   a) IOL choices to match up with lifestyle needs
      a) Monofocal vs. toric vs. multifocal IOL
      b) Monovision candidate
      c) 

3) Discuss surgical approach
   a) Astigmatism Management
   b) Discuss the benefits and risks of femtosecond laser refractive surgery
   c) 

4) Discuss intra-operative aberrometry (ORA™)

5) Discuss the need for other methods to hit refractive target
   a) LASIK Treatment at 3 months if needed

PREOPERATIVE EVALUATION

- Detailed History with Lifestyle Assessment
- Complete Eye Exams including Evaluation
  - Dry Eyes and External Diseases Assessment
  - Pupil Size Evaluation
  - Corneal Topography and Pachymetry
  - OCT of Macular
  - Fundus Exam of Macular and Peripheral Retina
    - Retina Clearance for High Myopes
  - Visual Field and OCT Nerve Fiber Layer Analysis for Glaucoma Patients
- Prophylactic Use of Topical Antibiotics, NSAIDS
  - Dry eye and Blepharitis Treatment as Needed
POSTOPERATIVE MANAGEMENT

- VISUAL ACUITY AND MANIFEST REFRACTION
- DRY EYE AND BLEPHARITIS ASSESSMENT
- CORNEAL STATUS ASSESSMENT
- IOP MONITORING WHILE ON STEROIDS DROPS
- CYSTOID MACULAR EDEMA MONITORING WITH OCT
- VISUAL SYMPTOMS DISCUSSION AND REASSURING
- DISCUSS ANY SPECTACLES NEEDS
- DISCUSS TIMING AND NEEDS FOR SECOND EYE SURGERY
- TRANSFER OF CARE PROCESS
- POSTOPERATIVE MEDICATIONS INCLUDING ANTIBIOTIC, STEROIDS, NSAID, IOP LOWERING MEDS MOSTLY TOPICAL

CORNEAL BASE REFRACTIVE SURGERY

MONOVISION LASIK:
WaveLight Refractive Suite

ReLEx-Smile preserves corneal biomechanics
- Anterior and central stromal lamellae are stronger\textsuperscript{1}
- Vertical cuts weakening the cornea strain much more than horizontal cuts\textsuperscript{2}
  Goal: preserve most of the anterior stroma, minimize vertical cuts/sidecuts (length & depth)

Advantage of ReLEx-Smile vs F-Lasik:
➢ Intact anterior stromal lamellae and no anterior corneal sidecut
➢ 50-70\textmu of the anterior stroma additionally contribute to corneal tensile strength
  --> Better corneal biomechanical stability
- Corneal nerve bundles grow in anterior stroma from periphery towards central corneal

- Nerves are penetrating Bowman’s layer and spreading as a subbasal nerve plexus, branching vertically and horizontally
  
  with LASIK flap preparation nerve bundles are cut and severed by laser ablation

---

81 Dry Eye Study

82 Introduction to the KAMRA® Inlay

83 Inlay Design

84 The KAMRA® Inlay Indications for Use
The KAMRA® inlay is indicated for intrastromal corneal implantation to improve near vision by extending the depth of focus in the non-dominant eye of phakic, presbyopic patients between the ages of 45 and 60 years old who have cycloplegic refractive spherical equivalent of +0.50 D to −0.75 D with less than or equal to 0.75 D of refractive cylinder, who do not require glasses or contact lenses for clear distance vision, and who require near correction of +1.00 D to +2.50 D of reading add.

85 Corneal Physiologic Principles
- Oxygen enters from the tears
- Glucose & other metabolites enter from the aqueous humor
- Catabolites exit to the aqueous humor

86 Depth of Focus without Correction
Depth of Focus *with the Inlay*

Depth of focus and image quality of a KAMRA® inlay eye of a 49 Year Old Presbyope

**Inlay Placement Guidance**

- The AcuTarget HD™ instrument provides pre-op and post-op centration information:
  - Identifies unique optical landmarks to assist with inlay centration planning
  - Confirms achieved inlay placement
  - Assists with managing vision complaints post-operatively
  - Advanced features:
    - Pre-op result also identifies purkinje vs pupil by location (i.e. inferior temporal)
    - Pre-op print out includes additional ocular landmark graphics, patient demographic, time and date information

**Tear Film Assessment**

- Dry eye can have a significant effect on patient quality of vision and satisfaction post-op
- The AcuTarget HD™ instrument provides additional objective measurement of your patients:
  - Tear evaporation rate
  - Associated degradation in quality of vision from tear evaporation over time
- This information can be used to:
  - Improve patient selection
  - Minimize the influence of dry eye on outcomes
  - Inform on patient adherence to dry eye regimen

**How the KAMRA® Inlay Works**

- The small aperture allows only focused light rays to enter the eye, which:
  - Reduces blur when viewing near objects
  - Increases depth of focus
  - Minimally affects distance vision

**Results**

**Uncorrected Near Visual Acuity:**

*Inlay Eye – Data from US IDE*

- On average patients experienced a gain of 3.4 lines of near acuity between pre-op and the 36 month follow-up visit

**Uncorrected Intermediate Visual Acuity:** *Inlay Eye*

**Uncorrected Distance Visual Acuity:**

*Inlay Eye*

- Monocular uncorrected distance acuity in the inlay eye remained unchanged at 20/20

**UCNVA at 5 Years**
• UCNVA improved from a mean of J8 to J2 in the inlay eye (IE) between pre-op and 1 month and is maintained out to 5+ years
• Vision in the inlay eye and with both eyes (BE) is unaffected by the progression of presbyopia
• UCNVA in the untreated other eye (OE) shows an mean loss of 1 line over the same time period

97 Contrast Sensitivity: Photopic - Binocular
98 Contrast Sensitivity: Mesopic - Binocular
99

100 Task Performance
101 Summary of Results

• Near vision of J2 achieved on average
• Distance vision is minimally affected
• Long-term data shows maintained visual gain
• Results show that binocular mesopic contrast sensitivity remains within normal limits at 24 months post-op.
• There was no statistically significant change to depth perception as compared with pre-op results in the study done by Dr. Hoopes

102

103 Proposed Mechanism of Action for Treating Presbyopia with VisAbility
104 The VisAbility U.S. Clinical Trial (FDA)
• Now enrolling: Multi-Center 2 year study to generate data for a U.S. submission and possible approval
• Safety is paramount and the foremost priority of the study
• Investigating significant improvements in instrumentation and technique
• Early access to the newest technology
  – Longstanding history
  – Developed by Refocus Group, Inc. (founded in 1996)
  – CE Marked in the E.U.
  – Procedure provided at no cost
• Open to only 360 patients
  – Limited to 28 patients are each site
  – Available (in the U.S.) for a limited time

105 Multi-Center Clinical Study
106 What are VisAbility Implants?
• Tiny clear implants made of PMMA polymer
- Sterile, single-use, and biologically inert
- Same material that has been implanted in other surgical procedures for over 50 years

107 What happens during the VisAbility Procedure
- Numbing drops and antianxiety medications given to keep you comfortable and relaxed
- 4 (four) VisAbility Implants are placed just below the surface of the white of the eye through tiny incisions
- The outpatient procedure is minimally invasive and typically takes 15-20 minutes per eye.
- OR staff will observe patients immediately after surgery for any potential complications

108 What to expect after the VisAbility Procedure
- Improvement in near vision
- Slight irritation that usually goes away in a few days
- Temporary redness that goes away after a 3-4 week healing period

109 How long does it take for near vision to improve?
- Rehabilitation Period: Patients may experience gradual improvement within the 1st month (with continuous improvement 3 months and beyond)
- Start engaging in “near activities” to strengthen the focusing muscles
  - Allow more time to read
  - Do not wear reading glasses
  - Be patient
- Near vision continues to improve over time

110 Percentage of subjects with near acuity 20/40 better and 2 lines improvement (after surgery)

111 Patient Satisfaction:
Significant Improvement in Near Vision

112 SEE YOUNG AGAIN
- May improve near vision
  - May eliminate or reduce your need for reading glasses due to presbyopia
- May provide a full range of focus
  - No loss of distance or intermediate vision
• Works outside of the visual axis
  – Maintains integrity of the cornea and lens
• Allows for flexibility
  – Implants do not interfere with other procedures
    (e.g., cataract surgery) and are removable
• Natural binocular solution
  – Not a monovision, bifocal or multifocal solution

113 Clinical Photos

114

115

116 Retinal Detachment

117 Retinal Detachment
• Annual incidence 1:10,000-15,000
• OC 300-400
• Prevalence 45 in 15,000
• Risk Factors: Myopia >6dptr, Aphakia, Trauma, Vitreous Loss, Family Hx, Syndromes
• Risk for Fellow Eye is up to 15%
• Symptomatic PVD 6-12% Risk
• Vitreous Hemorrhage 70% Risk

118 Retinal Care of the Myopic Patient
• Ruiz-Moreno (2003)
  • N= 9,253 patients
  • RD risk 1:10,000 (<0.0001%) general pop
  • RD risk 0.15% after PRK
  • RD risk 0.36% after LASIK
  • RD risk 4.08% after IOL
  • RD risk 8.10% after IOL for pt > -10dptr
  • Colin (2008)

119 Retinal Detachment

120 Treated Retinal Tear

121 Lacquer Cracks

122 Macular Hole

Macular Pucker
Vitreomacular Traction

Clinical Pearls
- Symptomatic PVD w/o breaks – see patient within one month or refer
- Symptomatic PVD w/ break – refer within 48 hours
- Symptomatic PVD w/ heme – see patient within 1-2 weeks or refer – high risk for RD

Clinical Pearls
- Loss of central vision (inability to refract better than baseline) - refer
- Metamorphopsia – get OCT and look for CNVM or atrophy
- Patient with Multiple Questions – refer or decline elective surgery

Cystoid Macular Edema

Hyopyon

Macular Lesions

Macular Lesions

Macular Lesions

Visual Field Changes
Dan B. Tran, MD

Medical Director
Cornea, LASIK & Cataract Surgery Specialist

With the mind of a trained engineer and the intuitive skills of an experienced surgeon, Dr. Dan B. Tran is internationally recognized as a leading expert in advanced vision correction.

The all-laser, bladeless LASIK technique, now considered the standard in care, was first introduced by Dr. Tran to LASIK centers in Orange County when it received FDA clearance in 2001. Dr. Tran is also the first surgeon in the world to combine IntraLaseTM femtosecond laser technology with intracorneal rings (Intacs™) to treat keratoconus, a vision loss disorder affecting young adults.

In 2011, Dr. Tran was the first surgeon in California to utilize advanced LenSx™ femtosecond technology to perform refractive cataract surgery. This technology is now used in hundreds of cataract centers around the world by highly prominent cataract surgeons. He is among a select few surgeons currently conducting multiple FDA clinical studies on new advanced ophthalmic surgical implant devices.

His combination of surgical finesse and deep understanding of technology are why eye doctors and eye industry executives alike trust Dr. Tran as their personal surgeon. These traits have helped propel the advancement of surgical eye care in Orange County, keeping it at the forefront of surgical eye care delivery worldwide.

Featured several times in the Orange County Register, a member of medical advisory boards for several medical device companies, often invited to conduct FDA clinical trials, and published many times in national ophthalmological publications, Dr. Dan B. Tran is a frequent speaker at national and international meetings throughout the world.

877-ALL-LASER | www.coastalvisionmedical.com
EDUCATION

1984  BS, Electrical Engineering, Magna Cum Laude, California State Polytechnic University, Pomona, CA
1985  Graduate Studies in Electrical & Biomedical Engineering, Stanford University, Palo Alto, CA
1987  Graduate Studies in Electrical & Biomedical Engineering, University of Arizona, Tucson, AZ
1993  MD, University of Southern California, Keck School of Medicine, Los Angeles, CA

PROFESSIONAL TRAINING

1994  Internship, Internal Medicine, St. Mary Medical Center, UCLA School of Medicine, Los Angeles, CA
1997  Resident in Ophthalmology, Scheie Eye Institute, University of Pennsylvania, Philadelphia, PA

FELLOWSHIPS

1998  Fellow in Cornea and Refractive Surgery, Shiley Eye Center, University of California, San Diego, CA

BOARD CERTIFICATION

1999  American Academy of Ophthalmology

PROFESSIONAL AFFILIATIONS

• American Society of Cataract & Refractive Surgery
• International Society of Refractive Surgery
• American Academy of Ophthalmology

UNIVERSITY & HOSPITAL POSITIONS

• Clinical Instructor, Shiley Eye Center, University of California, San Diego, CA
• Staff Ophthalmologist, St. Joseph Hospital of Orange, CA
• Staff Ophthalmologist, St. Mary Hospital, Long Beach, CA
Betsy Nguyen, MD
Glaucoma & Cataract Specialist

Dr. Betsy Nguyen is a board certified cataract & glaucoma specialist, with 14 years of experience in her field. Trained at the prestigious, internationally recognized Jules Stein Eye Institute, at UCLA, Dr. Nguyen then became active in glaucoma research with the USC Doheny Eye Institute.

After earning her medical degree with highest distinction at the top of her class from UCLA School of Medicine, Dr. Nguyen went on to UCSF for her fellowship in glaucoma. As a diplomate of the American Academy of Ophthalmology and the California Academy of Eye Physicians & Surgeons, she was one of the team eye doctors for both the LA Angels and the Anaheim Ducks.

Dr. Betsy Nguyen is an ardent researcher, to further treatment options available for all, and has extensive expertise in managing glaucoma and cataracts together. These commonly concomitant conditions are best treated together—treating one and ignoring the other will result in long-term problems for patients. Dr. Nguyen uses the most advanced technologies available to combine the treatment in an integrated fashion, offering patients with cataract and glaucoma the very latest in surgery and research.

Customizing care to every one of her patients, Dr. Nguyen remains passionate about what she does and spends quality time counseling each one. “I give every patient the same level of attention and surgical excellence as I would give my own family.”
EDUCATION
1991 Bachelor of Science, Biological Sciences, University of California, Irvine, CA
1995 Doctor of Medicine, David Geffen School of Medicine, University of California, Los Angeles, CA

PROFESSIONAL TRAINING
1995-1996 Internship, Preliminary Medicine, University of California, San Fernando Valley, CA
1996-1999 Residency, Ophthalmology, Jules Stein Eye Institute, University of California, Los Angeles, CA

FELLOWSHIPS
1999-2000 Clinical Fellowship, Glaucoma and Clinical Instructor, University of California, San Francisco, CA and California Pacific Medical Center

BOARD CERTIFICATION
1997 Medical Board of California
2000 American Academy of Ophthalmology

PROFESSIONAL AFFILIATIONS
American Academy of Ophthalmology
American Society of Cataract and Refractive Surgery
American Medical Association
California Medical Association

California Academy of Eye Physicians & Surgeons
Memorial Physician Society
Orange County Ophthalmology Society
Orange County Glaucoma Society

RESEARCH, EXPERIENCE, PRESENTATIONS & PUBLICATIONS


2000-2011 Researcher for USC – Collaboration with Los Angeles Latino Eye Study (LALES). Collaborate with Rohit Verma, MD and Brian Francis, MD.


2007-2009 Schering study (LOC5 III Certified)
2004-2006 TAKEDA study (LOC5 III Certified)

2003 Advanced Glaucoma Training DVD, for Allergan

1999-2000 Evaluation of computerized optic discs to determine stability vs. progression of glaucoma, under Robert L. Stamper, MD, Chief of Glaucoma, UCSF.


Lisa D. Garbutt, MD
Comprehensive Ophthalmology
Cornea, Anterior Segment and Eyelid Surgeries

Board certified ophthalmologist Lisa Garbutt, MD, joined Coastal Vision in 2014. As a fellowship trained surgeon, she specializes in cataract surgery, corneal transplants, refractive procedures, such as LASIK, and certain oculoplastic procedures to improve vision such as blepharoplasty and ptosis repair. She is also extensively trained in DSAEK, a breakthrough technique for treating corneal diseases.

In addition to treating medical and surgical diseases of the eye, Dr. Garbutt enjoys being involved in various FDA trials conducted at Coastal Vision. She completed her medical degree cum laude at Boston University School of Medicine and received her ophthalmology training at the University of California, San Diego School of Medicine Shiley Eye Institute. She is a member of the American Academy of Ophthalmology and the American Society of Cataract and Refractive Surgeons.

She also participates in research and FDA clinical trials at Coastal Vision.

“One of the main reasons I became an ophthalmologist is because it gives me the opportunity to make a significant difference in someone's life. We often take our sight for granted, and don't realize how important it is to our everyday functioning, enjoyment, and happiness until it is compromised.”

“I enjoy introducing the science and innovation of ophthalmology into my patients' lives. The advancements in this field are moving swiftly forward each year, and allow me to provide the best care possible. Most importantly, I have the utmost respect for the trust of a patient, and aim to use my training, experience, and skill to enhance their quality of life.”

Dr. Garbutt is well respected and well liked by her patients, as well as her peers, for her compassion with patient care, her meticulous surgical skills and her comprehensive approach to ophthalmology. She has successfully performed thousands of cataract and cornea surgical cases prior to joining Coastal Vision.

Happy to return home to Orange County, where she grew up, Dr. Garbutt enjoys running, skiing and spending time with her friends and family.
EDUCATION

1994  Bachelor of Science, Psychobiology, University of California, Los Angeles, CA
1999  Master of Arts, Medical Science, Boston University School of Medicine, Boston, MA
2003  Doctor of Medicine, Boston University School of Medicine, Boston, MA

PROFESSIONAL TRAINING

2004-2007  Ophthalmology Residency, Shiley Eye Center, University of California, San Diego, CA
2003-2004  General Surgery Internship, Department of General Surgery, University of California, San Diego, CA

FELLOWSHIPS

2008  Fellow in Cornea, Cataract, and Refractive Surgery, Shiley Eye Center, University of California, San Diego, CA

BOARD CERTIFICATION

2008  American Academy of Ophthalmology

PROFESSIONAL AFFILIATIONS

• American Academy of Ophthalmology
• American Society of Cataract and Refractive Surgery
CURRICULUM VITAE

Eugene Chang, M.D., M.B.A.

Mailing/Contact Address:
Orange County Retina Medical Group
1200 North Tustin Avenue, Suite 140
Santa Ana, California 92705
714-972-8432

PROFESSIONAL PRACTICE AFFILIATIONS

Orange County Retina Medical Group
Physician/Surgeon
Since December 2013

Locations
1200 North Tustin Avenue Suite 140 Santa Ana, CA 92705 714-972-8432
1200 North Tustin Avenue Suite 100 Santa Ana, CA 92705 714-972-8432
24022 Calle de la Plata Suite 475 Laguna Hills, CA 92653 949-581-3618
320 Superior Avenue Suite 160 Newport Beach, CA 92663 949-646-3242
333 W. Bastanchury Road Suite 200 Fullerton, CA 92835 714-451-0801
31451 Rancho Viejo Road Suite 101 San Juan Capistrano, CA 92675 949-496-0611

EDUCATION AND TRAINING

Vitreo- Retinal Fellowship
Rush University Medical Center/Illinois Retina Associates
Chicago, Illinois; 2004-2006

Residency, Ophthalmology
California Pacific Medical Center
San Francisco, California; 2001-2004

Residency, Internal Medicine (preliminary)
University of California, San Francisco, School of Medicine/Fresno-Central San Joaquin Valley Medical Education Program
Fresno, California; 2000-2001

Medical School/Graduate
Medical Doctorate/Master of Business Administration
Tufts University School of Medicine/Tufts University
Boston, Massachusetts; 1996 - 2000

Undergraduate
Bachelor of Arts in Political Science
Brown University
Providence, Rhode Island; 1992-1996

Updated 13Dec2013 MC

E. Chang, MD, MBA

Page 1 of 4
BOARD CERTIFICATION

American Board of Ophthalmology

MEDICAL LICENSURE

Illinois, issued 2004
California, issued 2002

HONORS

1994 Recipient of The Brown University Undergraduate Teaching & Research Assistantship

PROFESSIONAL MEMBERSHIPS

American Academy of Ophthalmology
American Society of Retinal Specialists

PROFESSIONAL/WORK EXPERIENCE

2006 – 2013 Vitreoretinal Surgeon
Kaiser Permanente, Oakland, California

1996 - 1998 Medical Education Review Committee Representative

1995 - 1996 Teaching Assistant
Department of Biology, Brown University, Providence, Rhode Island

Summer 1997 Intern
Dyax Corporation, Cambridge, Massachusetts

Summer 1995 Research Fellow
Center for International and Security Studies, Taiwan Institute of Economic Research;
Taipei, Taiwan
RESEARCH

   Joes S. Schuman, M.D., Department of Ophthalmology, New England Eye Center, Boston, Massachusetts
   - Researched the relationship between glaucoma status and macular thickness as measured with Optical Coherence Tomography.

02. Research Assistant, 1994 – 1995
   Robert F. Valentini, Ph.D., Brown University, Department of Orthopaedics, Providence, Rhode Island
   - Assayed drug delivery system in rat and human cell lines
   - Devised experiments to quantify the amount of drugs released into target cells

03. Research Assistant, 1994 – 1995
   Hugh S. Keeping, Ph.D., Brown University, Department of Orthopaedics, Providence, Rhode Island
   - Managed research projects with grant awarded by Brown University
   - Studied the role of bone morphogenetic proteins in the pathogenesis of tumors metastases to bone.
   - Developed quantitative approaches to determine cytokine interactions during prostate cancer progression.

BIBLIOGRAPHY

01. Chang E, Chow DR, Packo KH, Olivier S. Our experience with 25-gauge vitrectomy; its efficacy, efficiency and a look at procedure-based outcomes. American Society of Retina Specialists, 23rd Annual Meeting, Montreal, Canada; 2005

02. Chang E, Luckie A, Ai E, Ahmed I. Ophthalmic Manifestation of HIV chapter in HIV InSite Knowledge Base. UCSF; 2005


06. Keeping, HS, Chang G, Angert L, Chang E, Ehrlich MG, Glantz L. Interleukin modulation of prostatic bone morphogenetic protein expression in primary tumor and bone metastases. 2nd Annual Rhode Island Hospital/Women and Infants Hospital Research Poster Day.
PRESENTATIONS/LECTURES

01. *Good visual acuity following proliferative vitreoretinopathy.* Barkan Society Meeting, San Francisco, California; 2003

02. *Our experience with 25-gauge vitrectomy: its efficacy, efficiency, and a look at procedure-based outcomes.* American Society of Retina Specialists' 23rd Annual Meeting, Montreal, Canada; 2005

03. *Fluorescein Angiography, Indocyanine Green Angiography and Optical Coherence Testing.* 14th Annual Rush Medical College of Ophthalmology Clinical Review Course; 2005

04. *Diagnostic Testing.* Retina Care Symposium, Costa Mesa, California; December 5, 2013

LANGUAGES

Mandarin
CURRICULUM VITAE

TIMOTHY T. YOU, M.D.
Fellow, American Academy of Ophthalmology

Mailing/Contact Address:
Orange County Retina Medical Group
1200 North Tustin Avenue, Suite 140
Santa Ana, California 92705
714-972-8432

PROFESSIONAL PRACTICE AFFILIATIONS

Orange County Retina Medical Group
Physician/Surgeon/Partner
Since 3/1/2005

1200 North Tustin Avenue Suite 140 Santa Ana, CA 92705 714-972-8432
1200 North Tustin Avenue Suite 100 Santa Ana, CA 92705 714-972-8432
24022 Calle de la Plata Suite 475 Laguna Hills, CA 92653 949-581-3618
320 Superior Avenue Suite 160 Newport Beach, CA 92663 949-646-3242
333 W. Bastanchury Road Suite 200 Fullerton, CA 92835 714-451-0801
31451 Rancho Viejo Road Suite 101 San Juan Capistrano, CA 92675 949-496-0611

7/2002-2/2005 Rhode Island Eye Institute, Providence, Rhode Island
7/1999-6/2002 Pacific Clear Vision Institute, Eugene, Oregon

EDUCATION AND TRAINING

Vitreo-Retinal Fellowship
Massachusetts Eye and Ear Infirmary
Harvard Medical School, Boston, Massachusetts, 1997-1999
  • Thomas Heed Ophthalmic Fellow, 1997-98
  • American Ophthalmological Society, Herman Knapp Fellow, 1998-99

Research Fellowships
Penn Medical Scholars Anatomic Pathology Fellowship
Department of Pathology & Laboratory Medicine
Hospital of the University of Pennsylvania, 1991-1992

Children's Hospital of Los Angeles
University of Southern California, Doheny Eye Institute
Medical Student Fellowship in Pediatric Ophthalmology, 1989

Residency in Ophthalmology
Massachusetts Eye and Ear Infirmary
Harvard Medical School, Boston, Massachusetts, 1994-1997

Internship in Medicine
VA Medical Center, Sepulveda, California
University of California, Los Angeles, 1993-1994

Medical School
Medical Doctorate
University of Pennsylvania School of Medicine

Revised: 31Dec2013.MC  TYou, MD
Page 1 of 12
Undergraduate Education
Bachelor of Science in Biology with distinction in major & cum laude
Yale College, New Haven, Connecticut, 1984-1988
Lab Assistant, Yale School of Medicine, Department of Microbiology, 1987

PROFESSIONAL POSITIONS

2013-Present  Clinical Rotation Preceptor, Southern California College of Ophthalmology, Fullerton, California
2012-Present  Preceptor and Site Coordinator, Western University Health Sciences, Pomona, California
2012-Present  Chief, Department of Ophthalmology, Children’s Hospital of Orange County, Orange, California
2009-Present  Advisor, Clinical Institute, St. Joseph Hospital, Orange, California
2010-2012  Member, Planning Committee, Children’s Hospital of Orange County Tower, Orange, California
2006-Present  Expert Witness, Medical Board of California
2005-Present  Medical Reviewer, MES Group
2003-2005  Assistant Clinical Professor in Ophthalmology, Brown Medical School, Providence, Rhode Island
2000-Present  Medical Reviewer, Advanced Medical Group
1997-1999  Assistant Staff, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, Massachusetts

MEDICAL LICENSES

American Board of Ophthalmology, Diplomate, (Board Certified) in 1999
Exam score 95th percentile

American Board of Ophthalmology, Diplomate, (Recertification) in 2009
Maintenence of Certification

Diplomat National Board of Medical Examiners, since 1994

Medical Board of California, since 1993
HOSPITAL AFFILIATIONS

3/1/2005 – Present    Anaheim Regional Medical Center, Anaheim, California
3/1/2005 – Present    Children’s Hospital at Mission, Mission Viejo, California
3/1/2005 – Present    Children’s Hospital of Orange County, Orange, California
3/1/2005 – Present    Hoag Memorial Hospital Presbyterian, Newport Beach, California
3/1/2005 – Present    St. Joseph Hospital, Orange, California
3/1/2005 – Present    Western Medical Center, Anaheim, California
3/1/2005 – Present    Western Medical Center, Santa Ana, California

HONORS AND AWARDS

2003    Brown Medical School Award for Excellence in Teaching
1999    Fellow of the Year for Massachusetts Eye and Ear for Excellence in Teaching
1999    Fellow Award at Paul Chandler Lecture for Resident Teaching
1997    STORZ Ophthalmic Instrument Design Contest for Modified Phaco-Chopper
1994-1991    Bill Raskob Foundation Award
1993    History of Medicine Prize, *The Stigma of Atomic Bomb Disease*
1992    History of Medicine Prize, *A Short History of Egyptian Military Ophthalmia*
1988    Summer Research Internship, Taejon Research Institute, South Korea
1985    Jostens’ Scholarship
1985    Elks Club Western-Division Scholarship
1985    Soroptomist Club Scholarship
1985    Orange County Medical Association Scholarship
1984-1988    Mission Community Hospital Auxiliary Scholarship
1982-1984    American Academy of Sciences Junior Scientist, University of Southern California/University of California at Irvine
PROFESSIONAL SOCIETY MEMBERSHIPS

American Academy of Ophthalmology, Fellow
American Society of Retina Specialists (The Vitreous Society)
Association for Research in Vision and Ophthalmology
California Association of Eye Physicians and Surgeons
California Medical Association
California Scholarship Federation
Orange County Society of Ophthalmology
Orange County Medical Association
Oregon Medical Association
Society of Heed Fellows
Society of Penn Medical Scholars
Western Retina Study Club

CLINICAL RESEARCH

01. Genetech, Inc., Protocol #FVF2598g (Marina), Phase IIIb, 2003-2005
    Sub-Investigator. A multicenter, randomized, double masked, sham injection-controlled study of the safety and efficacy of rhuFab V2 in subjects with neovascular AMD who have minimally classic or occult lesion

02. Eyetech Pharmaceuticals, Protocol #EOP1004, Phase II/III, 2005-2005
    Sub-Investigator. A randomized, double-masked, controlled, dose-ranging, multi-center comparative trial, in parallel groups, to establish safety and efficacy of intravitreal injections of EYE001 (anti-VEGF pegylated aptamer) in patients with exudative AMD

    Sub-Investigator. A multicenter, double-masked, randomized, parallel groups study to demonstrate efficacy and safety of anecortave treatment relative to Visudyne for AMD.

    Sub-Investigator. A multi-center, randomized, double-masked, placebo-controlled, parallel group, evaluation of the safety and efficacy of combretastatin A4 phosphate infusion for treating subfoveal CNV in pathologic myopia.

    Sub-Investigator. A randomized trial comparing intravitreal corticosteroids and laser photocoagulation for DME.

06. Alcon Research, Ltd., Protocol C-02-60 (AART), Phase III, 2005-2009
    Sub-Investigator. Anecortave Acetate Risk Reduction Trial (AART): An evaluation of efficacy and safety of posterior juxtascleral administrations of anecortave acetate for depot suspension (15 mg or 30 mg) versus sham administration in patients (enrolled in study “A” or study “B”) at risk for developing sight-threatening CNV due to exudative AMD.

07. National Eye Institute, SCORE, 2005-2009
    Sub-Investigator. The Standard Care vs. Corticosteroid for Retinal Vein Occlusion (SCORE): Two randomized trials to compare the efficacy and safety of intravitreal injection(s) of triamcinolone acetonide with standard care to treat macular edema: one for CRVO and one for BRVO.
Sub-Investigator. A randomized, double-blind, parallel-design, placebo-controlled study to evaluate the effects of 5mg tadalafil (IC351, LY450190) and 50mg sildenafil administered once daily for 6 months on visual function in healthy subjects or subjects with mild erectile dysfunction.

Sub-Investigator. A trial using anecortave acetate 15mg administered every 3 months versus anecortave acetate 15 mg every 6 months versus anecortave acetate 30 mg administered every 6 with exudative AMD.

Sub-Investigator. A randomized, active-controlled, double-masked, single dummy, multicenter comparative trial, in parallel groups, to compare the safety and efficacy of intravitreous injections of Macugen given every 6 weeks for up to 102 weeks, plus sham PDT, to Macugen plus PDT with Visudyne, in subjects with predominantly classic subfoveal CNV secondary to AMD.

Principal Investigator. A 24-month randomized, double-masked, sham controlled, multicenter study comparing PDT with verteporfin (Visudyne) plus two different dose regimens of intravitreal triamcinolone acetonide (1 mg and 4 mg) versus Visudyne plus intravitreal pegaptanib (Macugen) in patients with subfoveal CNV secondary to AMD.

Principal Investigator. An open label, multicenter trial of maintenance intravitreous injections of Macugen (pegaptanib sodium) given every six weeks for 48 weeks in subjects with subfoveal neovascular AMD initially treated with a different modality resulting in maculopathy improvement.

13. Novartis, Protocol #CBPD952A2308 (Denali), Phase IIIB, 2006-2010
Principal Investigator. A 24-month randomized, double-masked, controlled, multicenter study assessing safety and efficacy of verteporfin (Visudyne) photodynamic therapy administered in conjunction with ranibizumab (Lucentis) versus ranibizumab (Lucentis) monotherapy in patients with subfoveal CNV secondary to AMD.

Sub-Investigator. Fluocinolone Acetonide in Diabetic Macular Edema (FAME): A randomized, double-masked, parallel group, multicenter, dose-finding comparison of the safety and efficacy of ASI-001A 0.5mg/day and ASI-001B 0.2 μg/day fluocinolone acetonide intravitreal inserts to sham injection in subjects with DME (Medidur®).

Sub-Investigator. CLinical Evaluation of Anti-angiogenesis in the Retina - Intravitreal Trial 3 (CLEAR-IT 3): A randomized, double-masked, active-controlled phase III study of the efficacy, safety, and tolerability of repeated doses of intravitreal VEGF Trap in subjects with neovascular AMD.

Sub-Investigator. COmbining Bevacizumab and Lucentis Therapy (COBALT): A randomized, double-masked, parallel-assignment study of intravitreal bevacizumab sodium, administered every 8 to 12 weeks as maintenance therapy following three injections of Lucentis compared with Lucentis monotherapy every 4 weeks in patients with exudative AMD.
17. Allergan, Protocol 206207-012, Phase III, 2007-2010
Sub-Investigator. A 52-week, masked, multicenter, randomized, controlled trial (with up to 13 weeks additional follow-up) to assess the safety and efficacy of 700 µg dexamethasone posterior-segment drug delivery system (DEX PS DDS) Applicator System in combination with laser photocoagulation compared with laser photocoagulation alone in the treatment of subjects with diffuse DME.

Sub-Investigator. A safety and efficacy study of Vitreosolve for ophthalmic intravitreal injection for inducing posterior vitreous detachment in subjects with NPDR.

Ophthalmology Investigator. A safety follow-up study of patients previously exposed to MK-0634 (a beta-3 receptor antagonist developed for the treatment of overactive bladder). Subjects had previously been enrolled in a multicenter, double-blind, randomized, placebo-controlled, parallel group, dose-ranging study of L-000796568 in postmenopausal women with OAB.

20. Allergan, Protocol 206207-019-00, Phase II, 2008-2010
Sub-Investigator. A 26-week, open-label study to assess the safety and efficacy of 700 µg dexamethasone posterior segment drug delivery system applicator system in conjunction with Lucentis® in the treatment of patients CNV secondary to AMD.

Sub-Investigator. An ascending dose and parallel group trial to establish the safety, tolerability and pharmacokinetic profile of multiple intravitreal injections of volociximab (α5β1 integrin antagonist) as monotherapy or in combination with Lucentis 0.5 mg/eve in subjects with neovascular AMD.

22. Regeneron, Protocol VGFT-OD-0706 (Da Vinci), Phase III, 2008-2011
Sub-Investigator. A double-masked, randomized, controlled study of the safety, tolerability and biological effect of repeated intravitreal administration of VEGF Trap-eye in patients with DME.

23. NEI/Tufts Medical Center, The Family Study of Macular Degeneration, 2009-2010
The goal is to evaluate genetic and non-genetic risk factors for AMD

Sub-Investigator. A 26-week, open-label study to assess the safety and efficacy of 700 µg dexamethasone posterior segment drug delivery system applicator system in the treatment of vitrectomized subjects with DME.

Sub-Investigator. A randomized, multicenter, double-blind, parallel-group trial to assess the analgesic efficacy and safety of a new analgesic compared with placebo in subjects with painful diabetic peripheral neuropathy.

Sub-Investigator. A randomized, multicenter, double-blind, two-arm, multicenter, placebo-controlled study to assess the efficacy and safety of EN3324 (Axomadol) in subjects with moderate to severe chronic low back pain.

27. GlaxoSmithKline, Protocol MD 7110852, Phase IIb, 2009-2012
Principal Investigator. A dose-ranging study of pazopanib eye drops vs. ranibizumab intravitreal injections for the treatment of neovascular AMD.
Sub-Investigator. A double-masked, multicenter, randomized, active treatment-controlled study of the efficacy and safety of 0.5 mg and 2.0 mg ranibizumab administered monthly or on an as needed basis (PRN) in patients with subfoveal neovascular AMD.

Sub-Investigator. A multicenter, double-masked, parallel group, placebo-controlled study to assess the efficacy and safety of Vocolosporin as therapy in subjects with active noninfectious intermediate, posterior or pan-uveitis.

30. Lpath, Protocol LT1009-Oph-003 (NEXUS), Phase IIA, 2011-Present
Sub-Investigator. A multicenter, masked, randomized, comparator-controlled study evaluation Isonep™ (sonepnzumab [LT1009]) as either monotherapy or adjunctive therapy to Lucentis or Avastin versus Lucentis or Avastin alone for the treatment of subjects with choroidal neovascularization secondary to AMD.

Sub-Investigator. An open-label, multicenter, extension study of the safety and utility of the new inserter of Illuvien® (Fluocinolone Acetonide Intravitreal Insert) 0.19mg and the safety of Illuvien® in subjects with DME.

32. EyeGate Pharmaceuticals, Protocol EGP-437-004, Phase III, 2012-2013
Sub-Investigator. A prospective, multi-center, randomized, double-masked, positive controlled, clinical trial designed to evaluate the safety and efficacy of iontophoretic dexamethasone phosphate ophthalmic suspension (1%) in patients with non-infectious anterior segment uveitis.

33. Quark Pharmaceuticals, Protocol QRK202 (MATISSE), Phase II, 2012-2013
Sub-Investigator. An open-label dose escalation study of PF-04523655 (Stratum I) combined with a prospective, randomized, double-masked, multi-center, controlled study (Stratum II) evaluating the efficacy and safety of PF-04523655 alone and in combination with ranibizumab versus ranibizumab alone in diabetic macular edema.

34. Xoma, Protocol X052130/CL3-78989-005, Phase III, 2012-Present
Principal Investigator. A randomized, double-masked, placebo-controlled study of the safety and efficacy of gevokizumab in the treatment of active non-infectious intermediate, posterior, or pan-uveitis.

35. Pfizer, Protocol B1181003-1050, Phase II, 2012-2013
Sub-Investigator. A phase 2, multi-center, randomized, double-masked, placebo-controlled, multi-dose study to investigate the efficacy, safety, pharmacokinetics and pharmacodynamics of RNN6 (PF-04382923) in subjects with geographic atrophy secondary to age-related macular degeneration.

36. Xoma, Protocol X052131/CL3-78989-005 (EYEguard™-C), Phase III, 2012-Present

37. Regeneron Protocol VGFTe-AMD-1124 (RE-VIEW), Phase IV, 2012-Present
Sub-Investigator. Rigorous evaluation of vision and safety with intravitreal afliberecept injection dosed every 8 weeks over 2 years in neovascular AMD.

38. Merck Protocol MK8931—017 (SCH 900931, P07738), Phase 2/3, Collaborative Study, 2012-Present
39. Ophthotech OPH1003, Phase III, 2013-Present
   Sub-Investigator. A randomized, double-masked, controlled trial to establish the safety and efficacy of intravitreous administration of Fovista™ (Anti-PDGF-B pegylated aptamer) administered in combination with Lucentis® compared to Lucentis® monotherapy in subjects with subfoveal neovascular macular degeneration

ABSTRACTS


02. Wong CG, You TT, Carvalho RAP. Natural history of progressive experimental CNV in the rabbit after sustained release of both VEGF and bFGF within the supra-choroidal space. Association for Research in Vision and Ophthalmology Meeting, May 2009. Abstract

03. Wong CG, Bruce TC, You TT. Experimental CNV after transcleral implantation of VEGF/bFGF-implant within the suprachoroidal space for defining potential long-term synergistic actions of ranibizumab (Lucentis) with small low-cost molecules in ameliorating wet AMD. Association for Research in Vision and Ophthalmology Meeting, May 2008. Abstract


POSTERS & PRESENTATIONS

01. Updates in Retina Care: Macular Degeneration and Implantable Miniature Telescope
    Course Director. Retina Care Symposium, Costa Mesa, California; December 5, 2013.

02. Healthcare

03. Updates in Macular Degeneration
    Invited speaker (JCAPHO). South Coast Eye Center, Laguna Hills, California; November 8, 2013.

    Invited speaker. NVision Centers, Costa Mesa, California; August 22, 2013.

05. Retinopathy of Prematurity and Eye Care for Infants
    Invited speaker. Anaheim Regional Medical Center, Anaheim, California; February 21, 2013.

06. Healthcare


08. Updates in Age-Related Macular Degeneration
    Invited speaker. Forest Home Conference Center, Forest Falls, California; July 5, 2012.

09. Update on Retinal Venocclusive Diseases
    Guest speaker (JCAPHO). South Coast Eye Medical Centers, Laguna Hills, California; March 9, 2012.

10. Healthcare

11. Management of Ophthalmic Emergencies
    Invited speaker. Forest Home Conference Center, Forest Falls, California; July 5, 2011.

12. Retinal Disease Management
    Invited Speaker, Fuentes de Gracia Hospital Grand Rounds. Chimaltenango, Guatemala; March 2011.

13. Diabetes and the Eye
    Invited Speaker. St. Joseph's Hospital, Orange, California; February 26, 2011.

14. Overcoming Retina Hurdles to 20/20 Vision for Your Patients
    Invited Speaker. Orange County Optometric Society, Western Medical Center, California; August 8, 2010

15. Diabetes and the Eye

16. Retinopathy of Prematurity and Other Ocular Anomalies
    Invited Speaker. Anaheim Regional Medical Center, Anaheim, California; October 27, 2009.

18. *Retinopathy of Prematurity and Neonatal Eye Diseases*
   Invited Speaker. Children’s Hospital of Orange at Mission Viejo, California; September 28, 2009.

19. *Retinopathy of Prematurity and Neonatal Eye Diseases*
   Invited Speaker. Department of Neonatology, Children’s Hospital of Orange County, California; July 13, 2009.

20. *Updates in Ophthalmic Care*
   Invited Speaker. Fuentes de Gracia Hospital Grand Rounds, Chimaltenango, Guatemala; July 2009.

21. *Updates on New Treatment for Retinal Diseases*
   Invited Speaker. TLC Annual Symposium, Anaheim, California; June 7, 2009.

22. *Macular Degeneration*
   Invited Speaker. Foundation for Fighting Blindness. Low Vision Symposium, Southern California College of Optometry, Fullerton, California; May 9, 2009.

23. *The Refractive Surgery Retinal Evaluation: Pearls and Pitfalls*
   Invited Speaker. TLC, Newport Beach, California; April 22, 2009.

24. *Retinal Disease Update*

25. *Emerging Treatment Strategies for Exudative AMD.*
   Invited Speaker. Novartis Speaker Program. Costa Mesa, California; March 12, 2008.

26. *Emerging Treatment Strategies for Exudative AMD.*
   Invited Speaker. Novartis Speaker Program. Newport Beach, California; February 20 2008.

27. *Retinopathy of Prematurity and Other Ocular Anomalies*
   Invited Speaker. Children’s Hospital of Orange at Mission Viejo, California; February 20, 2007.

28. *Toxoplasmia Uveitis*
   Invited Speaker. Continuing Medical Education Lecture. Children’s Hospital of Orange County, Orange, California; October 23, 2006

29. *Retinopathy of Prematurity*
   Invited Speaker. Anaheim Regional Medical Center, Anaheim, California; March 14, 2006.

30. *Retinopathy of Prematurity and Neonatal Eye Diseases*
   Invited Speaker. Hoag Presbyterian Hospital, Newport Beach, California; July 12, 2005.

31. *The Great Debates: Controversies in Retinal Disease 2005*
   Invited Speaker. Medical Education Seminar. University of California, Irvine, Beckman Laser Center, Irvine, California; March 26, 2005.

32. *Pediatrics Case Conference*
   Invited Speaker. Rhode Island Hospital, Providence, Rhode Island; January 20, 2003.

33. *Advances in Retina*
   Rhode Island Eye Institute, Providence, Rhode Island; 2002.
34. **Posterior Segment**  
*Posterior Segment Rounds, Central Oregon Optometric Association, Redmond, Oregon; 2001.*

35. **Medicine 2000**  
*Oregon Society of Medical Assisting Conference, Eugene, Oregon; 2000.*

36. **Retinal Diagnoses**  
*Pacific Northwest Conference, Bend, Oregon; 2000.*

37. **Retinal Surgery throughout the Ages**  
*Lake County Optometric Society Meeting, Eugene, Oregon; 1999.*

38. **You TT** and Arroyo JG. Surgical approaches to dislocated lenses. *Annual Fellows’ Conference, Massachusetts Eye & Ear Infirmary, Boston, Massachusetts; 1998.*

39. **You TT** and Young LHY. “Retinal Manifestations of Gastrointestinal Disorders.” *Biennial Residents’ Conference, Massachusetts Eye & Ear Infirmary, Boston, Massachusetts; 1997.*


45. **Cognitive Decision Making - A Computer Based Model**  
*Society of General Internal Medicine Meeting, Washington, DC; 1994.*


47. **Bacterial Utilization of Dissolved Organic Matter in a Natural, Oligotrophic Aquatic System**  
*California Academy of Science Meeting, Los Angeles, California; 1981.*
Title: Cataract & Refractive Surgery
Provider Name: Dr. Murad Sunalp, M.D.

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No

☑ Detailed Course Description
☐ PowerPoint and/or other presentation materials
☒ Advertising (optional)
☒ CV for EACH course instructor
☒ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No

Continuing Education Course Approval Checklist
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract &amp; Refractive Surgery</td>
<td>06/02/2016</td>
</tr>
</tbody>
</table>

Provider Contact Information

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Provider Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad</td>
<td>880 E Merritt Ave #109, Tulare, Ca 93277</td>
</tr>
<tr>
<td>Sunalp</td>
<td>(Last) A (Middle)</td>
</tr>
</tbody>
</table>

Provider Email Address: slv@sunalplaservision.com

Will the proposed course be open to all California licensed optometrists?

- YES [ ]
- NO [ ]

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?

- YES [ ]
- NO [ ]

Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad</td>
<td>A36954</td>
<td>MD</td>
<td>559 688-2020</td>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
<tr>
<td>Sunalp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider: [Signature] 4/21/16

Form CE-01, Rev. 2/16
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cataract &amp; Refractive Surgery</td>
<td>06/02/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Provider Mailing Address</th>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad</td>
<td>880 E Merritt Ave #109, Tulare, Ca 93277</td>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Contact Information</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will the proposed course be open to all California licensed optometrists?</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Instructor Information</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructor Name</td>
<td></td>
<td></td>
</tr>
<tr>
<td>License Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Phone Number</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Email Address</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Signature of Course Provider</td>
<td>4/21/16</td>
<td></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Form CE-01, Rev. 2/16
Cataract & Refractive Surgery Course 1.5 Hours

Preloaded HOYA Lens for Standard Cataract Procedures

While there are many options available to standard lens exchange procedures, the HOYA lens is a superior choice for several reasons. Due to a unique manufacturing process, the preloaded lenses are guaranteed to be sterile at time of insertion. From the manufacturing lab to the surgical procedure, the lens is never exposed to contact with humans or the environment, greatly reducing the incidence of infection or any other form of contamination. The improved insertion device is designed to give surgeons more accuracy and ease when inserting the device, and the smaller incision size required increase patient comfort, decreases healing time, and results in fewer post-operative complications.

NEW Multifocal and Toric Intraocular Lens Correction

Substantial advances have been made intraocular lens technology. While we can never guarantee that a patient will be free from glasses, multifocal lenses can greatly increase chances of independence from glasses and contacts for daily activities. Astigmatism correcting Toric lenses can improve distance vision when appropriately indicated. These options are not a solution for all cataract patients, but understanding this technology and having the widest availability of surgical solutions provides the highest caliber of patient care.

Co-Management Cataract and LASIK Surgery

Reinforcing the MD-OD relationship in regards to patient care. Indications and contraindications for cataract and refractive surgery, opportunities to improve surgical results based upon proper testing, diagnosis, and communication between the surgical and optometric teams.

NEW Sunap ReSure Sealant Technique™

ReSure Sealant is indicated for intraoperative management of clear corneal incision (up to 3.5mm) with a demonstrated wound leak for which a temporary dry surface can be achieved, in order to prevent postoperative fluid egress from such incisions following cataract surgery with intraocular lens placements in adults. It can take one to two minutes to completely dry the surface of the cornea following stromal hydration, a significant time given the short overall length of surgery. Applying two cautery spots will induce wound apposition and temporarily seal the wound, while at the same time preparing the surface of the cornea for the ReSure Sealant. The use of cautery to close the wound, followed by application of the ReSure Sealant, results in a fast and effective means of achieving wound closure and does not appear to cause any astigmatism or increased discomfort for the patient.

NEW SmartDrop™ Technology

SmartDrop™ is a patent pending pharmaceutical solution matrix technology created specifically for stabilizing multiple active pharmaceutical ingredients that do not typically mix. The technology micronizes the particles to enhance solubility, create uniform distribution, balance the pH, and maintain a specific gravity in order to obtain one complete isotonic solution having the ideal osmolality. SmartDrop™ is designed to require 50% fewer drops to be administered by patients and may provide significant cost savings up to 75% compared to traditional post-surgery eye drop treatments.
Dear XXXXXX,

We would like to cordially invite you to the Sunalp Laser Vision CE Lecture, Spring 2016!

In appreciation for our mutual hard work, and care of patients in the San Juaquin Valley, we would be honored to have you join us in an evening of food, drink, networking, and education! As we each strive to provide the highest level of care in our individual practices, it is important that we not only work together, but make a concerted effort to offer the most comprehensive and up-to-date procedures available. The SLV lecture will provide a positive environment for professional interaction, as well as a stimulating evening of industry education.

As you are probably aware, Sunalp Laser Vision has been providing eye care in Tulare and the surrounding area for over 32 years. Our Tulare facility was remodeled for our use in 2006, and our Visalia location recently opened. In addition to our two permanent facilities, we have auxiliary offices in Porterville and Bakersfield for the added convenience of your patients.

Dr. Murad A. Sunalp’s specialized training has given the community access to ophthalmic laser surgery using VISX and LASIK Excimer Laser systems, up-to-the minute cataract management using multifocal and toric intraocular lens implants; and glaucoma and diabetic eye care. Dr. Sunalp has not only been able to demonstrate the highest caliber of surgical expertise, but has continued to help lead the field in innovations.

We are also proud to introduce the newest addition to our team, Dr. Manpreet Rehal, a Central Valley native. After completing her undergraduate studies at CSU Stanislaus, Dr. Rehal continued to the Illinois College of Optometry. While very skilled in the optometric field, she also contributes to our surgical staff, specializing in the co-management care of LASIK, PRK, cataract, pterygium, and blepharoplasty patients.

TOPICS WILL INCLUDE:  
- NEW Endolaser for Symptomatic Vitreous Floaters  
- NEW Sunalp ReSure Sealant Technique™  
- Preloaded HOYA Lens for Standard Cataract Procedures  
- NEW Multifocal and Toric Intraocular Lens Correction  
- Co-Management Cataract and LASIK Surgery  
- NEW Sunalp Protocol™ Avastin Injections  
- NEW Glaucoma 1Stents  
- NEW SmartDrop™ Technology

WHERE:  “The Vintage Press,” 216 N Willis St, Visalia Ca 93291
WHEN: Thursday, June 1st, 6 – 9:00 P.M.
RSVP: (559) 688-2020 ***By Friday May 13th

We look forward to seeing you there!!!!

Sincerely,

Murad A. Sunalp  
M.D., M.B.A., FACS

Manpreet Rehal  
O.D.
WE WOULD LIKE TO INVITE YOU TO OUR SPRING 2016 CONTINUING EDUCATION EVENT!

When: Thursday, June 2nd 6 – 9:30 PM

Where: The Vintage Press, Visalia

Topics:

- NEW Endolaser for Symptomatic Vitreous Floaters
- NEW Sunalp ReSure Sealant Technique™
- Preloaded HOYA Lens for Standard Cataract Procedures
- NEW Multifocal and Toric Intraocular Lens Correction
- Co-Management Cataract and LASIK Surgery
- NEW Sunalp Protocol™ Avastin Injections
- NEW Glaucoma iStents

RSVP: 559-688-2020

EAT, NETWORK, LEARN, AND ENJOY!!!!!
Murad A. Sunalp,
M.D., M.B.A., M.A., B.M., B.Ch., FACS

Sunalp Laser Vision • 880 East Merritt Avenue • Tulare, CA 93274
(800) 367-3363 • (559) 688-2020 • sunalp@aol.com

OBJECTIVE
Seeking professional opportunities in Ophthalmic surgical applications and senior healthcare administration

SKILLS
- Four years experience during post-doctoral fellowship and residency at the Estelle Doheny Eye Institute
- Nearly thirty years experience in private practice surgical Ophthalmology
- Highly skilled in the use of laser-based surgical and optical imaging equipment
- Conducted research on improving Ophthalmic surgical instrumentation
- Fluent in Turkish, English, German

EDUCATION

Oxford University

Oxford University Medical School

Stanford University School of Medicine

University of Southern California

University of California - Los Angeles

University of Tennessee

St. John's College
Oxford, England
October 1972 - July 1978

John Radcliffe Hospital
Headington, England
July 1978 - June 1980

Department of Ophthalmology
Stanford, California
Summer 1977 & Summer 1981

Department of Ophthalmology
Doheny Eye Institute
Los Angeles, California
July 1980 - July 1985

Anderson School of Business M.B.A.
Los Angeles, California
July 2003 - January 2005

College of Business Administration Physician Executive M.B.A.
Knoxville, Tennessee
January 2012 - December 2012
PROFESSIONAL EXPERIENCE

Internship
University of Southern California
Department of Ophthalmology
Los Angeles, California
June 1980 - June 1981

Fellowship
Estelle Doheny Eye Foundation
Retina Research
Los Angeles, California
July 1981 - June 1982

Residency
University of Southern California
Department of Ophthalmology
Doheny Eye Institute
Los Angeles, California
July 1982 - June 1985

Private Practice
Sunalp Laser Vision
880 East Merritt Avenue
Suite 109
Tulare, California
November 1985 - Present

ASSOCIATIONS/MEMBERSHIPS

Fellow, American Academy of Ophthalmology (AAO)
Fellow American College of Surgeons
Member, Royal College of Physicians - England
Member, Royal College of Surgeons - England
Member, California Association of Ophthalmology
Fellow, Royal College of Ophthalmologists - England (FRCO)
Clinical Professor of Ophthalmology - U.C. Berkeley School of Optometry
Member, American Society of Cataract & Refractive Surgery (ASCRS)
Staff Member, Tulare Regional Medical Center - Tulare, CA
Staff Member, Sierra View District Hospital - Porterville, CA
Staff Member, Hanford Community Medical Center - Hanford, CA

LICENSES:
California, 1980
Turkey, 1989
United Kingdom, 1978
Hawaii, 2014
Florida, 2015

RESEARCH

- IOL/Phaco
- Avastin injections
- Scuba Contact Lens
- Refractive Surgery
- Tass syndrome
- Ophthalmic Instruments
Murad A. Sunalp, M.D., B.M., B. Ch.
M.D., M.A. (Oxford) F.A.A.O (USC)
FRCOphth (UK)
F.R.C.S., L.R.C.P. (London)

Sequoia Eye Center Medical Clinic / Sunalp Laser Vision / Sunalp Vision Center / Oxford NuVision Laser Medical Center
880 East Merritt Avenue • Tulare, California 93274
(800) 367-3363 • (559) 688-2020 • www.SunalpLaserVision.com

□ EXPERTISE
Ophthalmology, with special interest in ophthalmic lasers, state-of-the-art cataract surgery with multifocal and toric intraocular lenses, VISX LASIK Excimer Laser with CustomVue, and glaucoma surgery

□ EDUCATION
Oakham Private Boarding School
Rutland, United Kingdom
September 1969 ~ July 1971

St. John's College, Medical School
Oxford University, England
October 1972 ~ July 1976

Oxford University Medical School
John Radcliffe Hospital
Headington, England
July 1978 ~ June 1980

Stanford University School of Medicine
Department of Ophthalmology
Stanford, California
Summer 1977 & Summer 1981

University of Southern California
Department of Ophthalmology / Doheny Eye Institute
Los Angeles, California
July 1980 ~ July 1985

U.C.L.A. Anderson School of Business M.B.A.
Los Angeles, California
July 2003 ~ Pending
DEGREES & DIPLOMAS

B.A. Honors, Physiology (Oxford) • July 1975
M.A. (Oxford) • July 1975
B.M., B. Ch. (Oxford) • July 1978
L.R.C.P. (London), M.R.C.S. (England), (M.D.) • July 1978
E.C.F.M.G. • July 1978
M.R.C.S. • September 1979
F.R.C.S. • 1981
Fellow of the American Academy of Ophthalmology, FAAO • 1988
Fellow of the Royal College of Ophthalmology, England, FRCO • 1990

LANGUAGES

Turkish, English, German, Spanish

HONORS

American Field Service Scholarship of U.S.A. • 1969
O.R.O.S. Scholarship for U.K. • 1969

MEDICAL LICENSES

England U.K. — B.M. B. Ch. • 1978
California, U.S.A. — M.D. • 1981
Board Certified — American Board of Ophthalmology — F.A.O.G. • May 19, 1988
Board Certified in Ophthalmology, Turkey • 1989
Fellow of the Royal College of Ophthalmologists, United Kingdom — FRCO • 1990

POST-QUALIFICATION APPOINTMENTS

ECFMG 302-986-5

HOUSE SURGEON:
Mr. J.J.M. Hatfield, F.R.C.S., F.R.C.S.E.
Regional Advisor to Royal College of Surgeons,
Bedford General Hospital,
August 1978 — January 1979

HOUSE PHYSICIAN:
Dr. S.C. Trueove, M.D., F.R.C.P
May Reader in Clinical Medicine;
and Drs. C.W. Burke and R.C. Turner
The Radcliffe Infirmary, Oxford
February 1979 — July 1979

ANATOMY INSTRUCTOR AND TUTOR:
Professor C.B. Phillips, F.R.C.P.
Oxford University, Department of Anatomy
August 1979 — January 1980

SENIOR HOUSE OFFICER:
Professor R.B. Duthie, F.R.C.S., F.R.C.S.E., Ch.M., R.A.G.S.,
Nuffield Professor of Orthopedic Surgery,
University of Oxford
February 1980 — July 1980

308
**INTERNERSHIP**
University of Southern California, Department of Ophthalmology
Los Angeles, California
June 1980 – June 1981

**FELLOWSHIP**
Estelle Doheny Eye Foundation
Los Angeles, California
Retina Research
July 1981 – June 1982

**RESIDENCY**
University of Southern California, Department of Ophthalmology / Doheny Eye Institute
Los Angeles, California
July 1982 – June 1985

**PROFESSIONAL EXPERIENCE**
Sequoia Eye Center Medical Clinic / Sunalp Laser Vision / Sunalp Vision Center / Oxford NuVision Laser Medical Center
880 East Millit Avenue
Tulare, California 93274
November 1985 – Present

**ASSOCIATIONS**
Fellow of the American Academy of Ophthalmology, FAAO
Royal College of Physicians, England
Royal College of Surgeons, England
Member of California Medical Society
California Association of Ophthalmology
Fellow of the Royal College of Ophthalmologists, England FRCO
Clinical Professor of Ophthalmology - School of Optometry, U.C. Berkeley
American Society of Cataract & Refractive Surgery, ASCRS

**HOSPITAL STAFF PRIVILEGES**
Tulare District Hospital, Tulare, CA
Sierra View District Hospital, Porterville, CA
Hanford Community Medical Center, Hanford, CA

**CHARITY SURGERY**
Azores, Portugal – 1989
Istanbul, Turkey – 1989
Istanbul, Turkey – 1992
Cabo San Jose, Mexico – 1994 - 1995
Mardin, Turkey – 1995
Istanbul, Turkey – 1997
Sarajevo, Bosnia – 1998
CHARITIES

CASA (Court Appointed Special Advocate) FOR CHILDREN 2008 - 2009

City of Hope 2008

Visalia Veterans' Committee 2009

RESEARCH

- IOL/Phaco
- Refractive Surgery
- Dry Eyes
- Topiramate and Glaucoma
- Scuba Contact Lens
- Ophthalmic Instruments

SERVICES

OPHTHALMIC & REFRACTIVE
CONSULTATIONS:
Cornal Topography (Nidek)
Pachymetry
OCT & HRT (Heidelberg)
IOL Master (Zeiss)
Visual Field
Fluorescein Angiography

OPHTHALMIC LASERS & PROCEDURES
Secondary Cataract YAG (Laserax)
Macular Degeneration (Argon)
Glaucoma Yag Laser (Lumenis)
Diabetic Argon Laser (HGM)
Glaucoma Surgical Implants:
Ahmed Glaucoma Valve
Mini Express Shunt

INFINITI OZII PHACO CATARACT
- With Intraocular Lens Implant (IOL)
Multifocal Lenses:
- TECON Multifocal IOL
- ReSTOR Multifocal IOL
- Crystalens HD ICL
- Toric IOL
- Aspheric IOL

PLASTIC SURGERY
Blepharoplasty Upper & Lower Lids
Entropion & Ectropion Repair
- Ptosis Repair
- Pterygium with Autograft & Fibrin Glue
- Lacrimal Surgery

REFRACTIVE SURGERY
CustomVue VISX Lasik
Photo-Refractive Keratotomy (PRK)
- Epiklasik
Astigmatic Keratotomy (LRI)
Conductive Keratoplasty (CK)
Refractive Lensectomy
Implantable Contact Lenses (ICL)
PUBLICATIONS & STUDIES


02. Improved Definition of the Appendix Mass and Appendectomy using thermocouple potential use submitted to the Department of Surgery, Oxford University, M. Sunalp - 1979


04. Inhibition of Angiogenesis by a Cardiag Extract in Corneal Thermal Burns (abstract), ARVO Meeting, M. Sunalp, R. Novak, N. Sorgente - 1984

05. Pressure Effect of Tie-On Dressing in Skin Grafts, by M. Sunalp - 1984


08. 240 Band Modification with Scleral Buckle in Retinal Detachment, M. Sunalp - 1985

09. Inhibition of Angiogenesis on Rabbit transplant Model (abstract) ARVO meeting, M. Sunalp, R. Novak, N. Sorgente - 1985

10. Small Incision Cataract Surgery Lecture, Istanbul University, guest speaker. M. Sunalp - September 1985


12. Medical Ophthalmology Mission to the Azores with the Tuiare-Angra Slitter City Foundation, to perform for the first time on the island of Terceira in Portugal, cataract with implant surgery, M. Sunalp - June 1989


15. Turkish-American Ophthalmology Meeting, Istanbul, Turkey - June 1990
   Lectures given by M. Sunalp:
   1. Melanoma and Laser Treatment
   2. Tumor Neovascularization
   3. Phaco IOL Cataract Extraction Lecture, slides and video

   Lectures given by M. Sunalp:
   1. Decentration Study of 6x6mm PMMA IOL's
   2. Comparison of Foldable/PMMA IOL's, Astigmatism
   3. Two Rare Cases of Hyphopyon
   4. Video (PHACO) Library and Competition

17. Oval in Oval Concept in 6x6mm Small Incision IOL and Oval Capsulorhexis**, Video for Dublin.
   Video presentation by M. Sunalp - August 1990

** Video demonstration by M. Sunalp.
16. Punctal Plug Invention, Dr. Sunalp, Dr. Taji - September 1969, (Patent pending)

19. Contact Lens and Scuba Diving Research - 1989 - 1990

20. Miray's Disease, Authors: Dr. Kenneth Wright, Dr. Sunalp - 1980 (et: AL, pending.)


Lectures given by M. Sunalp:
1. Preoperative sedation in cataract surgery
2. No suture phacoemulsification versus one suture phacoemulsification
Video presentation:
1. No suture, Oval In-Oval, Phacoemulsification

25. Guest Lecturer, Istanbul University, M. Sunalp, January 3, 1992

Video Presentation by M. Sunalp:
1. No Suture, Oval In Oval, Phacoemulsification

Video Presentation by M. Sunalp:
1. No Suture, Oval In Oval, Phacoemulsification


30. "Diode Matters," Keeler Newsletter for Microlaser Users, Vol.1 No. 2; August 1992, Murad A. Sunalp, MD

31. Congress of the European Society of Cataract & Refractive Surgery (Formerly the European IOL Implant Council), Paris, France - September 1992
Lectures given by M. Sunalp:
1. Small incision phacoemulsification with topical anesthesia
2. Astigmatic comparison analysis of one suture VS. no suture phacoemulsification cataract surgery
Video presentation:
1. No Injection, No Suture, Yes Phacoemulsification, Yes Small Incision, Yes Modified Oval Capsulotomy

32. Congress of the European Society of Cataract & Refractive Surgery, Innsbruck, Austria - September 1993
Video Presentation by M. Sunalp:
1. Sunalp Phacoemulsification Spatula

Presented by Murad A. Sunalp, MD, Thomas Nagy, O.D., Gary Smith, O.D.
Lecture given:
1. Radial Keratotomy (RK) VS. VISX Excimer Laser

Lecture given by M. Sunalp:
1. Advances in Refractive Surgery

36. EYETECH '95, New Orleans, Louisiana - June 1995
Lecture given by M. Sunalp:
1. Various Types of Refractive Surgery

37. EYETECH '96, New Orleans, Louisiana - June 1995
Lecture given by M. Sunalp:
1. Radial Keratotomy Wet Lab

38. AAO/TADS, Chicago, Illinois - October 1995
Lecture given by M. Sunalp:
1. Vein Occlusions and Bee Venom

39. Refractive Surgery, Latin America, Colombia - November 1996
Lecture given by M. Sunalp:
1. Correction of pseudophakic myopia with RK/AK

40. Hawaiian Eye - January 1997
Lecture given by M. Sunalp:
1. Correction of pseudophakic myopia with RK/AK

41. ASCRS, Mazel Conference, Washington, D.C. - June 1997
Lecture given by M. Sunalp:
1. Correction of pseudophakic myopia with RK/AK

42. ESCRS Prague - September 1997
Lecture given by M. Sunalp:
1. Correction of pseudophakic myopia with RK/AK and simultaneous bilateral cataract extraction under general anesthesia

43. International Turkish Ophthalmology meeting, Istanbul - September 1997
Lecture given by M. Sunalp:
1. Simultaneous bilateral cataract extraction under general anesthesia

44. AAO San Francisco, California - October 1997
Lecture given by M. Sunalp:
1. Simultaneous bilateral cataract extraction under general anesthesia

45. Control of Post Cataract Surgery Pressure Spikes With Tolbutamide Drops,
Clinical Study with M. Sunalp, N. Sorgente - 1998

46. Post Radial Keratotomy Cataract Surgery - Intra-operative Refinoscopy and IOL Insertion,
World Ophthalmology Congress, Amsterdam, Netherlands - June 1999
Lecture given by M. Sunalp

47. "Use of Intraoperative Refractive Refinement with Piggyback IOL for difficult Cataract cases,"
Ocular Surgery News, Vol. 17, No. 19, October 1, 1998, Murad A. Sunalp, MD
Dr. Murad Sunalp

   Lectures given by M. Sunalp:
   1. Phacoemulsification
   2. Intra Operative Refraction
   3. Live Cataract Surgery

49. General Hospital, Cabo San Jose, Mexico – February 28, 2000
   Lecture given by M. Sunalp:
   1. Dry Eyes and Glaucoma Surgery

50. ASCRS, Boston International Meeting, Film Library, Boston, Massachusetts, M. Sunalp - May 20-24, 2000

51. Doheny Eye Institute, University of Southern California, June 2000
   Lecture given by M. Sunalp:
   1. Temporary IOL Insertion for difficult Post Refractive Cataract cases

52. International Cataract Symposium, Lisbon, Portugal, September 2000: Panel member

53. ASCRS San Francisco, California, Lecture / Video on Refractive Surgery, M. Sunalp - April 2003


60. ASCRS New Orleans, Louisiana, Intraocular surgery and Trypan blue and (TASS) – Featured in Eye Word Today (Best paper of the session), M. Sunalp - April 2008


62. The American Optometric Association on Intraoperative Floppy Iris Syndrome (IFIS) and Malayan ring, Visalia, California – April 2009
   Lecture given by M. Sunalp

63. Advanced Cataract Surgery and Comanagement with Multifocal IOL’s, Visalia, California - October 1, 2009
   Lecture given by M. Sunalp
48. First Ophthalmic International Meeting, Lisbon, Portugal - September 24-25, 1999, Azores, Portugal - October 1, 1999
   Lectures given by M. Sunaip:
   1. Phacoemulsification
   2. Intra Operative Refraction
   3. Live Cataract Surgery

49. General Hospital, Cabo San Jose, Mexico - February 29, 2000
   Lecture given by M. Sunaip:
   1. Dry Eyes and Glaucoma Surgery

50. ASCRS, Boston International Meeting, Film Library, Boston, Massachusetts, M. Sunaip - May 20-24, 2000

51. Doheny Eye Institute, University of Southern California, June 2000
   Lecture given by M. Sunaip:
   1. Temporary IOL Insertion for difficult Post Refractive Cataract cases

52. International Cataract Symposium, Lisbon, Portugal, September 2000. Panel member

53. ASCRS San Francisco, California, Lecture / Video on Refractive Surgery, M. Sunaip - April 2003

54. AAO/TAOS Symposium Anaheim, California, "Lasik and Retinal Detachment," M. Sunaip - November 2003

55. Chinese Cultural Center Visalia, California, "Surgical Correction ofPresbyopia," M. Sunaip - May 19, 2004


60. ASCRS New Orleans, Louisiana, Intraocular surgery and Trypan blue and (TASS)--Featured in Eye World Today (Best paper of the session), M. Sunaip - April 2009


62. The American Optometric Association on Intraoperative Floppy Iris Syndrome (IFIS) and Malayan Ring, Visalia, California --April 2009
   Lecture given by M. Sunaip

63. Advanced Cataract Surgery and Co management with Multifocal IOL’s, Visalia, California - October 1, 2009
   Lecture given by M. Sunaip

64. Publication Journal of Cataract & Refractive Surgery - December 2010 Volume 36 Number 12 "Two cases of Toxic anterior segment syndrome from generic trypan blue"

65. ASCRS San Diego, California Universal Corneal Marker Presentation - March 26, 2011
   Lecture given by M. Sunaip

66. ASCRS San Diego, California Technique for Injecting Bevacizumab for Diabetic and Other Macular Edema Treatment – March 26, 2011 – Lecture given by M. Sunaip

67. 42nd Annual Doheny Days Conference, Universal Refractive Corneal Marker – June 11, 2011 – Lecture given by Dr. Sunaip

68. 20th anniversary of LASIK and the 10th Aegean Cornea Meeting, Aegean Cornea X July 9-11
Continuing Education Course Approval Checklist

Title: Vitreo Retinal Procedures
Provider Name: Dr. Murad Sunalp, MD

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No
☑ Detailed Course Description
☐ PowerPoint and/or other presentation materials
☑ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No
# CONTINUING EDUCATION COURSE APPROVAL APPLICATION

Pursuant to California Code of Regulations (CCR), § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

### Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitreo Retinal Procedures</td>
<td>06/02/2016</td>
</tr>
</tbody>
</table>

### Course Provider Contact Information

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Provider Mailing Address</th>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad</td>
<td>880 E Merrill Ave #109</td>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
<tr>
<td>Sunalp</td>
<td>Tulare</td>
<td></td>
</tr>
<tr>
<td>A</td>
<td>Ca</td>
<td>93277</td>
</tr>
</tbody>
</table>

### Will the proposed course be open to all California licensed optometrists?  
☐ YES  ☐ NO

### Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?  
☐ YES  ☐ NO

### Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad</td>
<td>A36954</td>
<td>MD</td>
<td>.559 688-2020</td>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
<tr>
<td>Sunalp</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

4/21/16

Signature of Course Provider
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) §1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR §1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vitreo Retinal Procedures</td>
<td>06/02/2016</td>
</tr>
</tbody>
</table>

**Course Provider Contact Information**

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Provider Mailing Address</th>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad Sunalp</td>
<td>880 E Merritt Ave #109</td>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
<tr>
<td>(First)</td>
<td>City Tuleare State Ca Zip 93277</td>
<td></td>
</tr>
<tr>
<td>(Last)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Middle)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists? □ YES □ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? □ YES □ NO

**Course Instructor Information**

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad Sunalp A</td>
<td>A36954</td>
<td>MD</td>
<td>559 688-2020</td>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
<tr>
<td>(First)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Last)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>(Middle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider: _____________________________

Date: 4/21/16

Form CE-01, Rev. 2/16
Vitreo Retinal Course 1 Hour

NEW Endolaser for Vitreous Strand Floaters

Focal endolaser photocoagulation can be used to treat patients suffering from vitreous floaters. Laser vitreolysis allows for small localized treatment and higher accuracy. The endolaser procedure does not require an incision and is a simple outpatient procedure that can be performed in office. Prior to the treatment, anesthetic eye drops are applied, with use of a biomicroscope (slit lamp) to precisely deliver treatment, floaters are broken apart and/or frequently vaporized so that they disappear or become much less bothersome.

NEW Sunalp Protocol™ Avastin Injections

Avastin is the brand name for bevacizumab, a drug injected into the eye to slow vision loss in people who have “wet” age related macular degeneration (AMD). Injection of vascular endothelial growth inhibitors (VEGI) into the posterior chamber of the eye has become the mainstay of treatment in diabetic retinopathy and macular degeneration. Retinal specialists typically perform these injections using a transscleral approach and manage any attendant complications. A new perlimbic approach has been developed by Murad Sunalp, MD. This approach avoids scleral and retinal injury and lessens the risk of endophthalmitis and central retinal vein occlusion.
Dear XXXXXX,

We would like to cordially invite you to the Sunalp Laser Vision CE Lecture, Spring 2016!

In appreciation for our mutual hard work, and care of patients in the San Juaquin Valley, we would be honored to have you join us in an evening of food, drink, networking, and education! As we each strive to provide the highest level of care in our individual practices, it is important that we not only work together, but make a concerted effort to offer the most comprehensive and up-to-date procedures available. The SLV lecture will provide a positive environment for professional interaction, as well as a stimulating evening of industry education.

As you are probably aware, Sunalp Laser Vision has been providing eye care in Tulare and the surrounding area for over 32 years. Our Tulare facility was remodeled for our use in 2006, and our Visalia location recently opened. In addition to our two permanent facilities, we have auxiliary offices in Porterville and Bakersfield for the added convenience of your patients.

Dr. Murad A. Sunalp’s specialized training has given the community access to ophthalmic laser surgery using VISX and LASIK Excimer Laser systems, up-to-the-minute cataract management using multifocal and toric intraocular lens implants; and glaucoma and diabetic eye care. Dr. Sunalp has not only been able to demonstrate the highest caliber of surgical expertise, but has continued to help lead the field in innovations.

We are also proud to introduce the newest addition to our team, Dr. Manpreet Rehal, a Central Valley native. After completing her undergraduate studies at CSU Stanislaus, Dr. Rehal continued to the Illinois College of Optometry. While very skilled in the optometric field, she also contributes to our surgical staff, specializing in the co-management care of LASIK, PRK, cataract, pterygium, and blepharoplasty patients.

**TOPICS WILL INCLUDE:**
- NEW Endolaser for Symptomatic Vitreous Floaters
- NEW Sunalp ReSure Sealant Technique™
- Preloaded HOYA Lens for Standard Cataract Procedures
- NEW Multifocal and Toric Intraocular Lens Correction
- Co-Management Cataract and LASIK Surgery
- NEW Sunalp Protocol™ Avastin Injections
- NEW Glaucoma iStents
- NEW SmartDrop™ Technology

**WHERE:** “The Vintage Press,” 216 N Willis St, Visalia Ca 93291
**WHEN:** Thursday, June 1st, 6 – 9:00 P.M.
**RSVP:** (559) 688-2020 ***By Friday May 13th

We look forward to seeing you there!!!!

Sincerely,

Murad A. Sunalp .
M.D., M.B.A., FACS

Manpreet Rehal
O.D.

Cataract/Cornea  Diabetic/Macular/Retina  Glaucoma  Plastic Surgery  Refractive Surgery  Optical
WE WOULD LIKE TO INVITE YOU TO OUR SPRING 2016 CONTINUING EDUCATION EVENT!

When: Thursday, June 2\textsuperscript{nd} 6 – 9:30 PM
Where: The Vintage Press, Visalia

Topics:

- NEW Endolaser for Symptomatic Vitreous Floaters
- NEW Sunalp ReSure Sealant Technique™
- Preloaded HOYA Lens for Standard Cataract Procedures
- NEW Multifocal and Toric Intraocular Lens Correction
- Co-Management Cataract and LASIK Surgery
- NEW Sunalp Protocol™ Avastin Injections
- NEW Glaucoma iStents

RSVP: 559-688-2020

EAT, NETWORK, LEARN, AND ENJOY!!!!
Murad A. Sunalp,
M.D., M.B.A., M.A., B.M., B.Ch., FACS

Sunalp Laser Vision • 880 East Merritt Avenue • Tulare, CA 93274
(800) 367-3363 • (559) 688-2020 • sunalp@aol.com

OBJECTIVE
Seeking professional opportunities in Ophthalmic surgical applications and senior healthcare administration

SKILLS
• Four years experience during post-doctoral fellowship and residency at the Estelle Doheny Eye Institute
• Nearly thirty years experience in private practice surgical Ophthalmology
• Highly skilled in the use of laser-based surgical and optical imaging equipment
• Conducted research on improving Ophthalmic surgical instrumentation
• Fluent in Turkish, English, German

EDUCATION

Oxford University

St. John’s College
Oxford, England
October 1972 - July 1978

Oxford University Medical School

John Radcliffe Hospital
Headington, England
July 1978 - June 1980

Stanford University School of Medicine

Department of Ophthalmology
Stanford, California
Summer 1977 & Summer 1981

University of Southern California

Department of Ophthalmology
Doheny Eye Institute
Los Angeles, California
July 1980 - July 1985

University of California - Los Angeles

Anderson School of Business M.B.A.
Los Angeles, California
July 2003 - January 2005

University of Tennessee

College of Business Administration Physician Executive M.B.A.
Knoxville, Tennessee
January 2012 - December 2012
PROFESSIONAL EXPERIENCE

Internship
University of Southern California
Department of Ophthalmology
Los Angeles, California
June 1980 - June 1981

Fellowship
Estelle Doheny Eye Foundation
Retina Research
Los Angeles, California
July 1981 - June 1982

Residency
University of Southern California
Department of Ophthalmology
Doheny Eye Institute
Los Angeles, California
July 1982 - June 1985

Private Practice
Sun Alpine Laser Vision
880 East Merritt Avenue
Suite 109
Tulare, California
November 1985 - Present

ASSOCIATIONS/MEMBERSHIPS

Fellow, American Academy of Ophthalmology (AAO)
Fellow American College of Surgeons
Member, Royal College of Physicians - England
Member, Royal College of Surgeons - England
Member, California Association of Ophthalmology
Fellow, Royal College of Ophthalmologists - England (FRCO)
Clinical Professor of Ophthalmology - U.C. Berkeley School of Optometry
Member, American Society of Cataract & Refractive Surgery (ASCRS)
Staff Member, Tulare Regional Medical Center - Tulare, CA
Staff Member, Sierra View District Hospital - Porterville, CA
Staff Member, Hanford Community Medical Center - Hanford, CA

LICENSES:
California, 1980
Turkey, 1989
United Kingdom, 1978
Hawaii, 2014
Florida, 2015

RESEARCH

- IOL/Phaco
- Avastin injections
- Scuba Contact Lens
- Refractive Surgery
- Tass syndrome
- Ophthalmic Instruments
Murad A. Sunalp, M.D., B.M., B. Ch.
M.D., M.A. (Oxford) F.A.A.O (USC)
FRCophth (UK)
F.R.C.S., L.R.C.P. (London)

Sequoia Eye Center Medical Clinic / Sunalp Laser Vision / Sunalp Vision Center /
Oxford NuVision Laser Medical Center
880 East Merritt Avenue • Tulare, California 93274
(800) 367-3363 • (559) 688-2020 • www.SunalpLaserVision.com

EXPERTISE
Ophthalmology; with special interest in opthalmic lasers; state-of-the-art cataract surgery with multifocal and toric intraocular lenses, VISX LASIK Excimer Laser with CustomVue, and glaucoma surgery.

EDUCATION
Oakham Private Boarding School
Rutland, United Kingdom
September 1968 – July 1971

St. John’s College, Medical School
Oxford University, England
October 1972 – July 1976

Oxford University Medical School
John Radcliffe Hospital
Headington, England
July 1976 – June 1980

Stanford University School of Medicine
Department of Ophthalmology
Stanford, California
Summer 1977 & Summer 1981

University of Southern California
Department of Ophthalmology / Doheny Eye Institute
Los Angeles, California
July 1980 – July 1985

U.C.L.A. Anderson School of Business M.B.A.
Los Angeles, California
July 2006 – Pending

324
DEGREES & DIPLOMAS

B.A. Honors, Physiology (Oxford) • July 1975
M.A. (Oxford) • July 1975
B.M., B. Ch. (Oxford) • July 1978
L.R.C.P. (London), M.R.C.S. (England), (M.D.) • July 1978
E.C.F.M.G. • July 1978
V.G.E. • September 1979
F.L.E.X. • 1981
Fellow of the American Academy of Ophthalmology, F.A.A.O. • 1986

LANGUAGES

Turkish, English, German, Spanish

HONORS

American Field Service Scholarship of U.S.A. • 1989
O.P.O.S. Scholarship for U.K. • 1989

MEDICAL LICENSES

England U.K. — B.M. B. Ch. • 1978
California, U.S.A. — M.D. • 1981
Board Certified — American Board of Ophthalmology — F.A.O.O. • May 19, 1988
Board Certified in Ophthalmology, Turkey • 1989
Fellow of the Royal College of Ophthalmologists, United Kingdom — F.R.C.O. • 1990

ECFMG 302-896/5

POST-QUALIFICATION APPOINTMENTS

HOUSE SURGEON: Mr. J.J.M. Hadfield, F.R.C.S., F.R.C.S.E,
Regional Advisor to Royal College of Surgeons,
Bedford General Hospital
August 1978 — January 1979

HOUSE PHYSICIAN: Dr. S.C. Truelove, M.D., F.R.C.P.
May Reader in Clinical Medicine,
and Drs. C.W. Burke and R.C. Turner
The Radcliffe Infirmary, Oxford
February 1979 — July 1979

ANATOMY INSTRUCTOR AND TUTOR:
Professor C.B. Phillips, F.R.C.P.,
Oxford University, Department of Anatomy
August 1979 — January 1993

SENIOR HOUSE OFFICER:
Professor R.B. Duthie, F.R.C.S., F.R.C.S.E., Ch.M., R.A.C.S.,
Nuffield Professor of Orthopedic Surgery,
University of Oxford
February 1980 — July 1980
## INTERNSHIP
University of Southern California
Department of Ophthalmology
Los Angeles, California
June 1980 - June 1981

## FELLOWSHIP
Estelle Doheny Eye Foundation
Los Angeles, California
Retina Research
July 1981 - June 1982

## RESIDENCY
University of Southern California
Department of Ophthalmology / Doheny Eye Institute
Los Angeles, California
July 1982 - June 1985

## PROFESSIONAL EXPERIENCE
Sequoia Eye Center Medical Clinic / Sunalp Laser Vision / Sunalp Vision Center /
Oxford NuVision Laser Medical Center
860 East Merritt Avenue
Tulare, California 93274
November 1985 - Present

## ASSOCIATIONS
Fellow of the American Academy of Ophthalmology, FAAO
Royal College of Physicians, England
Royal College of Surgeons, England
Member of California Medical Society
California Association of Ophthalmology
Fellow of the Royal College of Ophthalmologists, England, FRCS
Clinical Professor of Ophthalmology - School of Optometry, U.C. Berkeley
American Society of Cataract & Refractive Surgery, ASCRS.

## HOSPITAL STAFF PRIVILEGES
Tulare District Hospital, Tulare, CA
Sierra View District Hospital, Porterville, CA
Hanford Community Medical Center, Hanford, CA

## CHARITY SURGERY
Azores, Portugal – 1989
Istanbul, Turkey – 1989
Istanbul, Turkey – 1992
Cabo San Jose, Mexico – 1994 - 1995
Mardin, Turkey – 1995
Istanbul, Turkey – 1997
Sarajevo, Bosnia – 1998
CHARITIES
CASA (Court Appointed Special Advocate) FOR CHILDREN 2008 - 2009
City of Hope 2008
Visalia Veterans Committee 2009

RESEARCH
- IOL/Phaco
- Refractive Surgery
- Dry Eyes
- Tolbutamide and Glaucoma
- Suba Contact Lens
- Ophthalmic Instruments

SERVICES
OPHTHALMIC & REFRACTIVE
CONSULTATIONS:
- Corneal Topography (Nidek)
- Pachymetry
- OCT & HRT (Heidelberg)
- IOL Master (Zeiss)
- Visual Field
- Fluorescin Angiography

OPHTHALMIC LASERS & PROCEDURES
- Secondary Cataract YAG (Laserek)
- Macular Degeneration (Argon)
- Glaucoma Yag Laser (Lumenis)
- Diabetic Argon Laser (HGM)
- Glaucoma Surgical Implants:
  - Ahmed Glaucoma Valve
  - Mini Express Shunt

INFINITI OZII PHACO CATARACT
With Intraocular Lens Implant (IOL)
Multifocal Lenses:
- TECNIS Multifocal IOL
- ReSTOR Multifocal IOL
- Crystalens HD IOL
- Toric IOL
- Aspheric IOL

PLASTIC SURGERY
- Blepharoplasty Upper & Lower Lids
- Entropion & Ectropion Repair
- Pterygium Repair
- Ptosis Repair
- Phakomata with Autograft & Fibrin Glue
- Laceral Surgery

REFRACTIVE SURGERY
- CustomVue VISX Lasik
- Photo-Refractive Keratoplasty (PRK)
- Epilasik
- Astigmatic Keratotomy (LRI)
- Conductive Keratoplasty (CK)
- Refractiv Lensectomy
- Implantable Contact Lenses (ICL)

327
PUBLICATIONS & STUDIES


02. Improved Definition of the Appendix Mass and Appendectomy using thermocouple potential use submitted to the Department of Surgery, Oxford University, M. Sunalp - 1979


04. Inhibition of Angiogenesis by a Cartilage Extract in Corneal Thermal Burns (abstract), ARVO Meeting, M. Sunalp, P. Novak, N. Sorgente - 1984

05. Pressure Effect of Tie-Over Dressing in Skin Grafts, by M. Sunalp - 1984


08. 240 Band Modification with Scleral Buckle in Retinal Detachment, M. Sunalp - 1985

09. Inhibition of Angiogenesis on Rabbit transplant Model (abstract) ARVO meeting, M. Sunalp, P Novak, N. Sorgente - 1985

10. Small Incision Cataract Surgery Lecture, Istanbul University, guest speaker, M. Sunalp - September 1986


12. Medical Ophthalmology Mission to the Azores with the Tuare-Angora Sister City Foundation, to perform for the first time on the island of Terceira in Portugal, cataract with implant surgery, M. Sunalp - June 1988


15. Turkish-American Ophthalmology Meeting, Istanbul, Turkey - June 1990

Lectures given by M. Sunalp:
1. Melanoma and Laser Treatment
2. Tumor Neovascularization:
3. Phaco ICL Cataract Extraction Lecture, slides and video.


Lectures given by M. Sunalp:
1. Orientation Study of 5X6mm PMMA IOL's
2. Comparison of Foldable/PMMMA IOL's, Astigmatism
3. Two Rare Cases of Hypotony
4. Video (PHACO) Library and Competition

17. Oval in Oval Concept in 5x6mm Small Incision IOL, and Oval Capsulorrhesis**, Video for Dublin. Video presentation by M. Sunalp - August 1990
18. Punctal Plug Invention, Dr. Sunalp, Dr. Tajiri - September, 1999, (Patent pending)

19. Contact Lens and Scuba Diving Research - 1989 - 1990

20. Milroy’s Disease, Authors: Dr. Kenneth Wright, Dr. Sunalp - 1990 (et al, pending)


Lectures given by M. Sunalp:
1. Preoperative sedation in cataract surgery
2. No suture phacoemulsification versus one suture phacoemulsification Video presentation:
3. No suture, Oval In-Oval, Phacoemulsification

25. Guest Lecturer, Istanbul University, M. Sunalp, January 3, 1992


Video Presentation by M. Sunalp:
1. No Suture, Oval In Oval, Phacoemulsification


Video Presentation by M. Sunalp:
1. No Suture, Oval In Oval, Phacoemulsification


31. Congress of the European Society of Cataract & Refractive Surgery (Formerly the European IOL Implant Council), Paris, France - September 1992

Lectures given by M. Sunalp:
1. Small incision phacoemulsification with topical anesthesia
2. Astigmatic comparison analysis of one suture vs. no suture phacoemulsification cataract surgery Video presentation:
1. No Injection, No Suture, Yes Phacoemulsification, Yes Small Incision, Yes Modified Oval Capsulorhexis

32. Congress of the European Society of Cataract & Refractive Surgery, Innsbruck, Austria - September 1993

Video Presentation by M. Sunalp:
1. Sunalp Phacoemulsification Spatula


Presented by Murad A. Sunalp, MD, Thomas Nagy, O.D., Gary Smith, O.D.

Lecture given:
1. Radial Keratotomy (RK) VS. VISX Excimer Laser

   Lecture given by M. Sunalp:
   1. Advances in Refractive Surgery

36. EYETECH '95, New Orleans, Louisiana - June 1995
   Lecture given by M. Sunalp:
   1. Various Types of Refractive Surgery

37. EYETECH '95, New Orleans, Louisiana - June 1995
   Lecture given by M. Sunalp:
   1. Radial Keratotomy Wet Lab

38. AAO/TAOS, Chicago, Illinois - October 1996
   Lecture given by M. Sunalp:
   1. Vein Occlusions and Bee Venom

39. Refractive Surgery, Latin America, Colombia - November 1996
   Lecture given by M. Sunalp:
   1. Correction of pseudophakic myopia with RK/AK

40. Hawaiian Eyes - January 1997
    Lecture given by M. Sunalp:
    1. Correction of pseudophakic myopia with RK/AK

41. ASCRS, Pastoral Conference, Washington, D.C. - June 1997
    Lecture given by M. Sunalp:
    1. Correction of pseudophakic myopia with RK/AK

42. ESCRS Prague - September 1997
    Lecture given by M. Sunalp:
    1. Correction of pseudophakic myopia with RK/AK and simultaneous bilateral cataract extraction under general anesthesia

43. International Turkish Ophthalmology meeting, Istanbul - September 1997
    Lecture given by M. Sunalp:
    1. Simultaneous bilateral cataract extraction under general anesthesia.

44. AAO San Francisco, California - October 1997
    Lecture given by M. Sunalp:
    1. Simultaneous bilateral cataract extraction under general anesthesia.

45. "Control of Post Cataract Surgery Pressure Spikes With Tolbutamide Drops," Clinical Study with M. Sunalp, N. Sorgente - 1996

    Lecture given by M. Sunalp

47. "Use of Intraoperative Refractive Refinement with Piggyback IOL for difficult Cataract cases," Ocular Surgery News, Vol. 17, No. 18, October 1, 1999, Murad A. Sunalp, MD
48. First Ophthalmic International Meeting, Lisbon, Portugal - September 24-25, 1999, Azores, Portugal - October 1, 1999
Lectures given by M. Sunalp:
1. Phacoemulsiication
2. Intra-Operative Refraction
3. Live Cataract Surgery

49. General Hospital, Cabo San Jose, Mexico - February 29, 2000
Lecture given by M. Sunalp:
1. Dry Eyes and Glaucoma Surgery

50. ASCRS, Boston International Meeting, Film Library, Boston, Massachusetts, M. Sunalp - May 23-24, 2000

51. Doheny Eye Institute, University of Southern California, June 2000
Lecture given by M. Sunalp:
1. Temporary IOL Insertion for difficult Post Refractive Cataract cases

52. International Cataract Symposium, Lisbon, Portugal, September 2000. Panel memer

53. ASCRS San Francisco, California, Lecture / Video on Refractive Surgery; M. Sunalp - April 2003


55. Chinese Cultural Center Visalia, California, “Surgical Correction of Presbyopia,” M. Sunalp - May 19, 2004


60. ASCRS New Orleans, Louisiana, Intracocular surgery and Trypan blue and (TASS) – Featured in Eye World Today (Best paper of the session); M. Sunalp - April 2008


62. The American Optometric Association on Intraoperative Floppy Iris Syndrome (IFIS) and Matyuging ring, Visalia, California - April 2009
Lecture given by M. Sunalp

63. Advanced Cataract Surgery and Comanagement with Multifocal IOL’s, Visalia, California - October 1, 2009
Lecture given by M. Sunalp
48. First Ophthalmic International Meeting, Lisbon, Portugal – September 24-25, 1999
   Azores, Portugal – October 1, 1999
   Lectures given by M. Sunalp:
   1. Phacoemulsification
   2. Intra Operative Refraction
   3. Live Cataract Surgery
49. General Hospital, Cabo San Jose, Mexico – February 29, 2000
   Lecture given by M. Sunalp:
   1. Dry Eyes and Glaucoma Surgery
50. ASCRS, Boston International Meeting, Film Library, Boston, Massachusetts, M. Sunalp – May 20-24, 2000
51. Doheny Eye Institute, University of Southern California, June 2000
   Lecture given by M. Sunalp:
   1. Temporary IOL insertion for difficult Post Refractive Cataract cases
52. International Cataract Symposium, Lisbon, Portugal, September 2000. Panel member
53. ASCRS, San Francisco, California, Lecture / Video on Refractive Surgery, M. Sunalp – April 2003
54. AAO/TAOS Symposium Anaheim, California, "Lasik and Retinal Detachment," M. Sunalp – November 2003
55. Chinese Cultural Center Visalia, California, "Surgical Correction of Presbyopia," M. Sunalp – May 19, 2004
56. Black Sea Ophthalmology meeting, "OK vs. Lasik for treating Presbyopia and Hyperopia," M. Sunalp – August 2005
60. ASCRS New Orleans, Louisiana, Intracocular surgery and Trypan Blue and (TASS) – Featured in Eye Word Today (Best paper of the session), M. Sunalp – April 2008
62. The American Optometric Association on Intraoperative Floppy Iris Syndrome (IFIS) and Malaligning ring, Visalia, California – April 2009
   Lecture given by M. Sunalp
63. Advanced Cataract Surgery and Co-management with Multifocal IOL’s, Visalia, California – October 1, 2009
   Lecture given by M. Sunalp
64. Publication Journal of Cataract & Refractive Surgery – December 2010 Volume 35 Number 12 “Two cases of Toxic anterior segment syndrome from generic trypan blue”
65. ASCRS San Diego, California Universal Corneal Marker普雷斯坦 - March 26, 2011
   Lecture given by M. Sunalp
66. ASCRS San Diego, California Technique for Injecting Bevacizumab for Diabetic and Other Macular Edema Treatment – March 26, 2011 – Lecture given by M. Sunalp
   Dr. Sunalp
68. 20th Anniversary of LASIK and the 10th Aegean Cornea Meeting, Aegean Cornea X July 9-11
Continuing Education Course Approval Checklist

Title: Glaucoma iStent Procedure
Provider Name: Dr. Murad Sunalp, MD

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No
☑ Detailed Course Description
☐ PowerPoint and/or other presentation materials
☑ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No
**CONTINUING EDUCATION COURSE APPROVAL APPLICATION**

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glaucoma iStent Procedure</td>
<td>06/02/2016</td>
</tr>
</tbody>
</table>

**Course Provider Contact Information**

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>(First)</th>
<th>(Last)</th>
<th>(Middle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunalp</td>
<td></td>
<td></td>
<td>A</td>
</tr>
</tbody>
</table>

**Provider Mailing Address**

<table>
<thead>
<tr>
<th>Street</th>
<th>City</th>
<th>State</th>
<th>Zip</th>
</tr>
</thead>
<tbody>
<tr>
<td>880 E. Merritt Ave #109</td>
<td>Tulare</td>
<td>Ca</td>
<td>93277</td>
</tr>
</tbody>
</table>

**Provider Email Address**

slv@sunalplaservision.com

Will the proposed course be open to all California licensed optometrists? ☐ YES ☐ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? ☐ YES ☐ NO

**Course Instructor Information**

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>(First)</th>
<th>(Last)</th>
<th>(Middle)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sunalp</td>
<td></td>
<td></td>
<td>A</td>
</tr>
</tbody>
</table>

**License Information**

<table>
<thead>
<tr>
<th>License Number</th>
<th>License Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>A36954</td>
<td>MD</td>
</tr>
</tbody>
</table>

**Phone Number**

<table>
<thead>
<tr>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>559 688-2020</td>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider: [Signature]

Date: 4/21/16

Form CE-01, Rev. 2/16
**CONTINUING EDUCATION COURSE APPROVAL APPLICATION**

**$50 Mandatory**

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Glaucoma iStent Procedure</td>
<td>06/02/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Provider Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Provider Name</strong></td>
</tr>
<tr>
<td>Murad</td>
</tr>
<tr>
<td>Sunalp</td>
</tr>
<tr>
<td>A</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street</td>
</tr>
<tr>
<td>880 E Merritt Ave #109</td>
</tr>
<tr>
<td>City</td>
</tr>
<tr>
<td>Tulare</td>
</tr>
<tr>
<td>State</td>
</tr>
<tr>
<td>Ca</td>
</tr>
<tr>
<td>Zip</td>
</tr>
<tr>
<td>93277</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists?  □ YES  □ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?  □ YES  □ NO

**Course Instructor Information**

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Murad</td>
<td>A36954</td>
<td>MD</td>
<td>688-2020</td>
<td><a href="mailto:slv@sunalplaservision.com">slv@sunalplaservision.com</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider  

4/21/16  

Date
NEW Glaukos Glaucoma iStents®

The iStent® Trabecular Micro-Bypass Stent is indicated for use in conjunction with cataract surgery for the reduction of intraocular pressure (IOP) in adult patients with mild to moderate open angle glaucoma currently being treated with ocular hypotensive medication.
Dear XXXXX,

We would like to cordially invite you to the Sunalp Laser Vision CE Lecture, Spring 2016!

In appreciation for our mutual hard work, and care of patients in the San Juaquin Valley, we would be honored to have you join us in an evening of food, drinks, networking, and education. As we each strive to provide the highest level of care in our individual practices, it is important that we not only work together, but make a concerted effort to offer the most comprehensive and up-to-date procedures available. The SLV lecture will provide a positive environment for professional interaction, as well as a stimulating evening of industry education.

As you are probably aware, Sunalp Laser Vision has been providing eye care in Tulare and the surrounding area for over 32 years. Our Tulare facility was remodeled for our use in 2006, and our Visalia location recently opened. In addition to our two permanent facilities, we have auxiliary offices in Porterville and Bakersfield for the added convenience of your patients.

Dr. Murad A. Sunalp’s specialized training has given the community access to ophthalmic laser surgery using VISX and LASIK Excimer Laser systems, up-to-the minute cataract management using multifocal and toric intraocular lens implants; and glaucoma and diabetic eye care. Dr. Sunalp has not only been able to demonstrate the highest caliber of surgical expertise, but has continued to help lead the field in innovations.

We are also proud to introduce the newest addition to our team, Dr. Manpreet Rehal, a Central Valley native. After completing her undergraduate studies at CSU Stanislaus, Dr. Rehal continued to the Illinois College of Optometry. While very skilled in the optometric field, she also contributes to our surgical staff, specializing in the co-management care of LASIK, PRK, cataract, pterygium, and blepharoplasty patients.

TOPICS WILL INCLUDE:
- NEW Endolaser for Symptomatic Vitreous Floaters
- NEW Sunalp ReSure Sealant Technique™
- Preloaded HOYA Lens for Standard Cataract Procedures
- NEW Multifocal and Toric Intraocular Lens Correction
- Co-Management Cataract and LASIK Surgery
- NEW Sunalp Protocol™ Avastin Injections
- NEW Glaucoma iStents
- NEW SmartDrop™ Technology

WHERE: “The Vintage Press,” 216 N Willis St, Visalia Ca.93291
WHEN: Thursday, June 1st, 6 – 9:00 P.M.
RSVP: (559) 688-2020 ***By Friday May 13th

We look forward to seeing you there!!!

Sincerely,

Murald A. Sunalp
M.D., M.B.A., FACS

Manpreet Rehal
O.D.

MURALD A. SUNALP, M.D. (Oxford), M.B.A., F.A.C.S.
BOARD-CERTIFIED OPHTHALMOLOGY
REFRACTIVE FELLOWSHIP
Ph: (559) 688-2020
Fax: (559) 688-8526
Cell: (310) 948-3937
Email: slv@sunalplaservision.com
Web: www.sunalplaservision.com
4/21/16
WE WOULD LIKE TO INVITE YOU TO OUR SPRING 2016 CONTINUING EDUCATION EVENT!

When: Thursday, June 2nd 6 – 9:30 PM

Where: The Vintage Press, Visalia

Topics:

- NEW Endolaser for Symptomatic Vitreous Floaters
- NEW Sunalp ReSure Sealant Technique™
- Preloaded HOYA Lens for Standard Cataract Procedures
- NEW Multifocal and Toric Intraocular Lens Correction
- Co-Management Cataract and LASIK Surgery
- NEW Sunalp Protocol™ Avastin Injections
- NEW Glaucoma iStents

RSVP: 559-688-2020

EAT, NETWORK, LEARN, AND ENJOY!!!!
Murad A. Sunalp,  
M.D., M.B.A., M.A., B.M., B.Ch., FACS

Sunalp Laser Vision • 880 East Merritt Avenue • Tulare, CA 93274  
(800) 367-3363 • (559) 688-2020 • sunalp@aol.com

OBJECTIVE
Seeking professional opportunities in Ophthalmic surgical applications and senior healthcare administration

SKILLS
- Four years experience during post-doctoral fellowship and residency at the Estelle Doheny Eye Institute
- Nearly thirty years experience in private practice surgical Ophthalmology
- Highly skilled in the use of laser-based surgical and optical imaging equipment
- Conducted research on improving Ophthalmic surgical instrumentation
- Fluent in Turkish, English, German

EDUCATION

Oxford University

Oxford University Medical School

Stanford University School of Medicine

University of Southern California

University of California - Los Angeles

University of Tennessee

St. John's College  
Oxford, England  
October 1972 - July 1978

John Radcliffe Hospital  
Headington, England  
July 1978 - June 1980

Department of Ophthalmology  
Stanford, California  
Summer 1977 & Summer 1981

Department of Ophthalmology  
Doheny Eye Institute  
Los Angeles, California  
July 1980 - July 1985

Anderson School of Business M.B.A.  
Los Angeles, California  
July 2003 - January 2005

College of Business Administration Physician Executive M.B.A.  
Knoxville, Tennessee  
January 2012 - December 2012
PROFESSIONAL EXPERIENCE

Internship
University of Southern California
Department of Ophthalmology
Los Angeles, California
June 1980 - June 1981

Fellowship
Estelle Doheny Eye Foundation
Retina Research
Los Angeles, California
July 1981 - June 1982

Residency
University of Southern California
Department of Ophthalmology
Doheny Eye Institute
Los Angeles, California
July 1982 - June 1985

Private Practice
Sunalp Laser Vision
880 East Merritt Avenue
Suite 109
Tulare, California
November 1985 - Present

ASSOCIATIONS/MEMBERSHIPS

Fellow, American Academy of Ophthalmology (AAO)
Fellow American College of Surgeons
Member, Royal College of Physicians - England
Member, Royal College of Surgeons - England
Member, California Association of Ophthalmology
Fellow, Royal College of Ophthalmologists - England (FRCO)
Clinical Professor of Ophthalmology - U.C. Berkeley School of Optometry
Member, American Society of Cataract & Refractive Surgery (ASCRS)
Staff Member, Tulare Regional Medical Center - Tulare, CA
Staff Member, Sierra View District Hospital - Porterville, CA
Staff Member, Hanford Community Medical Center - Hanford, CA

LICENSES:
California, 1980
Turkey, 1989
United Kingdom, 1978
Hawaii, 2014
Florida, 2015

RESEARCH

- IOL/Phaco
- Avastin injections
- Scuba Contact Lens
- Refractive Surgery
- Tass syndrome
- Ophthalmic Instruments
Murad A. Sunalp, M.D., B.M., B. Ch.
M.D., M.A. (Oxford) F.A.A.O (USC)
FRCOphth (UK)
F.R.C.S., L.R.C.P. (London)

Sequoia Eye Center Medical Clinic / Sunalp Laser Vision / Sunalp Vision Center /
Oxford NuVision Laser Medical Center
880 East Merritt Avenue • Tulare, California 93274
(800) 367-3363 • (559) 688-2020 • www.SunalpLaserVision.com

EXPERTISE
Ophthalmology, with special interest in ophthalmic lasers, state-of-the-art cataract
surgery with multifocal and toric intraocular lenses, VISX LASIK Excimer Laser with
CustomVue, and glaucoma surgery

EDUCATION
Oakham Private Boarding School
Rutland, United Kingdom
September 1969 – July 1971

St. John's College, Medical School
Oxford University, England
October 1972 – July 1978

Oxford University Medical School
John Radcliffe Hospital
Headington, England
July 1978 – June 1980

Stanford University School of Medicine
Department of Ophthalmology
Stanford, California
Summer 1977 & Summer 1981

University of Southern California
Department of Ophthalmology / Doheny Eye Institute
Los Angeles, California
July 1980 – July 1985

U.C.L.A. Anderson School of Business M.B.A.
Los Angeles, California
July 2003 – Pending
<table>
<thead>
<tr>
<th>DEGREES &amp; DIPLOMAS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>B.A. Honors, Physiology (Oxford) • July 1975</td>
<td></td>
</tr>
<tr>
<td>M.A. (Oxford) • July 1975</td>
<td></td>
</tr>
<tr>
<td>B.M., B. Ch. (Oxford) • July 1978</td>
<td></td>
</tr>
<tr>
<td>L.R.C.P (London), M.R.C.S. (England), (M.D.) • July 1978</td>
<td></td>
</tr>
<tr>
<td>E.C.F.M.G. • July 1978</td>
<td></td>
</tr>
<tr>
<td>M.Q.E. • September 1979</td>
<td></td>
</tr>
<tr>
<td>F.R.E. • 1981</td>
<td></td>
</tr>
</tbody>
</table>

Fellow of the American Academy of Ophthalmology, FAAO • 1986
Fellow of the Royal College of Ophthalmology, England, FRCS • 1990

<table>
<thead>
<tr>
<th>LANGUAGES</th>
<th>Turkish, English, German, Spanish</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>HONORS</th>
<th>American Field Service Scholarship of U.S.A. • 1969</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>O.R.O.S. Scholarship for U.K. • 1969</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>MEDICAL LICENSES</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>England U.K. — B.M. B. Ch. • 1978</td>
<td></td>
</tr>
<tr>
<td>California, U.S.A. — M.D. • 1981</td>
<td></td>
</tr>
</tbody>
</table>

Board Certified — American Board of Ophthalmology — F.A.O.O. • May 19, 1988
Board Certified In Ophthalmology, Turkey • 1989
Fellow of the Royal College of Ophthalmologists, United Kingdom — FRCS • 1990

<table>
<thead>
<tr>
<th>POST-QUALIFICATION APPOINTMENTS</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>ECFMG</td>
<td>302-986-5</td>
</tr>
<tr>
<td>HOUSE SURGEON:</td>
<td>Mr. J.I.M. Hasfield, F.R.C.S., F.R.C.S.E. Regional Advisor to Royal College of Surgeons, Bedford General Hospital August 1978 – January 1979</td>
</tr>
<tr>
<td>HOUSE PHYSICIAN:</td>
<td>Dr. S.C. Truelove, M.D., F.R.C.P. May Reader in Clinical Medicine, and Drs. C.W. Burke and R.C. Turner The Radcliffe Infirmary, Oxford February 1979 – July 1979</td>
</tr>
<tr>
<td>ANATOMY INSTRUCTOR AND TUTOR:</td>
<td>Professor C.B. Phillips, F.R.C.P. Oxford University, Department of Anatomy August 1979 – January 1980</td>
</tr>
</tbody>
</table>
| **INTERNSHIP** | University of Southern California  
Department of Ophthalmology  
Los Angeles, California  
June 1980 – June 1981 |
|----------------|--------------------------------------------------|
| **FELLOWSHIP** | Estelle Doheny Eye Foundation  
Los Angeles, California  
Retina Research  
July 1981 – June 1982 |
| **RESIDENCY**  | University of Southern California  
Department of Ophthalmology / Doheny Eye Institute  
Los Angeles, California  
July 1982 – June 1985 |
| **PROFESSIONAL EXPERIENCE** | Sequoia Eye Center Medical Clinic / Sunalp Laser Vision / Sunalp Vision Center / Oxford NuVision Laser Medical Center  
880 East Maritt Avenue  
Tulare, California 93274  
November 1985 – Present |
| **ASSOCIATIONS** | Fellow of the American Academy of Ophthalmology, FAAO  
Royal College of Physicians, England  
Royal College of Surgeons, England  
Member of California Medical Society  
California Association of Ophthalmology  
Fellow of the Royal College of Ophthalmologists, England FRCO  
Clinical Professor of Ophthalmology - School of Optometry, U.C. Berkeley  
American Society of Cataract & Refractive Surgery, ASCRS |
| **HOSPITAL STAFF PRIVILEGES** | Tulare District Hospital, Tulare, CA  
Sierra View District Hospital, Porterville, CA  
Hanford Community Medical Center, Hanford, CA |
| **CHARITY SURGERY** | Azores, Portugal – 1989  
Istanbul, Turkey – 1989  
Istanbul, Turkey – 1992  
Cabo San Jose, Mexico – 1994 – 1995  
Mardin, Turkey – 1995  
Istanbul, Turkey – 1997  
Sarajevo, Bosnia – 1998 |
CHARITIES
CASA (Court Appointed Special Advocate) FOR CHILDREN 2006 - 2009
City of Hope 2008
Visalia Veterans Committee 2008

RESEARCH
- IOL/Phaco
- Dry Eyes
- Scuba Contact Lens
- Refractive Surgery
- Tolbutamide and Glaucoma
- Ophthalmic Instruments

SERVICES
OPHTHALMIC & REFRACTIVE
CONSULTATIONS:
- Corneal Topography (Nidek)
- Pachymetry
- OCT & HRT (Heidelberg)
- IOL Master (Ziemer)
- Visual Field
- Fluorescein Angiography

OPHTHALMIC LASERS & PROCEDURES
- Secondary Cataract YAG (Laserax)
- Macular Degeneration (Argon)
- Glaucoma Yag Laser (Lumenis)
- Diabetic Argon Laser (HGM)
- Glaucoma Surgical Implants:
  - Ahmed Glaucoma Valve
  - Mini Express Shunt

INFINITI OZII PHACO CATARACT
With Intraocular Lens Implant (IOL)
- Multifocal Lenses:
  - TECNIS Multifocal IOL
  - ReSTOR Multifocal IOL
  - Crystallens HD IOL
  - Toric IOL
  - Aspheric IOL

PLASTIC SURGERY
- Blepharoplasty Upper & Lower Lids
- Entropion & Ectropion Repair
- Ptosis Repair
- Plenigraft with Autograft & Fibrin Glue
- Lacrimal Surgery

REFRACTIVE SURGERY
- CustomVue VISX Lasik
- Photo-Refractive Keratoplasty (PRK)
- EpiLasik
- Astigmatic Keratotomy (LRI)
- Conductive Keratoplasty (CK)
- Refractive Lensectomy
- Implantable Contact Lenses (ICL)
PUBLICATIONS & STUDIES


02. Improved Definition of the Appendix Mass and Appendectomy using thermocouple potential use submitted to the Department of Surgery, Oxford University, M. Sunalp - 1979.


14. Turkish National Ophthalmology Meeting; Poster presentation on the ophthalmology mission to the Azores and lecture presentation on phacoemulsification, surgery modified lens and implantation, Adana, Turkey; M. Sunalp - September 1989.


Lectures given by M. Sunalp:
   1. Malignoma and Laser Treatment
   2. Tumor Neovascularization
   3. Phaco IOL Cataract Extraction Lecture, slides and video


Lectures given by M. Sunalp:
   1. Decentration Study of 6x8mm PMMA IOL's
   2. Comparison of Foldable/PMMA IOL's, Astigmatism
   3. Two Rare Cases of Hypotony
   4. Video (PHACO) Library and Competition

17. Ova in Oval Concept in 6x8mm Small Incision IOL and Oval Capsulorhexis™, Video for Dublin. Video presentation by M. Sunalp - August 1990.
16. Punctal Plug Invention, Dr. Sunalp, Dr. Tajiri - September, 1969. (Pending patent)

19. Contact Lens and Scuba Diving Research - 1989 - 1990

20. Miroy's Disease. Authors - Dr. Kenneth Wright, Dr. Sunalp - 1980 (not AL pending)


Lectures given by M. Sunalp:
1. Preoperative sedation in cataract surgery
2. No suture phacoemulsification versus one suture phacoemulsification Video presentation:
   1. No suture, Oval in Oval, Phacoemulsification

25. Guest Lecturer, Istanbul University, M. Sunalp, January 3, 1992

26. American Society of Cataract & Refractive Surgery, San Diego, California - April 1992 Video Presentation by M. Sunalp:
   1. No Suture, Oval in Oval, Phacoemulsification

   1. No Suture, Oval in Oval, Phacoemulsification


31. Congress of the European Society of Cataract & Refractive Surgery (Formerly the European IOL Implant Council), Paris, France - September 1992
Lectures given by M. Sunalp:
1. Small incision phacoemulsification with topical anesthesia
2. Astigmatic comparison analysis of one suture VS. no suture phacoemulsification cataract surgery Video presentation:
   1. No Injection, No Suture, Yes Phacoemulsification, Yes Small Incision, Yes Modified Oval Capsulorhexis

32. Congress of the European Society of Cataract & Refractive Surgery, Innsbruck, Austria - September 1993 Video Presentation by M. Sunalp:
1. Sunalp Phacoemulsification Spatula

Lecture given:
1. Radial Keratotomy (RK) VS. VISX Excimer Laser

   Lecture given by M. Sunalp:
   1. Advances in Refractive Surgery

36. EYETECH '95, New Orleans, Louisiana - June 1995
   Lecture given by M. Sunalp:
   1. Various Types of Refractive Surgery

37. EYETECH '95, New Orleans, Louisiana - June 1995
   Lecture given by M. Sunalp:
   1. Radial Keratotomy Wet Lab

38. AAOS/TAOS, Chicago, Illinois - October 1996
   Lecture given by M. Sunalp:
   1. Vein Occlusions and Bee Venom

39. Refractive Surgery, Latin America, Colombia - November 1996
   Lecture given by M. Sunalp:
   1. Correction of pseudophakic myopia with RK/AK

40. Hawaiian Eye - January 1997
    Lecture given by M. Sunalp:
    1. Correction of pseudophakic myopia with RK/AK

41. ASCRS, Master Conference, Washington, D.C. - June 1997
    Lecture given by M. Sunalp:
    1. Correction of pseudophakic myopia with RK/AK

42. ESCRIS Prague - September 1997
    Lecture given by M. Sunalp:
    1. Correction of pseudophakic myopia with RK/AK and simultaneous bilateral cataract extraction under general anesthesia

43. International Turkish Ophthalmology meeting, Istanbul - September 1997
    Lecture given by M. Sunalp:
    1. Simultaneous bilateral cataract extraction under general anesthesia

44. AAO San Francisco, California - October 1997
    Lecture given by M. Sunalp:
    1. Simultaneous bilateral cataract extraction under general anesthesia

45. Control of Post Cataract Surgery Pressure Spikes With Tolbutamide Drops,
    Clinical Study with M. Sunalp, N. Sorgente - 1998

46. Post Radial Keratotomy Cataract Surgery - Intra-operative Refractometry and IOL Insertion,
    World Ophthalmology Congress, Amsterdam, Netherlands - June 1999
    Lecture given by M. Sunalp

47. "Use of Intraoperative Refractive Refinement with Piggyback IOL for difficult Cataract cases."
    Ocular Surgery News, Vol. 17, No. 19, October 1, 1998, Murad A. Sunalp, MD
48. First Ophthalmic International Meeting, Lisbon, Portugal - September 24-25, 1999, Azores, Portugal - October 1, 1999
   Lectures given by M. Sunalp:
   1. Phacoemulsification
   2. Intra Operative Refraction
   3. Ile Cataract Surgery

49. General Hospital, Cabo San Jose, Mexico - February 29, 2000
   Lecture given by M. Sunalp:
   1. Dry Eyes and Glaucoma Surgery

50. ASCRS, Boston International Meeting, Filin Library, Boston, Massachusetts; M. Sunalp - May 20-24, 2000

51. Doheny Eye Institute, University of Southern California, June 2000
   Lecture given by M. Sunalp:
   1. Temporary IOL Insertion for difficult Post Refractive Cataract cases

52. International Cataract Symposium, Lisbon, Portugal, September 2000. Panel member

53. ASCRS San Francisco, California, Lecture: Video on Refractive Surgery, M. Sunalp - April 2003

54. AAO/TAOS Symposium Anaheim, California, "Lasik and Retinal Detachment," M. Sunalp - November 2003

55. Chinese Cultural Center Visalia, California, "Surgical Correction of Presbyopia," M. Sunalp - May 18, 2004


60. ASCRS New Orleans, Louisiana, Intraocular surgery and Trypan blue and (TASS) - Featured in Eye World Today (Best paper of the session), M. Sunalp - April 2008


62. The American Optometric Association on Intraoperative Floppy Iris Syndrome (iFIS) and Malugen ring, Visalia, California - April 2009
   Lecture given by M. Sunalp

63. Advanced Cataract Surgery and Comanagement with Multifocal IOL's, Visalia, California - October 1, 2009
   Lecture given by M. Sunalp
48. First Ophthalmic International Meeting, Lisbon, Portugal – September 24-25, 1999,
Azores, Portugal – October 1, 1999
Lectures given by M. Sunalp:
1. Phakoemulsification
2. Intra Operative Refraction,
3. Live Cataract Surgery

49. General Hospital, Cabo San Jose, Mexico – February 26, 2000
Lecture given by M. Sunalp:
1. Dry Eyes and Glaucoma Surgery

50. ASCRS, Boston International Meeting, Film Library, Boston, Massachusetts, M. Sunalp - May 20-24, 2000

51. Doheny Eye Institute, University of Southern California, June 2000
Lecture given by M. Sunalp:
1. Temporary IOL insertion for difficult Post Refractive Cataract cases

52. International Cataract Symposium, Lisbon, Portugal, September 2000. Panel member

53. ASCRS San Francisco, California, Lecture / Video on Refractive Surgery, M. Sunalp - April 2003


55. Chinese Cultural Center Visalia, California, “Surgical Correction of Presbyopia,” M. Sunalp – May 19, 2004


60. ASCRS New Orleans, Louisiana, Intracocular surgery and Trypan blue and (TASS) – Featured in Eye Word Today (Abstract of the session), M. Sunalp - April 2008


62. The American Optometric Association on Intraoperative Floppy Iris Syndrome (IFIS) and Malory ring, Visalia, California – April 2009
Lecture given by M. Sunalp

63. Advanced Cataract Surgery and Co management with Multifocal IOL’s, Visalia, California - October 1, 2009
Lecture given by M. Sunalp

64. Publication Journal of Cataract & Refractive Surgery - December 2010 Volume 36 Number 12 “Two cases of toxic anterior segment syndrome from generic trypan blue”

65. ASCRS San Diego, California Universal Corneal Marker Presentation - March 26, 2013
Lecture given by M. Sunalp

66. ASCRS San Diego, California Technique for Injecting Bevacizumab for Diabetic and Other Macular Edema Treatment – March 28, 2011 – Lecture given by M. Sunalp

Dr. Sunalp

68. 20th anniversary of LASIK and the 10th Aegean Cornea Meeting, Aegean Cornea X July 9-11
Continuing Education Course
Approval Checklist

Title: Ocular Herbology
Provider Name: Dr. Tim Nguyen, OD

☒ Completed Application
☐ Open to all optometrists? ☑ Yes ☐ No
☐ Maintain record agreement? ☑ Yes ☐ No

☒ Detailed Course Description
☐ PowerPoint and/or other presentation materials
☐ Advertising (optional)
☒ CV for EACH course instructor
☒ License Verification for each course instructor
☐ Disciplinary History? ☐ Yes ☑ No
CONTINUING EDUCATION COURSE APPROVAL
APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ocular Herbology</td>
<td>06/01/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Course Provider Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIM</td>
<td>NGUYEN HUNG-MINH</td>
</tr>
<tr>
<td>(First)</td>
<td>(Last) (Middle)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>7841 Westminster Blvd</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td><a href="mailto:TATUPOET@GMAIL.COM">TATUPOET@GMAIL.COM</a></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?

<table>
<thead>
<tr>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>TIM</td>
<td>12458</td>
<td>OPTOMETRY</td>
<td>714 200-4413</td>
</tr>
</tbody>
</table>

| I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct. |

Signature of Course-Provider 04.12.2016
Dear Continuing Education Committee,

Course Title: **Ocular Herbology**

Course Outline:
Course teach current optometrists basic understanding about Ocular Herbology. It’s the trend of significant number of patients who use ocular herbal products. Some are honestly report to their eye doctors others are hesitate due to uncertainty of their doctors opinion or knowledge about herbology. The lecture go over one to few most selective and popular herbal prescription formula related to ocular redness, inflammation, reaction, etc.

It’s also aim to gain a better understanding of the ocular herb characteristics, properties,...
Therefore, optometrists can have a precaution or idea about possible drug interactions, side effects, related systemic conditions. Therefore, the lecture would support and improve the diagnostic and treatment protocol in coming time beside building a better patient care.

Course includes both theory and practical hand on observation of the herbs.

In the spirit of **“United, We Care”**, I thank you.

Sincerely

[Signature]

Tim H. Nguyen
OD, MPH, MSAOM, CMT.

P.S.: In the Calling for the Art of Healing, I’ve spent several years to write this “Ocular Herbology” book and recently finish the First Edition version. I sign to the Board on my Birthday (Apr. 4th) at the time of writing this course outline as a respect and the care for both public and patients!

“The eyes are the window to the body, health & spirit
Make sure take a good care of your window”

Ta Tu
Curriculum Vitae

Education
Master of Acupuncture & Oriental Medicine (M.S.A.O.M.), South Baylo University 5/2012
Massage Therapy, Acupressure & Tuina Massage Program Completion 6/2012
Doctor of Optometry (O.D.), Nova Southeastern University. 5/2003
Master of Public Health (M.P.H), Nova Southeastern University. 2/2005
Bachelor of Science in Biochemistry, University of California, Los Angeles (UCLA) 1997
Associate in Art, Fullerton College. 1995

Certifications
Certified Massage Therapist. 10/2012-Present
Acupressure & Tuina Massage Therapist 6/2012-Present
Certified Optometrist, TGL 2011-Present
Therapeutic Pharmaceutical Agents and Glaucoma with Approval Dilation and Irrigation of the Punctal and Lacrimal System.
Certified Optometrist, TPL 2003-2011
Therapeutic Pharmaceutical Agents with Approval Dilation and Irrigation of the Punctal and Lacrimal System (TPL).
Diagnosis and Treatment of Glaucoma Course, Co-management. 2004
Certified Ortho-Keratologist 2/2010
Certified Corneal Refractive Therapist (CRT) 1/2007

Medical Research
Meditation and Intraocular Pressure Study, Principle Investigator. 7-9/2003
Muscular Dystrophy in Space in Astronauts at MIR Station, Staff Research Associate, UCLA. 7/1997-1/1998

Scientific Invention, Works & Achievements
Tatudo Founder. The Way of Self-Healing in Martial Healthcare 2012 - Present
Discovered & coined the term “Shen Du” energy point 2014 - Present
Given additional name for an Extra Energy Point as “Spine Guard”
Traditional name is “Shiqizhui.”
eFlow Institute 2015-Present
Patented Invention the “Equilibrium Between Economic Systems” (aka “eFlow”)
Patent granted by the USPTO (Patent # 7827095) 11/2010
A series of mathematical equations related to economic sciences.
Conceptual Designer & Founder of the Twin Tower Health Center, 1/07-9/2010
Twin Tower Health Center Conceptual Design submitted to
The President of the United States, Governor of New York and related Organizations 9/2010
Discover the Intraocular Pulse (IOP) Reading Significance. 2009-Present
A pioneer scientific method to interpret the IOP pulse reading.
Written & Derived a Physics Equation in Optic Physics.
Currently inactive due to loss of all data.

Work Leadership & Experiences
United Eye Care Optometry – President 2004-present
Tatudo – Founder & President 2012-Present
eFlow – Inventor & President 2015-Present
Naturalife NLSC Ta Tu Poetry– Founder & President 2011-Present
Ta Tu Music Art & Poetry (MAP) 2015-Present
Adjunct Faculty, Biochemistry Dept., South Baylo Univ., 2007-2009
Naturalife, LLC, President 2007-2010
Organic Chemist, Crosby Laboratory, 1998-1999
EOPS Peer Counselor, Fullerton College 1994-1995
Advanced Calculus Tutor 1993
Calculus Tutor 1991-1992

Association & Leadership
Ortho-Keratology International Consultant 2012-Present
Member of Vietnamese Professional & Business Association 2015-Present
Past President of South Baylo University Vietnamese Student Association 2011-2012
Past Member of Bowers Museum 2010 ~ 2012
Past Member of International Poet Society 2000-2010
Past Member of California & American Optometric Association 2002 ~ 2004
Past President of Vietnamese Student Association, Fullerton College 1992-1993

Award & Recognition
Award of Recognition in Music & Art by City of Westminster 11/2015
One of the Honorable Vietnamese in Poetry, Music, Art & Literature by Du Tu Le 8/2015
Honorable Ta Tu Sculpture, Bust form by UuDam Nguyen, M.F.A. 12/2012
One of the Poet of the Year 2002, International Library of Poetry 2002
Medal of Poet Merit Award, International Library of Poetry, 2002
Excellence in Calculus 1991

Publications / Lectures / Literature – Art - Music - Poetry
Tatudo Martial Healthcare. Practice twice per week. Lecture twice per month. 2012 - Present
Ocular Herbology, Author. 2013 - Present
Tatudo Martial Art & Poetry - Founder 1/2015 - Present
Tatudo Martial Art & Poetry Presentation – Founding Lecture & Announcement 11/2015 - Present
“Sense Body” Single Music Album Release - Composer 11/2015 - Present
EFlow lectures: The Equilibrium Flow Between Economic Systems. 2010-Present
Ortho-Keratology, Honorable International Key Guest Lecture 6/2012
Gullstrand-Emsley Schematic Eye Drawing & Art Presentation 2000 - Present
Tatu & the Koans: The Essence of Being, poetry cards 6/2010-2011
The Concept & Practice of Well-Being, Naturalife, LLC 2007-2010
Eye Care & Cleaning, Saigon Broadcasting Television Network, 2/2005
Meditation and Intraocular Pressure. Saigon Broadcasting Television Network, 1/2005
Meditation and Intraocular Pressure, Nguoi Viet Daily Newspaper 1/2005
Meditation and Intraocular Pressure, American Academy of Optometry 6/2004
Transtheoretical Theory & The Ten Ox-Herding Paintings in Zen, United Eye Care 12/2004
The Eye in Cosmetic & Health Care, United Eye Care Optometry 10/2004
Terrorism: A Behavioral Understanding in Transtheoretical Approach. 8/2002
Nova Southeastern University,

Personal
A wife who also an OD and 2 wonderful boys!
Semi to full Vegetarian
Tatuist.
Continuing Education Course
Approval Checklist

Title: Retinal Toxicity of Systemic Medications
Provider Name: John Lee

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No

☑ Detailed Course Description
☐ PowerPoint and/or other presentation materials
☐ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☑ Yes ☐ No
CONTINUING EDUCATION COURSE APPROVAL
APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Retinal Toxicity of systemic medications</td>
<td>05/15/2016</td>
</tr>
</tbody>
</table>

Course Provider Contact Information

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Course Provider Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>John</td>
<td>Lee</td>
</tr>
<tr>
<td></td>
<td>H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Mailing Address</th>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Street 2575 Yorba Linda Blvd</td>
<td><a href="mailto:jlee@ketchum.edu">jlee@ketchum.edu</a></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists? □ YES □ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? □ YES □ NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rajiv Rathod</td>
<td>A120894</td>
<td>Physician's and Surgeon's</td>
<td>(714) 972-8432</td>
<td><a href="mailto:rrathod@ocretina.net">rrathod@ocretina.net</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider

Date: 4/1/2016

Form CE-01, Rev. 2/16
# 2016 May Honors Symposium

Sunday, May 15, 2016
FEATURING 5 HOURS OF CONTINUING EDUCATION

**Agenda:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00am – 9:10am</td>
<td>Welcome</td>
</tr>
<tr>
<td></td>
<td>Jason Lam, OD, MBA</td>
</tr>
<tr>
<td></td>
<td>President, AAOS</td>
</tr>
<tr>
<td>9:10am – 10:50am</td>
<td>Decision Making in Glaucoma</td>
</tr>
<tr>
<td></td>
<td>Pinakin Davey, OD</td>
</tr>
<tr>
<td></td>
<td>Western University of Health Sciences</td>
</tr>
<tr>
<td>10:50am – 11:10am</td>
<td>Break</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>11:10am – 12:00pm</td>
<td>Idiopathic Orbital Inflammatory Syndrome</td>
</tr>
<tr>
<td></td>
<td>Munish Sharma, MD, OD</td>
</tr>
<tr>
<td></td>
<td>Western University of Health Sciences</td>
</tr>
<tr>
<td>12:00pm – 1:00pm</td>
<td>Lunch</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>1:00pm – 1:50pm</td>
<td>Culinary Guide to Ophthalmic Diseases</td>
</tr>
<tr>
<td></td>
<td>Timothy You, MD</td>
</tr>
<tr>
<td></td>
<td>Orange County Retina</td>
</tr>
<tr>
<td>1:50pm – 2:40pm</td>
<td>Retinal Toxicity of Systemic Medications</td>
</tr>
<tr>
<td></td>
<td>Rajiv Rathod, MD, MBA</td>
</tr>
<tr>
<td></td>
<td>Orange County Retina</td>
</tr>
</tbody>
</table>
Retinal Toxicity of Systemic Medications
RAJIV R. RATHOD, M.D., M.B.A.

1. Review medications that cause retinal toxicity
   a. Medications and indications
   b. Medications and side effects
   c. Dosage needed to cause toxicity
   d. Mechanism of action on the retina
   e. Effects of medications on the retina
2. Describe the findings and diagnostic approaches
   a. What to look for on the examination
   b. Techniques to maximize presentation of retinal toxicity
   c. Presentation of effects on the retina
3. Describe the treatments for toxicity
   a. Treatment options
   b. Reversible vs. Irreversible
   c. Alternatives to consider

Specific Medications that will be covered in-depth:

Hydroxychloroquine
Corticosteroids
Oral Contraceptives (OCPs)
Topiramate
Nicotinic acid
Glitazones
Taxol
Fingolamid
PDE-5 inhibitors
Interferon a-2
CURRICULUM VITAE

RAJIV R. RATHOD, M.D., M.B.A.
Fellow, American Academy of Ophthalmology

Office Address:
Orange County Retina Medical Group
1200 North Tustin Avenue, Suite 140
Santa Ana, California 92705
714-972-8432

PROFESSIONAL PRACTICE AFFILIATIONS

Orange County Retina Medical Group
Orange County, California
Physician/Surgeon
Since July 2012

Locations
1200 North Tustin Avenue Suite 140 Santa Ana, CA 92705 714-972-8432
1200 North Tustin Avenue Suite 100 Santa Ana, CA 92705 714-972-8432
23521 Paseo de Valencia Suite 309 Laguna Hills, CA 92653 949-581-3618
320 Superior Avenue Suite 160 Newport Beach, CA 92663 949-646-3242
333 W. Bastanchury Road Suite 200 Fullerton, CA 92835 714-451-0801
31451 Rancho Viejo Road Suite 101 San Juan Capistrano, CA 92675 949-496-0611

EDUCATION AND TRAINING

Vitreo-Retinal Fellowship
University of Illinois
Chicago, Illinois; 2010-2012

Residency
Chief Resident, Ophthalmology
Washington University School of Medicine
St. Louis, Missouri; 2009-2010

Ophthalmology
Washington University School of Medicine / Barnes-Jewish Hospital
St. Louis, Missouri; 2006-2009

Internship in Medicine
Santa Clara Valley Medical Center Transitional Internship
Stanford University School of Medicine
San Jose, California; 2005-2006

Medical School
Medical Doctorate
Vanderbilt University School of Medicine
Nashville, Tennessee; 2000-2005

Updated 15May2013.MC
## Hospital/Surgery Center Affiliations

<table>
<thead>
<tr>
<th>Year</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>2012 – Present</td>
<td>Anaheim Regional Medical Center, Anaheim, California</td>
</tr>
<tr>
<td>2012 – Present</td>
<td>Barranca Surgery Center, Irvine, California</td>
</tr>
<tr>
<td>2012 – Present</td>
<td>Children's Hospital of Orange County, Orange, California</td>
</tr>
<tr>
<td>2012 – Present</td>
<td>Children's Hospital at Mission, Mission Viejo, California</td>
</tr>
<tr>
<td>2012 – Present</td>
<td>Hoag Memorial Hospital Presbyterian, Newport Beach, California</td>
</tr>
<tr>
<td>2012 – Present</td>
<td>Pacifica Hills Surgery Center, Laguna Hills, California</td>
</tr>
<tr>
<td>2012 – Present</td>
<td>St. Joseph Hospital, Orange, California</td>
</tr>
<tr>
<td>2012 – Present</td>
<td>St. Jude Medical Center, Fullerton, California</td>
</tr>
<tr>
<td>2012 – Present</td>
<td>Western Medical Center, Santa Ana, California</td>
</tr>
</tbody>
</table>

## Clinical Research

Six years of experience, prior to July 2012, in conducting research in ophthalmology-related topics including endophthalmitis, vitreoretinal surgery, retinal detachment repair, and sickle cell retinopathy.

01. Lpath, Protocol LT1009-Oph-003 (NEXUS), Phase IIA, 2012-Present
   Sub-Investigator. A multicenter, masked, randomized, comparator-controlled study evaluation of Isopen™ (sonepcizumab [LT1009]) as either monotherapy or adjunctive therapy to Lucentis or Avastin versus Lucentis or Avastin alone for the treatment of subjects with choroidal neovascularization secondary to AMD.

02. Alimera Sciences, Protocol C-01-11-008, Extension Study, 2012-Present
   Sub-Investigator. An open-label, multicenter, extension study of the safety and utility of the new inserter of Iluvien® (Fluocinolone Acetonide Intravitreal Insert) 0.19mg and the safety of Iluvien® in subjects with DME.

03. EyeGate Pharmaceuticals, Protocol EGP-437-004, Phase III, 2012-2013
   Sub-Investigator. A prospective, multi-center, randomized, double-masked, positive controlled, clinical trial designed to evaluate the safety and efficacy of iontophoretic dexamethasone phosphate ophthalmic suspension (1%) in patients with non-infectious anterior segment uveitis.

04. Quark Pharmaceuticals, Protocol QRK202 (MATISSE), Phase II, 2012-Present
   Sub-Investigator. An open-label dose escalation study of PF-04523655 (Stratum I) combined with a prospective, randomized, double-masked, multi-center, controlled study (Stratum II) evaluating the efficacy and safety of PF-04523655 alone and in combination with ranibizumab versus ranibizumab alone in diabetic macular edema.

05. Xoma, Protocol X052130/CL3-78989-005, Phase III, 2012-Present
   Sub-Investigator. A randomized, double-masked, placebo-controlled study of the safety and efficacy of gevokizumab in the treatment of active non-infectious intermediate, posterior, or pan-uveitis.

06. Pfizer, Protocol B1181003-1050, Phase II, 2012-Present
   Sub-Investigator. A phase 2, multi-center, randomized, double-masked, placebo-controlled, multi-dose study to investigate the efficacy, safety, pharmacokinetics and pharmacodynamics of RN6G (PF-04382923) in subjects with geographic atrophy secondary to age-related macular degeneration.

07. Xoma, Protocol X052131/CL3-78989-005 (EYE GUARD™-C), Phase III, 2012-Present
COMMUNITY INVOLVEMENT

Mobile Eye Care Clinic for the Homeless, Illumination Foundation, Saddelback Memorial Care Hospital, San Clemente, CA; November 4, 2012

LANGUAGES

Medical Spanish, Gujarati
Continuing Education Course Approval Checklist

Title: Decision Making in Glaucoma
Provider Name: John Lee

☒ Completed Application
   Open to all optometrists? ☒ Yes ☐ No
   Maintain record agreement? ☒ Yes ☐ No

☐ Detailed Course Description
☒ PowerPoint and/or other presentation materials
☐ Advertising (optional)
☒ CV for EACH course instructor
☒ License Verification for each course instructor
   Disciplinary History? ☐ Yes ☒ No
CONTINUING EDUCATION COURSE APPROVAL
APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Decision Making in Glaucoma</td>
<td>05/15/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Provider Mailing Address</th>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>John (First)</td>
<td>2575 Yorba Linda Blvd</td>
<td><a href="mailto:jlee@ketchum.edu">jlee@ketchum.edu</a></td>
</tr>
<tr>
<td>Lee (Last)</td>
<td>Fullerton</td>
<td></td>
</tr>
<tr>
<td>H (Middle)</td>
<td>CA 92831</td>
<td></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists? □ YES □ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? □ YES □ NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pinakin (First)</td>
<td>14334TLG</td>
<td>Optometry</td>
<td>(901) 831-1562</td>
<td><a href="mailto:pdavey@westernu.edu">pdavey@westernu.edu</a></td>
</tr>
<tr>
<td>Davey (Last)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gunvant (Middle)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and any accompanying attachments submitted is true and correct.

Signature of Course Provider

Date 4/1/2016
# 2016 May Honors Symposium

**Sunday, May 15, 2016**  
**FEATURING 5 HOURS OF CONTINUING EDUCATION.**

**Agenda:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
</table>
| 9:00am – 9:10am | Welcome  
Jason Lam, OD, MBA  
President, AAOS |
| 9:10am – 10:50am | Decision Making in Glaucoma  
Pinakin Davey, OD  
Western University of Health Sciences |
| 10:50am – 11:10am | Break |
| 11:10am – 12:00pm | Idiopathic Orbital Inflammatory Syndrome  
Munish Sharma, MD, OD  
Western University of Health Sciences |
| 12:00pm – 1:00pm | Lunch |
| 1:00pm – 1:50pm | Culinary Guide to Ophthalmic Diseases  
Timothy You, MD  
Orange County Retina |
| 1:50pm – 2:40pm | Retinal Toxicity of Systemic Medications  
Rajiv Rathod, MD, MBA  
Orange County Retina |
Disclosures
- Principal investigator for iVue OCT trial
- Principal investigator Topcon FDA trials for Maestro and OCT 2000
- Consultant for Topcon
- Speakers bureau Sanofi-Genzyme and Allergan

What is glaucoma?
- Definition:
  - “Ocular tissue damage at least partially related to intraocular pressure”
  - Where glaucoma is concerned agreement is limited among clinicians and scientists.

Types of glaucoma
- Primary Open angle glaucoma
- Normal tension glaucoma
- Ocular hypertension
- Glaucoma suspects
  - Optic disc
  - Visual fields
- Open angle
- Closed angle
- Secondary glaucoma
- Congenital glaucoma
- Primary angle closure
- Secondary angle closure

Prevalence studies
- Prevalence in different studies varies
  - Different populations
  - Different methods used to obtain a sample
  - Definition of glaucoma
Prevalence of POAG in Caucasians

<table>
<thead>
<tr>
<th>Study</th>
<th>Age range</th>
<th>Prevalence %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roscommon</td>
<td>Over 50</td>
<td>1.9</td>
</tr>
<tr>
<td>Beaver Dam</td>
<td>43-84</td>
<td>2.1</td>
</tr>
<tr>
<td>Rotterdam</td>
<td>Over 55</td>
<td>1.1</td>
</tr>
<tr>
<td>Dalby</td>
<td>55-65</td>
<td>0.9</td>
</tr>
<tr>
<td>Blue Mountain</td>
<td>Over 40</td>
<td>2.4</td>
</tr>
<tr>
<td>Barbados Caucasians</td>
<td>40-84</td>
<td>0.8</td>
</tr>
<tr>
<td>Baltimore Caucasians</td>
<td>Over 40</td>
<td>1.1</td>
</tr>
</tbody>
</table>

Prevalence of POAG in African American & African Caribbean

<table>
<thead>
<tr>
<th>Study</th>
<th>Age range</th>
<th>Prevalence %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Barbados</td>
<td>40-84</td>
<td>7.1</td>
</tr>
<tr>
<td>Baltimore</td>
<td>Over 40</td>
<td>4.2</td>
</tr>
<tr>
<td>St Lucia</td>
<td>Over 30</td>
<td>8.8</td>
</tr>
<tr>
<td>London</td>
<td>Over 35</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Prevalence of OAG in LALES

<table>
<thead>
<tr>
<th>Age group (years)</th>
<th>Number who received on examination</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>40-49</td>
<td>2363</td>
<td>31 (1.32)</td>
</tr>
<tr>
<td>50-59</td>
<td>1853</td>
<td>54 (2.92)</td>
</tr>
<tr>
<td>60-69</td>
<td>1195</td>
<td>69 (7.38)</td>
</tr>
<tr>
<td>70+</td>
<td>584</td>
<td>20 (1.72)</td>
</tr>
<tr>
<td>80+</td>
<td>147</td>
<td>32 (21.76)</td>
</tr>
<tr>
<td>Total</td>
<td>6142</td>
<td>291 (4.74)</td>
</tr>
</tbody>
</table>

Risk factors for glaucoma examined in population based studies

- Demographic
  - Age
  - Gender
  - Race
- Ocular
  - IOP
  - Optic nerve head
  - Myopia
  - Hypermetropia
- Systemic
  - Diabetes
  - Systemic hypertension
- Genetic
  - Family history
- Other
  - Cigarette smoking
  - Alcohol intake
  - Socio economic factors

Intraocular pressure

- Major risk factor
  - Not as fundamental as once thought.
- Prevalence increases with increase in IOP
- Visual field loss slows down with decrease in IOP
- Even if both eyes have IOP lower than 21. The eye with greater IOP will lose field quicker.
Systemic hypertension and glaucoma

- Blood pressure and pathogenesis of glaucoma
  - Hospital based study
  - Baltimore Eye Survey examined perfusion pressure
  - Ocular Perfusion pressure= Blood pressure-IOP
    (Systolic or Diastolic or mean pressure)

Genetic factors

- Positive family history
- Bias:
  - +ve Family history makes a person have frequent check ups
  - Recall bias
    - Sibling with glaucoma odds ratio 3.69
    - Parents with glaucoma odds ratio 2.67
    - Children with glaucoma odds ratio 1.12

Summary

- Prevalence of POAG is Caucasians over 40 years of age
  2% and in African American and African Caribbean is
  "four times" that.
- Hispanics greater risk than African American as they
grow older
- Overall quite underdiagnosed- 50% unknown
- Glaucoma suspects- increases need for care dramatically

Intraocular pressure

- Diagnosis- not helpful
- Treatment- only proven method
- Progression- very closely associated with IOP
- Risk factor- without a doubt most important risk factor
- In fact only alterable risk factor!
Nerve head evaluation

Measure Disc Size
Observe the scleral ring to identify the limits of the optic disc and evaluate its size.
- 66D 1X magnification
- Cup size is associated with disc size
- Effects any casual observer for cup to disc ratio measurement
- Rim thickness varies with disc size

Disc size
Small < 1.5 mm
Medium > 1.5 but < 2.5 mm
Large > 2.5 mm

Neuroretinal rim characteristics
- Color of rim- pale rims not good
- Width of rim in all sectors
- ISNT rule
- ISNT rule is accurate about 70% of times

RNFL
Healthy eye has striations
- A certain amount of NFL is required for visibility
- RNFL loss can be diffuse, localized or mixed
**RNFL cont...**
- Diffuse – reduction in RNFL brightness
- Localized – wedge shaped defect
- Localized RNFL defects should traced back the disc

**Peripapillary atrophy**
- Where
- How large

- 1/8, ¼, ½, ¾, 1, >1 DD

**Optic disc hemorrhages**
- Transient
- Inferior temporal or superior temporal regions mainly
- Record present or absent
- If present where

**Retinal vessels**

Look for this in patients that you suspect NTG

**CD ratio**
- Vertical
- Horizontal
- Largest

- CD ratio of imaging devices will not match your findings!
Focal atrophy of neural rim

Optic disc hemorrhages

Optic disc hemorrhages-3

Barring of circumlinear vessels

- Vessels that runs along margin between cup and neural rim.
- Found supero and infero temporally.
Barring of circumlinear vessels
- As rim becomes thinner it leaves an area of pallor between the rim and the circumlinear blood vessel.

Nasal cupping
- Usually seen in advanced glaucoma.
- Space between Nasal rim and blood vessels.

Bayonetting
- Double angulation of blood vessel.

Nerve fiber bundle defect
- Rim changes also produces RNFL defects.
- Dark stripes or wedge shapes defect paralleling the normal striations.
- Common after disc hemorrhages
Criteria for glaucomatous damage
- GHT outside normal limits in at least two occasions
- PSD < 5% of normal individuals
- A cluster of three or more non-edge points (pattern deviation plot) all of which are depressed at a p<5% and one of which is depressed at a p<1% on two occasions (respecting horizontal meridian)
- This criterion was written for 30-2, if 24-2 field is analyzed edge points are included.

Staging based on MD
- Better than -6 dB - Mild
- Worse than -6.0 dB but better than -12 dB - Moderate
- Worse than -12.0 dB - Severe

Optical coherence tomography

Gonioscopy

A = Above Schwalbe line, totally occluded angle.
B = Behind the Schwalbe line, peripheral iris is in contact with TM.
C = Scleral spur iris root at the level of scleral spur
D = Deep anterior ciliary body seen.
E = Extremely deep
Van Herrick angle estimation

1. 1 - Open angle, VII grade
2. 1/2 - Open angle, VII grade
3. 1/4 - Narrow angle, VII grade (Angle Closure Possible)
4. < 1/4 - Angle closure likely, VII grade

Ultrasound pachymetry is standard

As central data as possible
Greater number of measurements increase your reproducibility of data
Always use lowest data

Why not average the data?

Average 484 microns
Lowest 473 microns
Averaging helps decrease error but does not eliminate it.

Perpendicular measurements are lowest or smallest in value
Anterior segment OCT

Difference between optical and ultrasound pachymetry measurements

<table>
<thead>
<tr>
<th>Author</th>
<th>Difference in OCT and ultrasound values</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kim et al. AJO 2008</td>
<td>25 microns</td>
</tr>
<tr>
<td>Wang et al. Refract Surg 2008</td>
<td>35 microns</td>
</tr>
<tr>
<td>Gunvant &amp; Danner</td>
<td>35 microns</td>
</tr>
<tr>
<td>Medical Imaging 2006</td>
<td></td>
</tr>
</tbody>
</table>

How to use CCT data in glaucoma management?

- Error in IOP measurements
- Ocular hypertensive patients
  - Thinner cornea at greater risk of developing glaucoma

Medical management versus Surgical management

**The Scoring tool for Assessing Risk (S.T.A.R. II) calculator**

- OHTs and EGPS data
- Intended for use only in untreated OHT patients
- Age (30–80)
- IOP 20–32 mmHg
- CCT 475 to 650 microns
- PSD 0.50 to 3.00 dB
- C/D ratio vertical 0.00 to 0.8

Probability of conversion in 5 years
- <5% observe and monitor
- 5 to 15% consider treatment
- >15% treat

**Medications first advantages**

- Drugs are safer than surgery-
  - Less complications
  - Less discomfort
- Drug effects can reversed or is short acting
- Less expensive in the short run
- Multiple drugs can be combined to achieve successful reduction in IOP
- Better quality of life when compared to surgery first (Lichter et al., Ophthalmology 2001)
Medications first - disadvantages

May be more expensive in the long run
Multiple drugs
  • Compliance, adherence and persistence issues
Chronic drug uses and its effect on future surgical outcomes?
  • Preservatives effect?
  • Inflammation leading to failure of future procedures
Increased chances of cataract formation

*Sedwick DC et al. Adverse effects of topical antiglaucoma medications: II. Arch
Ophthalmol 1991

Surgery first - advantages

• If successful and large drop in IOP may be obtained
• No issues related to patient compliance, adherence and persistence

Good in situations where obtaining continuous supply of medications is a problem
May be cheaper long term

Surgery first - disadvantages

Outcomes may be variable
Long term may lose efficacy
May still require additional topical medications
Complications may be dire
Comfort and quality of life may be lower
Chances of cataract formation is greater than topical medications
Age - young vs. older individuals

Race and management options

• Race - white versus individuals with greater pigment
  Individuals with greater pigment - greater risk of post-operative scarring
  • Medications - first choice

*Broadway DC et al. Racial differences in the results of glaucoma filtration surgery: are racial differences in conjunctival cell profile important? BJO 1994

Age and management options

Younger individuals
  • Accelerated wound healing systems
  • Thick fleshy periocular tissues heals rapidly

• Thus older individuals better suited for surgical options

Current practice patterns

• Unacceptable high pressures will inevitably destroy optic nerve tissue
• Safe levels of IOP by any means warranted
  • If these don't work or not sufficient
  • Drugs like - prostaglandins
  • Reduction in inflow - beta blockers
• Maximal medical therapy

• Consider surgery
Maximal tolerated medical therapy

- pilocarpine
- timolol
- brimonidine
- latanoprost
- bimatoprost


And how exactly do I use them?

Do we really have the luxury to use them all?

- Stage of disease
  - Visual field status
- Stage of nerve damage
- Rim tissue remaining
- Type of glaucoma
  - POAG – medical first makes sense
  - Secondary glaucoma
  - Congenital glaucoma – treated differently
  - Complete angle closure
- Adherence, compliance, persistence issues
- Effect of medications and future outcomes of surgery

Target pressure

- A theoretical value below which visual field and ONH appear stable (not deteriorating).
- Calculated from highest recorded IOP.
- Conventionally 20-30% decrease in IOP.
- 40% or more if severe glaucoma
- Consider having a range rather than one number.

Medications

- First line drugs - prostaglandin analogs
- Second line: Beta blockers, Alpha 2 agonist, Carbonic anhydrase inhibitor
- Third: Combination with prostaglandin
  - Eg: PGA (Travatan z) and CAI+ Beta blocker (COSOPT)
  - PGA + brinzolamide/brimonidine (Simbrinza)
Where should the IOP be?

- No real number
- Start with 30% drop
- Monitor for progression
- Advanced glaucoma you want IOP to be less than 12
- Pressure should not fluctuate much

ALT versus SLT

SLT preferred
- Unlike ALT, SLT does not scar
- Autopsy specimens - confirm no coagulative damage after SLT
- SLT can be repeated

Mechanisms of action SLT

- 5-8 fold increase in monocytes and macrophages in TM
  - after treatment with SLT

Hypothesis

- Injury via laser causes releasing of chemoattractant
- This in turn recruits monocytes that are transformed into macrophages
- Macrophages clear pigment granules and exit via Schlemm's canal

Advances and updates

- Selective Laser trabeculoplasty
  - Selectively targets melanin pigment of TM
  - More safe compared to ALT (because lower power)
  - Equally effective as ALT
  - Can be repeated if first attempt is not effective
Continuous 24-hour Intraocular Pressure Monitoring With a Contact Lens Sensor: Safety, Tolerability, and Reproducibility In Glaucoma Patients

Kaveh Menouari, M.D., M.P.H., Felipe A. Mamedes, M.D., Ph.D., Ali Tafreshi, B.S., and Robert N. Weinreb, M.D.

Hamilton Glaucoma Center and Shiley Eye Center, Department of Ophthalmology, University of California, San Diego, La Jolla, California

Conclusions—Repeated use of the CLS demonstrated good safety and tolerability. The recorded IOP patterns showed fair reproducibility, suggesting that data from 24-h continuous IOP monitoring may be useful in the management of glaucoma patients.

Main adverse events
- Blurred vision 82%
- Hyperemia 80%
- SPK 15%

Cost 500 Euro. Not available for sale in USA

Correlation for repeatability
- Overall r = 0.9
- That is r-square = 36%

Analysis of Continuous 24-Hour Intraocular Pressure Patterns in Glaucoma

Kaveh Menouari, John H. Liu, Robert N. Weinreb, Ali Tafreshi, and Felipe A. Mamedes

CONCLUSIONS. Adapting the cosmosor method to CLS data is a useful way for modeling the rhythmic nature of 24-hour IOP patterns and evaluating their reproducibility. Repeatable nocturnal nadir phase was seen in 62.9% of patients. (Clinical Trials.gov number, NCT01319617.) (J Ophthalmol Vis Sci. 2012;53:8050-8056) DOI:10.1167/iovs.12-10569

Evaluation of Continuous 24-Hour Intraocular Pressure Monitoring for Assessment of Prostaglandin-Induced Pressure Reduction in Glaucoma

Gideon Holls, MD, PhD, BSc; Peter Kider, MD, PhD; and Peter Varga, MSE

Conclusions: Our results suggest that the current CLS technique cannot be clinically used to monitor IOP decrease induced by topical medication in glaucoma, and has limited value in identification of transient IOP elevation periods.

Summary of contact lens IOP devices
- Long way to go
- The ability of device to capture peak accurately is not excellent.
- Cautiously optimistic.
- FDA cleared on March 2016 not yet available for sale
- Prediction ...
New drugs

Mechanism of action

Latanoprostene Bunod

Cellular esterase

Latanoprost acid

4-hydroxybutyl nitroate (butamediol mononitrate)

Acts on changing ECM

Latanoprost and butamediol

Nitrergic oxide

Changes ocular meshwork cells that are highly contractile in nature

Latanoprostene Bunod–Bausch and Lomb

Latanoprostene bunod (LBN, BOL-303259-X) is a nitric oxide (NO)-donating prostanoid FP receptor agonist

A randomised, controlled comparison of latanoprostene bunod and latanoprost 0.005% in the treatment of ocular hypertension and open angle glaucoma: the VOYAGER study

Robert H Wiggers,1 Tuyen Dung,2 Baldo Scassellati Scacciali,3 Jason L Vintzen,2 Kuldev Singh,1 Paul L Kaufman,4 on behalf of the VOYAGER Study Group

![Graph showing comparison of latanoprostene bunod and latanoprost 0.005%](image)

Latanoprostene Bunod 0.024% versus Timolol Maleate 0.5% in Subjects with Open-Angle Glaucoma or Ocular Hypertension

The APOLLO Study

Robert N Wormald, MD, Baldo Scassellati Scacciali, MD, Jason Vintzen, MD, Jeffrey Lehman, MD

Timolol Maleate 0.5% or Latanoprostene Bunod 0.024%

IOP measured at 8 AM, 10 AM and 1 PM at weeks 2, 6, and 3 months

![Graph showing comparison of latanoprostene bunod and timolol maleate](image)

Figure 2. Proportion of subjects with intraocular pressure (IOP) ≤18 mm Hg at follow-up visits (intent-to-treat population). *p<0.05 versus latanoprost. LBN, latanoprostene bunod.
Latanoprostene Bunod 0.024% versus Timolol Maleate 0.5% in Subjects with Open-Angle Glaucoma or Ocular Hypertension

The APOLLO Study

Robert J. Wyveth, MD; Willis-Soviera Sperber, MD; Jana Vennus, MD; Jeffrey Lawrence, MD

![Graph showing study results](image)

Latanoprostene Bunod 0.024% versus Timolol Maleate 0.5% in Subjects with Open-Angle Glaucoma or Ocular Hypertension

The APOLLO Study

Robert J. Wyveth, MD; Willis-Soviera Sperber, MD; Jana Vennus, MD; Jeffrey Lawrence, MD

![Graph showing study results](image)
Curriculum Vitae
Pinakin Gunvant Davey BS Optom, PhD, OD, FAAO
Professor
Western University of Health Sciences
Phone: 901-831-1562 (mobile)
909-247-1781 (home)
Email: contact@pinakin-gunvant.com

Education:
Bachelor of Science Optometry 1\textsuperscript{st} Class (Aug 1995 – June 1999)
Elite School of Optometry, Chennai, India
Affiliated to Birla Institute of Technology and Science, Pilani, Rajasthan, India

Graduate Education
Dissertation: “The influence of corneal dimensions on measurement related to glaucoma and ocular hypertension”
Anglia Polytechnic University (now called Anglia Ruskin University)
Department of Optometry and Ophthalmic Dispensing
Cambridge, England

Post-doctoral fellowship: Department of Psychological and Brain Sciences Mentor Professor Edward A Essock PhD, Ocular Imaging and Glaucoma
University of Louisville, Kentucky (02/2003/03/2006)

Professional education
Doctor of Optometry (2006-2010) Southern College of Optometry


Research Experience:
06/1998 to 06/1999 Histopathology lab in Sankara Nethralaya, Medical Research Foundation, Chennai, India. Supervisor consultant ophthalmologist: Dr. Jyotirmay Biswas

12/1999 to 01/2003 Data collection for Ph.D. studies; I conducted experiments at Department of Optometry and Ophthalmic Dispensing, Anglia Ruskin University, Cambridge England. Supervisors Professor Daniel O’Leary and Dr. Russell Watkins

08/2001 to 10/2001 Data collection for Ph.D. studies; I conducted research at Department of Ophthalmology, Norfolk and Norwich NHS Trust Hospital, Norwich, England. Supervisors’ consultant ophthalmologists: Drs. David Broadway and Russell Watkins

11/2001 to 01/2002 Data collection for Ph.D. studies; I conducted research at Department of Glaucoma, Sankara Nethralaya, Medical Research Foundation Chennai, India. Supervisors’ consultant ophthalmologists: Drs. Lingam Vijaya and Mani Baskaran
02/2003 to 03/2006: Data collection for post-doctoral research; I conducted research in the Department of Glaucoma, the Kentucky Lions Eye Care Center Louisville, Kentucky, USA. Supervisor: Dr. Edward Essock, PhD and consultant ophthalmologist: Dr. Joern Soltau

Additional training:
07/2007: Selected and attended Summer Institute for Faculty Development workshop conducted by Association of Schools of Colleges of Optometry.
02/2008: Attended three day training and workshop on Institutional Review Board fundamentals for IRB administrators.
07/2008: Selected and attended The Summer Clinical Research Institute at The Ohio State University conducted by the American Optometric Association and American Academy of Optometry.

Professional Experience:
07/1999 to 10/1999: Chennai, India
Sankara Nethralaya Eye Hospital Chennai, India; Optometrist in Department of Optometry
Practitioner examining patients for refractive surgery and after care with Dr. Pandit (Ophthalmologist) and Mr. Conway (Optometrist)
Faculty at the Eye Center at Southern College of Optometry
07/2011 to present: Pomona, California USA
Faculty at the Eye Care Center at Western University of Health Sciences

Professional License
NPI number 1659685733
2010 to 2012: Therapeutic Optometrist Tennessee (2948)
2011 to present: California Optometrist 14334 TLG

Academic Appointments:
12/1999 to 01/2003: Cambridge, England
Part-time lecturer in the Department of Optometry and Ophthalmic Dispensing, Anglia Polytechnic University, Cambridge, England
03/2008 to 06/2011: Memphis, Tennessee
Assistant Professor at Southern College of Optometry
10/2006 to present: Louisville, Kentucky USA
Adjunct faculty at University of Louisville, Kentucky USA
07/2009 to 2012: Memphis, Tennessee, USA
Adjunct faculty at the University of Memphis, Tennessee, USA
07/2011 to present: Memphis, Tennessee
Adjunct faculty at Southern College of Optometry
07/2011 to 2014: Pomona, California, USA
Associate Professor at Western University of Health Sciences, College of Optometry
07/2014 to present Pomona, California, USA
Professor at Western University of Health Sciences, College of Optometry
07/2015 to present Pomona California, USA
Director of Research, Western University of Health Sciences, College of Optometry
Membership in Professional Organizations:
2002 to present Association for Research in Vision and Ophthalmology
2002 to present American Academy of Optometry; Fellow since 2003
2006 to present Optometric Glaucoma Society (Appointment based on research merit)
2011 to present American Optometric Association
2011 to present California Optometric Association
2011 to present Inland Empire Optometric Society

Travel awards:
1) The Wellcome Trust, UK, Travel Grant (in the Ph.D. and post-doctoral category; £1000) to travel to Association for Research in Vision and Ophthalmology (ARVO) 2002.
2) Anglia Polytechnic University Travel Grant (£1000) to travel to American Academy of Optometry (AAO) 2002.
3) Student Travel fellowship award ($500), from AAO 2003.
4) Gravemeyer Research Fellowship from University of Louisville ($750) to travel to ARVO 2004
5) Student Travel fellowship award ($500), from AAO 2004
6) Gravemeyer Research Fellowship from University of Louisville ($750) to travel to ARVO 2005

Academic awards:
1) Best poster, World Optometry Day, Elite School of Optometry, 1996.
3) Best contact lens project award, Elite School of Optometry, 1999.
4) Award for proficiency in public relations and communication Elite School of Optometry, 1999.
5) Award from the Governor Ernie Fletcher of Commonwealth of Kentucky for service to Kentucky Optometric Association and overall benefit to the state of Kentucky (2007)
6) WITELO Medal from University of Medical Science, Poznan, Poland in recognition of help for the Optometry Development in Poland (2011)
7) Awarded honorary membership to COMOF Optometric Extension Program national optometry organization Mexico in recognition of continued efforts for the progress and development of Optometry in Mexico (2013)

Patents:
Systems, methods, and computer-readable media for detecting and predicting a progression of retinal pathologies US 20130114041 A1
Patent Application Serial No. 61/234,803
Ref. 304044.84705P
Status: Awarded 2013
Inventors Drs. Khan Iftekhruddin, Paul Kim, Pinakin Davey
Publications:

Peer reviewed and indexed journals


22) P Gunvant, Y Kim, K Iftekharuddin, EA Essock Identifying glaucoma with multi-fractal features from optical coherence tomography SPIE Medical Imaging: Computer Aided Diagnosis 2011, 7963, 79633 S1-S9

23) Y Kim, K Iftekharuddin, P Gunvant, M Tooth, A. Garas, G Hollo, EA Essock Feature-based glaucomatous progression prediction using scanning laser polarimetry data SPIE Medical Imaging: Computer Aided Diagnosis 2011, 7963, 79633 T1-T9


29) P Davey, K Nouri, S Zaczyk: Assessing the need and benefits of home tonometers in the management of patients with glaucoma Clinical Optometry 2013;5 19–27

30) P Davey, C Newman, A Ablamowicz, D Fuller: Diagnostic accuracy of keratoconus using anterior segment optical coherence tomography Optometry Reports 2013; volume 3:e2, 6-8

31) P Davey: Fabry disease: a survey of visual and ocular symptoms Clinical Ophthalmology 2014 Aug 19;8:1555-60


38) S Khanal, PG Davey, L Racette, M Thapa: Comparison of Retinal Nerve Fiber Layer and Macular Thickness for Discriminating Primary Open Angle Glaucoma and Normal Tension Glaucoma using OCT. *Clinical and experimental Optometry* Accepted November 2015.

*Non peer reviewed journals*


40) P Gunvant, I Joseph: Comparison of visual acuity and contrast sensitivity with glasses and various water content hydrogel contact lenses. *Indian Contact Lens Journal*. 20:3-6 (July 1999).


49) PG Davey: The Impact of Imaging Devices on Glaucoma Management Review of Optometry Vol 150 July 15 2013: 52-61

Books and Book chapters
51) EA Essock, P Gunvant and Y Zheng: "Nerve Fiber Analyzer GDx-Progression" in Optic Nerve Head and Retinal Nerve Fiber Analysis Edited by Iester M, Garway-Heath D, Lemij H; Savona, Dogma ISBN 88-87434-30-1; Pages 111-113
52) P Spry, CA Johnson, A Anderson, P Gunvant, M Fingeret, JL Keltner, M Wall, JS Werner "A Primer for Frequency Doubling Technology (FDT) Perimetry using the Humphrey Matrix" Welch Allyn and Carl Zeiss Meditec
http://www.intechopen.com/books/show/title/glaucoma-current-clinical-and-research-aspects

Peer reviewed conference presentation:
4) P Gunvant, M Baskaran, TM Ganeshbabu, L Vijaya, J Uddin, D Broadway, R Watkins: Determination of a 'true' intraocular pressure in open angle glaucoma & ocular
hypertension using a mathematical model. Invest Ophthal and Vis Sci 2002, 43 E-
Abstract -1070

5) RJ Watkins, P Gunvant, J Uddin, DC Broadway: The influence of central corneal thickness 
& corneal curvature on intraocular pressure measurement with the Goldmann tonometer 

6) P Gunvant, IS Joseph, M Baskaran, L Vijaya, DC Broadway, RJ Watkins: Pulsatile ocular 
blood flow measurements in healthy Asian eyes: Reference values for an Indian 

7) P Gunvant, DC Broadway, RJ Watkins: Effect of ethnic origin on Pulsatile Ocular Blood 

8) P Gunvant, DC Broadway, RJ Watkins: Does Optic Disc Topography Vary During Office 

9) P Gunvant, M Baskaran, L Vijaya: Effect of central corneal thickness on contact and non-

10) P Gunvant, M Baskaran, L Vijaya: Determination of “True intraocular pressure” in a normal 

and corneal parameters in open angle glaucoma and ocular hypertension. Invest 
Ophthal and Vis Sci, 2003, 44 E-Abstract -2174

12) P Gunvant, M Baskaran, K Ramani, L Vijaya: Comparison of the Proview tonometer with 
the goldmann applanation tonometer. Optometry and Vision Science, 2003, 80: 226

13) P Gunvant, P Chen, Y Zheng, D Greenfield, H Bagga, M Bohem, E Essock: Predicting 
subsequent visual field loss in subjects with disc hemorrhage using RNFL polarimetry. 
Optometry and Vision Science, 2003, 80: 229

14) EA Essock, BC Hansen, Y Zheng, AM Haun, P Gunvant: “Mach Bands” in the orientation 
dimension: An illusion due to inhibition of near by orientations: Journal of Vision, 2004, 

15) A Haun, P Gunvant, M Baskaran, L Vijaya: Central corneal thickness measurement using 
a pachometer: Mean or lowest values? Invest Ophthalmol Vis Sci, 2004, 45: E-
Abstract 137

Loss in Ocular Hypertensive Patients Using Wavelet-Fourier Analysis (WFA) of GDx 

17) P Gunvant, Y Zheng, EA Essock: Wavelet-Fourier analysis on retinal nerve fiber layer 
polarimetry data in patients with early glaucoma. Optometry and Vision Science, 
2004, 81: 5

18) P Gunvant, S Demirel, CA Johnson: Reproducibility of visual field abnormalities identified 
by Frequency Doubling Technology perimetry in patients with early glaucoma. 
Optometry and Vision Science, 2004, 81: 6

19) M Baskaran, R George, P Gunvant, Sve Ramesh, P Raju, L Vijaya: True intraocular 
pressure (TIOP) with Orssengo and Pye model compared with Applanation Tonometry 

20) P Gunvant, Y Zheng, PG Schlotmann, DF Garway-Heath, EA Essock: Comparison of 
OCT and VCC RNFL estimates in identifying glaucoma using Wavelet-Fourier Analysis. 

21) P Gunvant, Y Zheng, RS Parikh, S Prabakaran, JG Babu, AU Kumar,
G Chandrashekar, R Thomas, EA Essock: Analysis of retinal nerve fiber layer data obtained by Optical Coherence Tomograph using Fourier Based Analysis. *Invest Ophthalmol Vis Sci*, 2006 47: E-Abstract 3338

22) EA Essock, P Gunvant, Y Zheng, RS Parikh, S Prabakaran, JG Babu, AU Kumar, G Chandrashekar, R Thomas: Comparison of shape-based analysis of retinal nerve fiber layer data obtained from OCT and GDX-VCC. *Invest Ophthalmol Vis Sci*, 2006, 47: E-Abstract 3638


29) P Gunvant: Sources of errors in retinal imaging Multimedia poster SECO 2008


32) P Gunvant, F Jackson, E Hocking, D Taylor: Repeatability of home tonometry can be improved with increased training *Optometry*, 2008; 79, 6, 331-332


39) P Gunvant & M Cohler: Effect of repeated application on corneal biomechanical parameters and intraocular pressure measurements *Optometry and Vision Science*, 2010; 87: E-Abstract 100947


41) SR Gollamudi, A Ablamowicz, P Gunvant: Investigation of parameters that predict the necessity of LASIK enhancement post cataract surgery with multifocal IOL implantation *American Society of Cataract and Refractive Surgery* March 2011: Abstract 731057


52) G Comer, P Davey, M Chaglasian, J Cuadros, J Lawrenson, L Alexander, P Dabasia, Q Zhou, DF Garway-Heath "The IVue™ Normative Database Study- Methodology and
Distribution of OCT Parameters" *Optometry and Vision Science*, 2013; 90 E-Abstract 130192

53) R Shah, S Zaczyk, T Thamsopit, P Vyas, S Alvarex, B Santos, P Davey "Macular pigment optical density: Repeatability, inter eye correlation and effect of ocular dominance" *Optometry and Vision Science*, 2013; 90 E-Abstract 135209


55) DJ Cameron, PG Davey "Non-invasive ocular assessment in wildtype and disease model zebrafish" *Invest Ophthalmol Vis Sci*, 2014; 54: E-Abstract 2107


64) M Sharma, PG Davey, R Maeda Case series describing Retinal Manifestations along with OCT findings amongst patients of Fabry Disease American Optometric Association annual meeting 2015


67) SM Thurman, PG Davey, A Seitz Improving Computerized Tests For Measuring Visual Field Deficits In AMD *Optometry and Vision Science*, 2015; 92 E-Abstract 155313
Editorial responsibilities

Editor in Chief Open Journal of Ophthalmology 2012 to 2014

Editorial Board member
2. Optometry reports 2011
4. The Open Access Journal of Science and Technology 2013
6. JSM Ophthalmology 2013
7. Journal of Medical Disorders 2013

Reviewer for peer reviewed journals
1. Eye Official Journal of Royal College of Ophthalmologists; 2003 to present
2. Journal of Glaucoma; 2004 to present
4. Ophthalmic and Physiological Optics; 2004 to present
5. Graefe's Archive for Clinical and Experimental Ophthalmology; 2005 to present
6. Indian Journal of Ophthalmology; 2005 to present
7. Optometry and Vision Science; 2005, 2007 to present
8. Current Eye Research; 2006 to present
9. Optometry; 2007 to present
11. Clinical Ophthalmology 2008-to present
13. Clinical Optometry 2009-to present
15. Journal of Refractive Surgery 2010 to present

Ad-hoc Reviewer for granting agencies
1. National Institute for Health Research Scotland
2. The College of Optometrists, United Kingdom
3. Sultan Qaboos University Postgraduate Studies and Research Sultanate of Oman
4. Medical research Council, United Kingdom
5. Veterans Affairs

Invited lectures:
1) "Creutzfeldt-Jacob Disease and its effect on clinical practice" at the Elite school of Optometry, India. (2001)
3) "Pulsatile ocular blood flow - future possibilities" at the Medical Research Foundation Chennai, India. (2002)
4) "Intraocular pressure correction factors: Do we have a good one?" at the Medical Research Foundation Chennai, India. (2003)
5) “Are we measuring central corneal thickness accurately” at the Elite school of Optometry, India (2003)

6) “Effect of corneal parameters on glaucoma related measurements” at The Eye Foundation Coimbatore, India (2005)

7) “Evaluation of tonometric correction factors” at the L.V. Prasad Eye Institute Hyderabad, India (2005)


9) “Glaucoma management: Life under pressure” three hours lecture Evansville Indiana - Baypoint Anterior Segment Symposium November 2006

10) “Imaging devices and its use in primary care clinics” at American Academy of Optometry Anaheim, 2008, Primary Care Symposium

11) “Advances in ocular imaging and its use in management of glaucoma and retinal conditions” three hour lecture Hawaii Optometric Association, November 2008, Maui, Hawaii

12) “Intraocular pressure are you yesterday’s headline” one hour lecture, The Ohio State University to the class of 2009 April 2009

13) “Updates on intraocular pressure measurement” one hour lecture, The Ohio State University to the class of 2010 June 2010

14) “Measuring intraocular pressure in mass screenings” one hour lecture, Wills Eye Institute 2010, Philadelphia, Pennsylvania


16) “Life under pressure- Glaucoma lecture” Aditya Jyot Eye Institute Mumbai India December 2011

17) “Towards better Tonometry” Narayana Nethrayala Bangalore India December 2011

18) “Life under pressure- Glaucoma lecture Sankara Nethrayala, Medical Research Foundation Chennai India December 2011

19) “Glaucoma A nerve in Distress” Association Mexicana de Facultades, Escuelas, Colegios y Consejos de Optometria (AMFECO), Mexico city Mexico. February 2012

20) “Glaucoma” 36 hour course COMOF Mexico City Mexico June 2012

21) “Compare and contrast Optometry in India and USA” Aditya Jyot Eye Institute College of Optometry Mumbai India July 2012

22) “Ocular Physiology and Glaucoma” SNDT Womens University Mumbai, India July 2012

23) “Glaucoma” 24 hour course COMOF Mexico City Mexico November 2012

24) “Fabry eye disease-Optometry Making Diagnosis” Pacific University, Forest Grove, Oregon June 2013

25) “Fabry eye disease-Optometry Making Diagnosis” Southern Nevada Optometric Association June 2013

26) “Repeatability of biomechanical properties obtained using Scheimpflug technology”, World Glaucoma Congress, Vancouver Canada, July 2013

27) “Congenital glaucoma and ocular pathology in pediatric patient”, two hour lecture at COMOF Optometric Extension Program, Queretaro Mexico September 2013

29) "Fabry disease: clinical course" UCLA Department of Nephrology and Cedars-Sinai Medical Center, One hour presentation on Ocular manifestations of Fabry's disease, Los Angeles, California October 2013

30) "Fabry disease Ocular manifestations of a systemic disease" at Southern California College of Optometry Marshall B Ketchum University May 19th 2014

31) "Fabry disease Optometry making diagnosis" San Francisco Optometric Society, June 24th 2014

32) "Fabry disease Optometry making diagnosis" Western Regional Conference October 2014

33) Perceptual learning studies and Age related macular degeneration- one hour "Kaiser Tustin Santa Ana November 3rd 2015

34) Fabry disease Ocular manifestations of a systemic disease at Western University of Health Sciences December 2015

35) Fabry disease Research updates a Joint program UCLA and Western University event at Western University of Health Sciences December 2015

36) Fabry disease Optometry making Diagnosis at Southern California College of Optometry Marshall B Ketchum University May 18th 2015

37) "Advances in Ocular manifestations of Fabry disease" Presentation at The National Fabry Disease Foundation 8th Annual Fabry Family Conference Greensboro, North Carolina September 2015

38) Improving diagnostic and visual performance in Age related Macular Degeneration Selected as one of twenty two vision Emerging Vision Scientists to present at National Alliance for Vision and Eye Research Washington DC October 7th 2015

Continuing education lectures:

1) Two hour glaucoma course "Imaging devices- Are we there yet?" 19967-GL, "Progress in Detecting Progression" 19966-GL, Kentucky Optometric Association Fall Conference, September 2007, Covington, Kentucky.


4) Two hour retina course "Diagnosis and management of systemic diseases with posterior segment manifestations" 24579-PS F & P Educational Seminars Inc. March 2009, Evansville, Indiana.

5) Two hour glaucoma course "Diagnosis and management of glaucoma" 19966-GL and 25523-GL F & P Educational Seminars Inc. August 2009, Evansville, Indiana.

6) Two hour glaucoma course "Advances in glaucoma management" 19966-GL & 19967-GL Eye Specialty Group August 2009, Memphis, Tennessee

7) Two hour glaucoma course "Analyzing Glaucoma Progression: The Impact of Advanced Technology" 26375-GL Southern College of Optometry Fall CE October 2009 Memphis, Tennessee

9) Two hour glaucoma course “Visual Fields- Analysis, Advances and Future” 28165-GL two hour course Eye Specialty Group May 2010 Memphis Tennessee
10) Two hour glaucoma course “Intraocular pressure measurement: The old, the new and the yet to come” 29163-AS Eye Specialty Group August 2010 Memphis Tennessee
11) Three hour glaucoma course “Glaucoma management” 26375-GL and 25523-GL Midwest Optometric Society October 2010; Florence, Indiana
14) Two hour posterior segment course “Advances in retinal imaging” 31274-PS Eye Specialty Group April 2011 Memphis Tennessee
15) Two hour posterior segment course “Advances in retinal imaging” 31274-PS West Tennessee Optometric Association May 2011 Memphis Tennessee
16) Two hour posterior segment course “Advances in retinal imaging” 31274-PS Southern Eye Associates June 2011 Memphis Tennessee
17) Four hours glaucoma course at Western University of Health Sciences July 2011, Pomona, CA 1) Open Angle Glaucoma and Advanced Technologies 31847-GL one hour lecture 2) Pseudoexfoliation Syndrome and Glaucoma a Dangerous Duo 31848-GL two hour lecture, To Drop or to Chop Options of Medical and Surgical Management of Glaucoma one hour lecture
18) Nine hours glaucoma course at Western University of Health Sciences September 2011, Pomona, CA 1) Glaucoma back to basics two hour lecture 32406-GL, 2) Ocular imaging- the old, the new and yet to come two hour lecture 32402-GL 3) Toolbox in managing glaucoma: tonometry, pachymetry etc. two hour lecture 32403-GL 4) POAG, the greater part of glaucomas two hour lecture 32404 GL 5) Surgical options in managing glaucoma one hour lecture 32407-GL
19) One hour glaucoma course Progress in detecting progression one hour lecture 32883-GL Western University of Health Sciences October 2011, Pomona, CA
20) Six hour glaucoma course at Western University of Health Sciences November 2011, Pomona, CA 1) Open Angle Glaucoma and Advanced Technologies 31847-GL one hour lecture 2) Pseudoexfoliation Syndrome and Glaucoma a Dangerous Duo 31848-GL two hour lecture 3) To Drop or to Chop Options of Medical and Surgical Management of Glaucoma one hour lecture 4) POAG, the greater part of glaucomas two hour lecture 32404 GL
21) One hour glaucoma course Progress in detecting progression 32883-GL Western University of Health Sciences November 2011, Pomona, CA
22) One hour glaucoma course Progress in detecting progression 32883-GL Western University of Health Sciences January 2012, Pomona, CA
23) Six hour glaucoma course at Western University of Health Sciences February 2012, Pomona, CA 1) Open Angle Glaucoma and Advanced Technologies 31847-GL one hour lecture 2) Pseudoexfoliation Syndrome and Glaucoma a Dangerous Duo 31848-GL two hour lecture 3) To Drop or to Chop Options of Medical and Surgical Management of Glaucoma one hour lecture 4) POAG, the greater part of glaucomas two hour lecture 32404 GL
24) Two hour glaucoma course Intraocular pressure The Old, the new and the yet to come
29163-AS Surgical Eye Care Foundation The 7th Annual Optometric Continuing
Education Seminar. February 2012, Memphis TN
25) Two hour glaucoma course “Grand rounds in glaucoma” Western University of Health
Sciences February 2012, Pomona, CA
26) Six hour course “Optowest 2012 California Optometric Association” Four hours
glaucoma and two hours Nutrition and the eye April 2012
27) Five hour glaucoma course San Diego County Optometric Society presented May 20th
2012
28) Two hour CE lecture Visual Fields Past, Present and Future Orange County Optometric
Society June 2012
29) Four hours of CE lecture at Hays-Haine Annual Symposium at Western University of
Health Sciences September 2012
30) One and half hour lecture at New advances in diagnosis and treatment of retinal conditions
Luxottica CE Event lecture at Western University of Health Sciences November 2102
31) Four Hour CE lecture at Mississippi Optometric Association Annual CE event in
Jackson MS November 2012
32) Two hour CE event at Orange County Optometric Society Fabrys Eye Disease and
Ocular Manifestation February 2013
33) Two hour glaucoma CE lecture at Inland Empire Optometric Association annual CE
event, March 2013
34) Two hour CE lecture glaucoma management at Asian American Optometric Society bi
annual CE event March 2013
35) One Hour CE lecture at Western University of Health Sciences, Progression and
glaucoma, April 2013
36) Three hour CE lecture at Western University of Health Sciences on Optic disc analysis
and Visual field interpretation, April 2013
37) Three hour hands on interactive CE at Western University of Health Sciences, April 2013
38) Two hour CE lecture glaucoma management at Asian American Optometric Society bi
annual CE event August 2013
39) Two hour CE lecture 1) Ocular manifestation of systemic disease and 2) glaucoma
management at San Fernando Valley Optometric Association annual CE event
September 2013
40) One hour lecture on Ocular manifestations of Fabrys disease San Joaquin Optometric
Society, Modesto California October 2013
41) One Hour CE lecture at Western University of Health Sciences, Progression and
glaucoma, November 2013
42) Two hour CE lecture at California Optometric Association Monterey Meeting, Ocular
manifestations of Fabrys disease, November 2013
43) Two hour CE event at Inland Empire Optometric Association, Update on glaucoma
medications and Fabrys disease March 2014
44) Four hours of at the Western University of Health Sciences, Pomona California, Two
hours Medical Management in Glaucoma and Two hours of Surgical Considerations in
Glaucoma. March 2014
45) Two hour CE at the Optowest, 2014, California Optometric Association, Fabrys
disease Optometry making diagnosis. April 2014
46) One hour lecture at the Asian American Optometric Association “Glaucoma Medical Management update” August 24\textsuperscript{th} 2014

47) One hour lecture at San Mateo Optometric Association “Fabry disease Optometry making diagnosis”, August 25\textsuperscript{th} 2014

48) One hour lecture at Western University of Health Sciences “Progress in detecting progression in glaucoma” September 6\textsuperscript{th} 2014

49) Five hour course at Sandiego County Optometric Association on Glaucoma management September 14\textsuperscript{th} 2014

50) Four hours CE lectures at Western University of Health Sciences on Glaucoma management October 19\textsuperscript{th} 2014

51) Two hour CE at Northwest Congress Portland OR, on Fabry disease and Perceptual Learning studies in retinal degeneration February 21\textsuperscript{st} and 22\textsuperscript{nd} 2015

52) One hour CE webinar at Western University of Health Sciences Fabry Disease Optometry making Diagnosis March 4\textsuperscript{th} Webinar.

53) Five hour course at Sandiego County Optometric Association on March 15\textsuperscript{th} 2015

54) One hour course at Asian American Optometric Society on march 29\textsuperscript{th} 2015 Pseudo exfoliation syndrome

55) Four hour CE lecture in glaucoma management, two hours drugs and glaucoma, two hours imaging and glaucoma 5\textsuperscript{th} Midwest Optometric Society Conference April 12\textsuperscript{th} 2015

56) Four hour course Comprehensive Glaucoma Update at Western University of Health Sciences April 26\textsuperscript{th} 2015

57) One hour CE lecture Fabry disease Ocular Manifestations of a systemic Disease at Western University of Health Sciences May 14\textsuperscript{th} 2015

58) One hour CE lecture Fabry disease Ocular Manifestations of a systemic Disease at Western University of Health Sciences August 13\textsuperscript{th} 2015

59) Five hour CE lecture; Glaucoma Back to Basics (2 hours) and Tool box in Managing Glaucoma (3 hours) at Western University of Health Sciences September 13\textsuperscript{th} 2015

60) Two hour CE lecture; Epidemiology; Clinical trials in Glaucoma at Western University of Health Sciences September 20\textsuperscript{th} 2015

61) Two hour CE lecture POAG Greater part of Glaucomas at Western University of Health Sciences October 4\textsuperscript{th} 2015

62) Five hour CE lecture; Medical Management of Glaucoma A-Z (3 hours) Surgical Considerations in Glaucoma A-Z (2hours) at Western University of Health Sciences October 18\textsuperscript{th} 2015

63) Two hour CE lecture: Decision making in glaucoma: Diagnosis and Management at Western University of Health Sciences November 7\textsuperscript{th} 2015

64) Two hour CE lecture: Decision making in glaucoma: Diagnosis and management at Kaiser Annual CE event, Huntington Beach. January 30\textsuperscript{th} 2016
65) Four hour CE lecture provided on interactive glaucoma course at Western University of Health Sciences Pomona CA February 28th 2016

66) Two hour CE lecture: Decision making in glaucoma: Diagnosis and management at Inland Empire Annual CE event, Ontario CA. March 6th 2016

**Research Grants:**

**Title:** The Influence of Corneal Dimensions on Measurement Related To Glaucoma And Ocular Hypertension

**Principal Investigator:** Pinakin Gunvant BS Optom (100% efforts)

**Investigator:** Daniel O'Leary PhD, David Broadway MD

**Agency:** Anglia Polytechnic University, Research.

**Type:** Bursary for graduate studies at Anglia Polytechnic University

**Duration:** 1999-2002

**Type** Restricted grant

**Amount** £49,500 (approximate USD 89,100)

**Title:** Improving Glaucoma Treatment Based on Wavelet-Fourier Analysis of Retinal Nerve Fiber Layer Thickness

**Principal Investigator:** Edward Essock PhD, Joern Soltau MD, Philip Chen MD

**Investigator:** Pinakin Gunvant BS Optom, PhD (100% efforts)

**Agency:** Kentucky Science and Engineering Foundation

**Type:** KSEF-03-RDE-005 Emerging Technology,

**Duration:** 2004-2006

**Type** Restricted grant

**Amount** $168,096

**Title:** Factors Affecting Intraocular Pressure Measurement

**Principal Investigator:** Pinakin Gunvant BS Optom, PhD

**Clinical Examiner:** Felicia Jackson BS, Erin Hocking BS

**Agency:** Bausch and Lomb, USA

**Type** Unrestricted grant

**Duration:** 2006-2011

**Amount** $17,060 (includes 10,000 equipment support)

**Title:** Collection of Normative and Glaucoma Data Using GDx VCC™ Scanning Laser Polarimetry

**Principal Investigator:** Pinakin Gunvant BS Optom, PhD

**Clinical Examiner:** Michael Gerstner OD, Jason Duncan OD, Charles Haine OD, MS

**Agency:** Carl Zeiss Meditec, USA

**Type:** Unrestricted grant for collection of normative data/FDA trial

**Duration:** 2006-2007
<table>
<thead>
<tr>
<th>Title</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amount</td>
<td>$28,350</td>
</tr>
</tbody>
</table>

**Title:** Evaluation of the accuracy and clinical utility of Heine Lamba retinometer  
**Principal Investigator:** Pinakin Gunvant BS Optom, PhD  
**Co-investigators:** Jason Duncan OD, Scott B Steinman OD PhD  
**Clinical Examiner:** Marzuka Khan-Jalal BS, Michael Eller BS, Meredith Cohler BS, Erin Hocking BA  
**Agency:** Heine, USA.  
**Type:** Unrestricted grant  
**Duration:** 2007-2011  
**Amount:** $10,000

**Title:** Improving Glaucoma Treatment: Mathematical Analysis of Retinal Nerve Fiber Layer Thickness  
**Principal Investigator:** Pinakin Gunvant BS Optom, PhD  
**Agency:** ASSISI Foundation, Memphis USA  
**Type:** Restricted grant  
**Duration:** 2009-2011  
**Amount:** $79,900

**Title:** Collection of normative database for iVue OCT  
**Principal Investigator:** Pinakin Gunvant Davey OD, PhD  
**Agency:** Optovue Inc, Fremont, California  
**Type:** Restricted grant/FDA trial  
**Duration:** 2011-2012  
**Amount:** $31,000  

**Title:** Age related changes in Macular pigment Optical density  
**Principal Investigator:** Pinakin Gunvant Davey OD, PhD  
**Agency:** Zeavision LLC  
**Type:** Restricted grant  
**Duration:** 2013-2015  
**Amount:** $35,000  
Additional intramural grant from Western University of Health Sciences $5,000  
**Total Amount:** $40,000

**Title:** Collection of normative database for Maestro OCT  
**Principal Investigator:** Pinakin Gunvant Davey OD, PhD  
**Agency:** Topcon, Japan  
**Type:** Restricted grant/ FDA trial  
**Duration:** 2013-2014  
**Amount:** $70,550  
Title: Integrating Perceptual Learning Approaches into Effective Therapies for Low Vision.
Principal Investigator: Aaron Seitz PhD, Professor UC Riverside
Co-Investigator: Pinakin Gunvant Davey OD, PhD
Agency: National Institute of Health 1R01EY023582
Total funding: $1,774,188
Type: subcontract Restricted grant
Duration: 2013-2016
Co-investigator % effort: 12% (3 years)
Additional intramural grant from Western University of Health Sciences $5,000
Total funding: $ 105,001.00

Title: MAESTRO2: Topcon 3D OCT-1 Maestro Optic Disc and RNFL Study: Agreement and Repeatability comparison with the iVue
Principal Investigator: Pinakin Gunvant Davey OD, PhD
Agency: Topcon, Japan
Type: Restricted grant/ FDA trial
Duration: 2013-2014
Total funding $ 27,800

Title: TOPCON 3D OCT-1 MAESTRO REFERENCE DATABASE STUDY II
Principal Investigator: Pinakin Gunvant Davey OD, PhD
Clinical Investigators: Naida Jackirlic OD, Guru Sharma OD, Munish Sharma OD
Agency: Topcon, Japan
Type: Restricted grant/ FDA trial
Duration: 2015-2016
Total funding $ 33,600

Title: TOPCON 3D OCT-1 MAESTRO AGREEMENT AND PRECISION STUDY II
Principal Investigator: Pinakin Gunvant Davey OD, PhD
Clinical Investigators: Jessica Lee MS and Jennifer Kurtz
Agency: Topcon, Japan
Type: Restricted grant/ FDA trial
Duration: 2015-2016
Total funding $ 116,900

In Kind Grants to Southern College of Optometry

Ziemer Ophthalmology Pascal tonometer and supplies $4,500
Heidelberg Engineering Upgrade for Heidelberg Retina Tomograph $16,500
Carl Zeiss Meditec Frequency Doubling Perimeters two units $22,000
Carl Zeiss Meditec Upgrade to GDx and OCT units $6,500
In Kind grants to Western University of Health Sciences
Blood flow analyzer Paradigm technologies, Utah USA $5,000

IVue OCT Optovue Inc Fremont California USA equipment cost $46,950.00 two year loan to Western University of Health Sciences.

Teaching experience:
Lectures:
Anglia Polytechnic University Cambridge, England

1999-2002 Module leader (Instructor in charge), presented lectures, organized and supervised practical lab sessions for Optics of the eye. This course lasted for 1 semester total teaching time 36 hours.

2000-2002 Module leader (Instructor in charge), presented lectures, organized and supervised practical lab sessions for Experimental Methods in Optics & Principle Ophthalmic Lenses. This course lasted for 1 semester; three groups; total teaching time 108 hours.

2000-2002 Presented 6 weeks of lectures in a 12 week course on Microbiology for General and Ocular Pharmacology. This course lasted for 1 semester; total teaching time 18 hours.

2000-2002 Presented 2 weeks of a 12 week lecture course on Clinical Optometry; total teaching time 4 hours.

University of Louisville, Vision Science, Louisville, Kentucky, USA
2003-2006 Presented, 2 hours lecture in a 12 week course for Professor Edward A Essock on a course in vision science for graduate students.

Southern College of Optometry, Memphis, Tennessee, USA
2007 to 2011 Instructor for the Epidemiology part of OPT 323 Public health, Epidemiology and Geriatrics, presented lectures 5 weeks for a 16 week course total teaching time 10 hours.

2008 to 2011 Instructor in charge for the OPT 116, OPT 213 Biochemistry of the Eye the course is a 1.5 credit unit course each for 16 weeks, total teaching time 24 hours.

2010-2011 OPT 308Glaucma co-instructed the course (50%) with Dr. Dennis Matthews, 2 credit unit course for 16 weeks total teaching 16 hours

Glaucma course for Texas Optometrists
12/2006, 07/2007, 12/2007, 04/2008, 12/2008 Thirteen hours of a thirty hour course lectures covering topics of anatomy and physiology of optic nerve, mechanisms of glaucomatous damage, intraocular pressure, optic disc evaluation with imaging technology, an update on primary open angle glaucoma, epidemiology of glaucoma and
ocular hypertension, update on ocular hypertension, normal tension glaucoma, secondary glaucoma and visual fields.

Western University of Health Sciences
2009 to present Instructor in charge for the Ocular physiology OPTM 5032, 2.0 credit unit with 26 lecture hours. Total teaching time 26 hours

2010 to present Instructor in charge for the Ocular Disease II Glaucoma OPTM 5032 3.5 credit unit with 36 lecture hours and 10 lab hours (4 groups). Total teaching time 76 hours

2011 to 2013 Elective course II Common Optometric Procedures. OPTM 8163, 1.0 credit unit 14 lecture hours. Total teaching time 14 hours

Laboratory and clinic based modules:

Anglia Polytechnic University Cambridge, England

1999-2000 Contact Lenses: I co-supervised the 12 lab sessions; total lab time 36 hours.

1999-2000 Further Clinical Optometry: I co-supervised 12 lab sessions; total lab time 48 hours.

1999-2002 Clinical Optometry: I co-supervised the 12 lab sessions; total lab time 36 hours

Southern College of Optometry, Memphis, Tennessee, USA

2006 Lab instructor for OPT 230 (Patient Management) total lab time 96 hours

2006 to 2011 Teaching clinical technology in Advanced Care Ocular Disease at the Eye Centre.

2007 to 2011 Co-instructor OPT 328 a seminar based course; presented lectures; 8 weeks for a 16 week course and organized and supervised practical lab sessions. This course lasted for 1 semester, total teaching time 10 hours

Thesis supervision: Co-supervised the following thesis

2001
1) Ms. Leena Panchal: "Vertical cup-to-disc ratio - Agreement between direct ophthalmoscopic estimation, fundus biomicroscopic estimation and scanning laser ophthalmoscopic measurement"

2) Mr. Javed Akhtar: "Effect of pupil dilation on measurements obtained using scanning laser ophthalmoscope"

2002
3) Ms. Sarah Burdis: "Effect of repeated tonometry on the pulsatile ocular blood flow of consensual eye."

06/2007 to 06/2009 Co-Supervisor and committee member PhD thesis
Donald Ladwig (University of Louisville)
"Retinal nerve fiber layer and visual function" student terminated with a Masters degree.

06/2009 to 06/2011 Co-supervisor and committee member PhD thesis
Paul Young June Kim (University of Memphis)
"Early Identification and Prediction of Risk for Glaucomatous Progression Using Fractal Analysis of Pseudo 2D Retinal Nerve Fiber Layer (RNFL) Data"

Masters of Science in Medical Sciences research projects
2012-2013
Kiana Nouri- Repeatability of Ocular Response Analyzer: Best waveform vs. Mean values
Bridgett Santos - Repeatability of Macular Pigment Optical Density (MPOD)
Duck Lee Young- Repeatability of Ocular Corvis ST in Intraocular Pressure Measurements
Jerry Lee- Repeatability of biomechanical parameters obtained using the Corvis
Silverio Alvarez- Inter-eye correlation of Macular pigment optical density in healthy eyes

2013-2014
Jessica Lee- Age related variations in macular pigment optical density
Eric Saidi- In-Vivo Intraocular pressure measurements in zebrafish

2014-2015
Violeta Paronian Comparison of various clinical contrast sensitivity testing techniques
Kaydee McCray Evaluation of contrast sensitivity in healthy versus disease eyes

Service to college and university:

Open days: 1999-2002
I was involved in the "Open Days" of the optometry department at Anglia Polytechnic University. Graduate students were involved in the demonstration of facilities and answered the questions which were asked by the prospective students.

Psychology Day 2003 and 2004
I was involved in the organizing of the Psychology Day; this is an open day which is conducted by the Department of Psychological and Brain Sciences at University of Louisville. This event marks the annual celebration and display of department facilities and research.

Research at Louisville 2004
I was one of the judges for the Research at Louisville where I was involved in judging the research posters presented by the Graduate students of the science and bio-medical departments.

Annual Louisville Regional Science Fair 2005
I was one of the judges at the Louisville Regional Science Fair in the Microbiology category, where I was involved in judging the research posters presented by the students.
American Academy of Optometry Annual Conference Tampa Florida 2004. A volunteer in
the Academy's Membership Booth at Academy 2004 Tampa. To provide and be the primary
source of information for the individuals interested in becoming Fellow of American Academy
of Optometry (FAAO).

Mock board Part-3 for fourth year interns
1. Part-3 mock board Section-1 03/2006
2. Part-3 mock board Section-2 03/2007

Student Advisor Program
2006 to 2010 Student advisor for first year students. My duties are to mentor and
general guidance when they are students at Southern College of Optometry.

Committees
2006 to 2011 Research and IRB Committee at Southern College of Optometry
01/2008 to 09/2008 Chairman, IRB Committee, Southern College of Optometry
2012 to present Appointed as a member of PhD feasibility planning Committee
• Submitted potential course document for the program
• Organized an Memorandum of Understanding with industry in support of the
program
• Submitted a proposal for extramural funding to start the PhD program
• Worked on a NIH submission for a centre grant to develop graduate program.
2013-2014 Appointed by Dr. Philip Pumerantz to be part of Research Working Group,
Strategic Planning Phase II; working group chair Dr. Steven Henriksen
2013 to present Elected as a member of Promotion and Tenure Committee,
College of Optometry, Western University of Health Sciences
2013 to present Elected as a member of Academic Senate as a representative of
College of Optometry, Western University of Health Sciences

Student retention Webinars
Provided webinars to Doctor of Optometry batch of 2017
1) Insight into Optometry: Ocular Physiology June 25th 2013
2) Glaucoma: “The silent thief” July 23rd 2013

Service to profession:
2002 to present Member of Diseases Section at American Academy of Optometry
2007 to 2009 Continuing Education Quality Assurance Committee at American Academy of
Optometry
2007 and 2008 Moderator
Invited and served as a moderator of Glaucoma section American Academy of Optometry
annual conference
2009 and 2010 Reviewer
Invited and served as a reviewer for the of glaucoma scientific papers section at the American
Academy of Optometry annual conference
2008 to 2011 President, American Academy of Optometry Tennessee Chapter
2011 to Present Mentor for the Developing Country Eye Researcher Fellows at Association
for Research in Vision and Ophthalmology (ARVO)
2012- to present Appointed member of Education and Clinical Practices Committee, California Optometric Association


2013 Moderator at Association for Research in Vision and Ophthalmology, Retina and AMD symposium

2013-2014 Elected Chair of continuing education at Inland Empire Optometric Association

2013-to present Appointed member of Membership Committee of California Optometric Association

2015-2016 Treasurer and Chair of Education committee Inland Empire Optometric Association

---

Service to community:

Vision Screening
1998 Participated in vision screening for school children; the event was funded by the Rotary Club of Chennai, India.
1999 Leader of the team; vision screening for senior citizens, event was funded and organized by Kaingra (a social organization).

2004 Glaucoma Screenings
A total of 249 individuals were screened for glaucoma, the tests included frequency doubling perimetry
1. Salud Familiar Health Fair and Conference.  
   Primary focus was on Hispanic community. Held at the University of Portland, Portland, Oregon.

2006-2007
Supervised students and represented Southern College of Optometry for a vision screening program conducted on
1. 04/22/2006 by the Whitehaven Community Centre, Memphis, Tennessee.
2. 04/29/2006 by the Parkway Garden United Presbyterian Church, Memphis, Tennessee.
3. 06/03/2006 by the Sisterhood Showcase convention, Memphis, Tennessee.
4. 06/10/2006 by the Outreach Rising Sun, Memphis, Tennessee.
5. 05/20/2007 by the Tennessee Optometric Association in collaboration with Lions International for the Special Olympics at Nashville, Tennessee.

2007-2008
Supervised students and represented Southern College of Optometry for a vision screening program conducted on
1. 06/02/2007 by the Raleigh Presbyterian Church, Memphis, Tennessee
2. 06/30/2007 by the Breath of Life SDA Church, Memphis, Tennessee
3. 04/06/2008 by the BAPS Hindu Mandir (Temple), Memphis, Tennessee

2009-2010
Supervised students and represented Southern College of Optometry for a vision screening program conducted on
1. 05/08/2010 by the BAPS Hindu Mandir (Temple), Memphis, Tennessee

2012
Supervised students and represented Western University of Health Sciences, College of Optometry for a vision screening program conducted

1) BAPS Hindu Temple at Chino Hills Eye screening as a part of multispecialty health screening event September 16th 2012
2) HMPS Inc. ANNUAL HEALTH FAIR Co-Sponsored by Tarsadia Foundation & Supported by Anekanet Community Center Eye screening as a part of multispecialty health screening event October 7th 2012
3) California Zoroastrian Center ANNUAL HEALTH FAIR Eye screening as a part of multispecialty health screening event October 21st 2012
4) California Lions Friends in Sight and Sai Baba Organization Eye screening Event December 8th 2012
5) Lecture at BAPS Temple Chino Hills, Common Eye Problems, This lecture was delivered to about 1000 people as process to create awareness about ocular problems and to introduce the Western University of Health Sciences Eye Care Center to the neighboring community.
   • As a direct influence of this and ongoing communication we get constant referrals of patients from medical internists
   • I also won the prize for the Faculty that generated maximum new referrals, in a friendly competition conducted by the Eye Care Center at Western University of Health Sciences.
6) Lecture and eye screening to Ontario Centre Senior and Adult Community on glaucoma. October 11th 2012
7) Wrote articles for Inland Valley News, a printed publication that has wide range of circulation. Articles submitted on topic “Protect your eyes you cannot replace them” and “Glaucoma: The Silent thief”

References
Available upon request
Continuing Education Course Approval Checklist

Title: Culinary Guide to Ophthalmic Diseases
Provider Name: John Lee

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No

☐ Detailed Course Description
☑ PowerPoint and/or other presentation materials
☐ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

Please type or print clearly.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culinary Guide to Ophthalmic Diseases</td>
<td>05/15/2016</td>
</tr>
</tbody>
</table>

Course Provider Contact Information

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Provider Mailing Address</th>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>John Lee H</td>
<td>Street 2575 Yorba Linda Blvd City Fullerton State CA Zip 92831</td>
<td><a href="mailto:jlee@ketchum.edu">jlee@ketchum.edu</a></td>
</tr>
</tbody>
</table>

Will the proposed course be open to all California licensed optometrists? ☐ YES ☐ NO

Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation? ☐ YES ☐ NO

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timothy</td>
<td>G80625</td>
<td>Physician's and Surgeon's</td>
<td>714-972-8432</td>
<td><a href="mailto:tyou@ocretina.net">tyou@ocretina.net</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider: [Signature]
Date: 4/1/2016
**ASIAN AMERICAN OPTOMETRIC SOCIETY PRESENTS**

**2016 May Honors Symposium**

**Sunday, May 15, 2016**
**FEATURING 5 HOURS OF CONTINUING EDUCATION**

**Agenda:**

<table>
<thead>
<tr>
<th>Time</th>
<th>Session</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00am – 9:10am</td>
<td>Welcome</td>
</tr>
<tr>
<td></td>
<td>Jason Lam, OD, MBA</td>
</tr>
<tr>
<td></td>
<td>President, AAOS</td>
</tr>
<tr>
<td>9:10am – 10:50am</td>
<td>Decision Making in Glaucoma</td>
</tr>
<tr>
<td>(2 Hours CE)</td>
<td>Pinakin Davey, OD</td>
</tr>
<tr>
<td></td>
<td>Western University of Health Sciences</td>
</tr>
<tr>
<td>10:50am – 11:10am</td>
<td>Break</td>
</tr>
<tr>
<td>(20 min)</td>
<td></td>
</tr>
<tr>
<td>11:10am – 12:00pm</td>
<td>Idiopathic Orbital Inflammatory Syndrome</td>
</tr>
<tr>
<td>(1 Hour CE)</td>
<td>Munish Sharma, MD, OD</td>
</tr>
<tr>
<td></td>
<td>Western University of Health Sciences</td>
</tr>
<tr>
<td>12:00pm – 1:00pm</td>
<td>Lunch</td>
</tr>
<tr>
<td>(60 min)</td>
<td></td>
</tr>
<tr>
<td>1:00pm – 1:50pm</td>
<td>Culinary Guide to Ophthalmic Diseases</td>
</tr>
<tr>
<td>(1 Hour CE)</td>
<td>Timothy You, MD</td>
</tr>
<tr>
<td></td>
<td>Orange County Retina</td>
</tr>
<tr>
<td>1:50pm – 2:40pm</td>
<td>Retinal Toxicity of Systemic Medications</td>
</tr>
<tr>
<td>(1 Hour CE)</td>
<td>Rajiv Rathod, MD, MBA</td>
</tr>
<tr>
<td></td>
<td>Orange County Retina</td>
</tr>
</tbody>
</table>
A Culinary Guide to Ophthalmic Diseases

Stye or Sty

Stye: an acute bacterial infection of the secretory gland of the eyelid

Stye or Sty

"sty" - 15th cent old English styany, stigend - "riser"

Homonym. "sty" - old Eng/Norse, tarrow (pig) and stig (hair)

"hordeolum": Hordeolum - barley growing

Pig Sty

EAT THIS

NOT THAT!
Pig Sty

Strawberry

Strawberry

Strawberry hemangioma

Capillary Hemangioma

Capillary hemangioma

Mutton Fat in Broth

Benign vascular lesions of the head and neck in pediatric age.

Endothelial aggregates lack attempt for lumen formation.
**Definition**

- Multisystem chronic inflammation characterized by non caseating granulomas.

**Cuscuta granulomas**

**Non caseating granulomas**

**TB**

**Sarcoidosis**

**Sunflower Cataract**

Endophthalmitis

Grape Clusters of Staphylococcal Bacteria

Endophthalmitis

Café au Lait Spots (Coffee with Milk)

Café au Lait Spots (Coffee with Milk)

Café au Lait Spots (Coffee with Milk)

Café au Lait Spots (Coffee with Milk)

- Increased melanin pigment with the basal epidermis
- No increase in melanocytes

Neurofibromatosis

Lisch Nodules
Honey

Diabetes mellitus—"Siphon Honey"

Diabetic Retinopathy from Diabetes Mellitus

"The urine is wonderfully sweet, as if it were imbued with honey or sugar"

Thank you.
CURRICULUM VITAE

TIMOTHY T. YOU, M.D.
Fellow, American Academy of Ophthalmology

Mailing/Contact Address:
Orange County Retina Medical Group
1200 North Tustin Avenue, Suite 140
Santa Ana, California 92705
714-972-8432

PROFESSIONAL PRACTICE AFFILIATIONS

Orange County Retina Medical Group
Physician/Surgeon/Partner
Since 3/1/2005

1200 North Tustin Avenue  Suite 140  Santa Ana, CA 92705  714-972-8432
1200 North Tustin Avenue  Suite 100  Santa Ana, CA 92705  714-972-8432
24022 Calle de la Plata  Suite 475  Laguna Hills, CA 92653  949-381-3618
320 Superior Avenue  Suite 160  Newport Beach, CA 92663  949-646-3242
333 W. Bastanchury Road  Suite 200  Fullerton, CA 92835  714-451-0801
31451 Rancho Viejo Road  Suite 101  San Juan Capistrano, CA 92675  949-496-0611

7/2002-2/2005  Rhode Island Eye Institute, Providence, Rhode Island
7/1999-6/2002  Pacific Clear Vision Institute, Eugene, Oregon

EDUCATION AND TRAINING

Vitreo-Retinal Fellowship
Massachusetts Eye and Ear Infirmary
Harvard Medical School, Boston, Massachusetts, 1997-1999
  • Thomas Heed Ophthalmic Fellow, 1997-98
  • American Ophthalmological Society, Herman Knapp Fellow, 1998-99

Research Fellowships
Penn Medical Scholars Anatomic Pathology Fellowship
Department of Pathology & Laboratory Medicine
Hospital of the University of Pennsylvania, 1991-1992

Children's Hospital of Los Angeles
University of Southern California, Doheny Eye Institute
Medical Student Fellowship in Pediatric Ophthalmology, 1989

Residency in Ophthalmology
Massachusetts Eye and Ear Infirmary
Harvard Medical School, Boston, Massachusetts, 1994-1997

Internship in Medicine
VA Medical Center, Sepulveda, California
University of California, Los Angeles, 1993-1994

Medical School
Medical Doctorate
University of Pennsylvania School of Medicine
Undergraduate Education
Bachelor of Science in Biology with distinction in major & cum laude

Lab Assistant, Yale School of Medicine, Department of Microbiology. 1987

PROFESSIONAL POSITIONS

2013-Present Clinical Rotation Preceptor, Southern California College of Ophthalmology, Fullerton, California

2012-Present Preceptor and Site Coordinator, Western University Health Sciences, Pomona, California

2012-Present Chief, Department of Ophthalmology, Children’s Hospital of Orange County, Orange, California

2009-Present Advisor, Clinical Institute, St. Joseph Hospital, Orange, California

2010-2012 Member, Planning Committee, Children’s Hospital of Orange County Tower, Orange, California

2006-Present Expert Witness, Medical Board of California

2005-Present Medical Reviewer, MES Group

2003-2005 Assistant Clinical Professor in Ophthalmology, Brown Medical School, Providence, Rhode Island

2000-Present Medical Reviewer, Advanced Medical Group

1997-1999 Assistant Staff, Massachusetts Eye and Ear Infirmary, Harvard Medical School, Boston, Massachusetts

MEDICAL LICENSES

American Board of Ophthalmology, Diplomate. (Board Certified) in 1999
Exam score 95th percentile

American Board of Ophthalmology, Diplomate. (Recertification) in 2009
Maintenence of Certification

Diplomat National Board of Medical Examiners, since 1994

Medical Board of California, since 1993
HOSPITAL AFFILIATIONS

3/1/2005 – Present  Anaheim Regional Medical Center, Anaheim, California
3/1/2005 – Present  Children's Hospital at Mission, Mission Viejo, California
3/1/2005 – Present  Children's Hospital of Orange County, Orange, California
3/1/2005 – Present  Hoag Memorial Hospital Presbyterian, Newport Beach, California
3/1/2005 – Present  St. Joseph Hospital, Orange, California
3/1/2005 – Present  Western Medical Center, Anaheim, California
3/1/2005 – Present  Western Medical Center, Santa Ana, California

HONORS AND AWARDS

2003  Brown Medical School Award for Excellence in Teaching
1999  Fellow of the Year for Massachusetts Eye and Ear for Excellence in Teaching
1999  Fellow Award at Paul Chandler Lecture for Resident Teaching
1997  STORZ Ophthalmic Instrument Design Contest for Modified Phaco-Chopper
1994-1991  Bill Raskob Foundation Award
1993  History of Medicine Prize, The Stigma of Atomic Bomb Disease
1992  History of Medicine Prize, A Short History of Egyptian Military Ophthalmia
1989  Whanki Essay Contest, The Perfect Painting, second place
1988  Summer Research Internship, Taejon Research Institute, South Korea
1985  Jostens' Scholarship
1985  Elks Club Western-Division Scholarship
1985  Soroptomist Club Scholarship
1985  Orange County Medical Association Scholarship
1984-1988  Mission Community Hospital Auxiliary Scholarship
1982-1984  American Academy of Sciences Junior Scientist, University of Southern California/University of California at Irvine
PROFESSIONAL SOCIETY MEMBERSHIPS

American Academy of Ophthalmology, Fellow
American Society of Retina Specialists (The Vitreous Society)
Association for Research in Vision and Ophthalmology
California Association of Eye Physicians and Surgeons
California Medical Association
California Scholarship Federation
Orange County Society of Ophthalmology
Orange County Medical Association
Oregon Medical Association
Society of Heed Fellows
Society of Penn Medical Scholars
Western Retina Study Club

CLINICAL RESEARCH

01. Genetech, Inc., Protocol #FVF2598g (Marina), Phase IIIb, 2003-2005
   Sub-Investigator. *A multicenter, randomized, double masked, sham injection-controlled study of the*
   *safety and efficacy of rhuFab V2 in subjects with neovascular AMD who have minimally classic or*
   *occult lesion*

02. Eyetech Pharmaceuticals, Protocol #EOP1004, Phase II/III, 2005-2005
   Sub-Investigator. *A randomized, double-masked, controlled, dose-ranging, multi-center comparative*
   *trial, in parallel groups, to establish safety and efficacy of intravitreal injections of EYE001 (anti-VEGF*
   *pegylated aptamer) in patients with exudative AMD*

   Sub-Investigator. *A multicenter, double-masked, randomized, parallel groups study to demonstrate*
   *efficacy and safety of anecortave treatment relative to Visudyne for AMD*

   Sub-Investigator. *A multi-center, randomized, double-masked, placebo-controlled, parallel group,*
   *evaluation of the safety and efficacy of combretastatin A4 phosphate infusion for treating subfoveal*
   *CNV in pathologic myopia*

   Sub-Investigator. *A randomized trial comparing intravitreal corticosteroids and laser photocoagulation*
   *for DME*

06. Alcon Research, Ltd., Protocol C-02-60 (AART), Phase III, 2005-2009
   Sub-Investigator. *Anecortave Acetate Risk Reduction Trial (AART): An evaluation of efficacy and*
   *safety of posterior juxtascleral administrations of anecortave acetate for depot suspension (15 mg or 30*
   *mg) versus sham administration in patients (enrolled in study “A” or study “B”) at risk for developing*
   *sight-threatening CNV due to exudative AMD*

07. National Eye Institute, SCORE, 2005-2009
   Sub-Investigator. *The Standard Care vs. Corticosteroid for Retinal Vein Occlusion (SCORE): Two*
   *randomized trials to compare the efficacy and safety of intravitreal injection(s) of triamcinolone*
   *acetonide with standard care to treat macular edema: one for CRVO and one for BRVO*
Sub-Investigator. A randomized, double-blind, parallel-design, placebo-controlled study to evaluate the effects of 5mg taladafil (IC351, LY450190) and 50mg sildenafil administered once daily for 6 months on visual function in healthy subjects or subjects with mild erectile dysfunction.

Sub-Investigator. A trial using anecortave acetate 15mg administered every 3 months versus anecortave acetate 15 mg every 6 months versus anecortave acetate 30 mg administered every 6 with exudative AMD.

Sub-Investigator. A randomized, active-controlled, double-masked, single dummy, multicenter comparative trial, in parallel groups, to compare the safety and efficacy of intravitreal injections of Macugen given every 6 weeks for up to 102 weeks, plus sham PDT, to Macugen plus PDT with Visudyne, in subjects with predominantly classic subfoveal CNV secondary to AMD.

Principal Investigator. A 24-month randomized, double-masked, sham controlled, multicenter study comparing PDT with verteporfin (Visudyne) plus two different dose regimens of intravitreal triamcinolone acetonide (1 mg and 4 mg) versus Visudyne plus intravitreal pegaptanib (Macugen) in patients with subfoveal CNV secondary to AMD.

12. (OSI) Eyetech, Protocol EOP1023 (LEVEL), Phase IV; 2006-2008
Principal Investigator. An open label, multicenter trial of maintenance intraocular injections of Macugen (pegaptanib sodium) given every six weeks for 48 weeks in subjects with subfoveal neovascular AMD initially treated with a different modality resulting in maculopathy improvement.

13. Novartis, Protocol #CBPD952A2308 (Denali), Phase IIIB, 2006-2010
Principal Investigator. A 24-month randomized, double-masked, controlled, multicenter study assessing safety and efficacy of verteporfin (Visudyne) photodynamic therapy administered in conjunction with ranibizumab (Lucentis) versus ranibizumab (Lucentis) monotherapy in patients with subfoveal CNV secondary to AMD.

Sub-Investigator. Fluocinolone Acetonide in Diabetic Macular Edema (FAME): A randomized, double-masked, parallel group, multicenter, dose-finding comparison of the safety and efficacy of ASI-001A 0.5mg/day and ASI-001B 0.2 mg/day fluocinolone acetonide intravitreal inserts to sham injection in subjects with DME (Medidur®).

Sub-Investigator. Clinical Evaluation of Anti-angiogenesis in the Retina - Intravitreal Trial 3 (CLEAR-IT 3): A randomized, double-masked, active-controlled phase III study of the efficacy, safety, and tolerability of repeated doses of intravitreal VEGF Trap in subjects with neovascular AMD.

Sub-Investigator. Combining Bevasirinib and Lucentis Therapy (COBALT): A randomized, double-masked, parallel-assignment study of intravitreal bevasirinib sodium, administered every 8 to 12 weeks as maintenance therapy following three injections of Lucentis compared with Lucentis monotherapy every 4 weeks in patients with exudative AMD.
17. Allergan, Protocol 206207-012, Phase III, 2007-2010
Sub-Investigator. A 52-week, masked, multicenter, randomized, controlled trial (with up to 13 weeks additional follow-up) to assess the safety and efficacy of 700 μg dexamethasone posterior-segment drug delivery system (DEX PDS) Applicator System in combination with laser photoagulation compared with laser photoagulation alone in the treatment of subjects with diffuse DME.

Sub-Investigator. A safety and efficacy study of Vitreosolve for ophthalmic intravitreal injection for inducing posterior vitreous detachment in subjects with NPDR.

Ophthalmology Investigator. A safety follow-up study of patients previously exposed to MK-0634 (a beta-3 receptor antagonist developed for the treatment of overactive bladder). Subjects had previously been enrolled in a multicenter, double-blind, randomized, placebo-controlled, parallel group, dose ranging study of L-000796568 in postmenopausal women with OAB.

20. Allergan, Protocol 206207-019-00, Phase II, 2008-2010
Sub-Investigator. A 26-week, open-label study to assess the safety and efficacy of 700 μg dexamethasone posterior segment drug delivery system applicator system in conjunction with Lucentis® in the treatment of patients CNV secondary to AMD.

Sub-Investigator. An ascending dose and parallel group trial to establish the safety, tolerability and pharmacokinetic profile of multiple intravitreous injections of volociximab (α5β1 integrin antagonist) as monotherapy or in combination with Lucentis 0.5 mg/eye in subjects with neovascular AMD.

22. Regeneron, Protocol VGFT-OD-0706 (Da Vinci), Phase III, 2008-2011
Sub-Investigator. A double-masked, randomized, controlled study of the safety, tolerability and biological effect of repeated intravitreal administration of VEGF Trap-eye in patients with DME.

23. NEI/Tufts Medical Center, The Family Study of Macular Degeneration. 2009-2010
The goal is to evaluate genetic and non-genetic risk factors for AMD.

Sub-Investigator. A 26-week, open-label study to assess the safety and efficacy of 700 μg dexamethasone posterior segment drug delivery system applicator system in the treatment of vitrectomized subjects with DME.

Sub-Investigator. A randomized, multicenter, double-blind, parallel-group trial to assess the analgesic efficacy and safety of a new analgesic compared with placebo in subjects with painful diabetic peripheral neuropathy.

Sub-Investigator. A randomized, multicenter, double-blind, two-arm, multicenter, placebo-controlled study to assess the efficacy and safety of EN3324 (Anomadol) in subjects with moderate to severe chronic low back pain.

27. GlaxoSmithKline, Protocol MD 7110852, Phase IIb, 2009-2012
Principal Investigator. A dose-ranging study of pazopanib eye drops vs. ranibizumab intravitreal injections for the treatment of neovascular AMD.
28. Genentech, Protocol FVF4579g (HARBOR), Phase III, 2009-2012
Sub-Investigator. A double-masked, multicenter, randomized, active treatment-controlled study of the efficacy and safety of 0.5 mg and 2.0 mg ranibizumab administered monthly or on an as needed basis (PRN) in patients with subfoveal neovascular AMD.

Sub-Investigator. A multicenter, double-masked, parallel group, placebo-controlled study to assess the efficacy and safety of Voclosporin as therapy in subjects with active noninfectious intermediate, posterior or pan-uveitis.

30. Lpath, Protocol LT1009-Oph-003 (NEXUS), Phase IIa, 2011-Present
Sub-Investigator. A multicenter, masked, randomized, comparator-controlled study evaluation Isanep™ (sonecizumab [LT1009]) as either monotherapy or adjunctive therapy to Lucentis or Avastin versus Lucentis or Avastin alone for the treatment of subjects with choroidal neovascularization secondary to AMD.

Sub-Investigator. An open-label, multicenter, extension study of the safety and utility of the new inserter of Iluvien® (Fluocinolone Acetonide Intravitreal Insert) 0.19mg and the safety of Iluvien® in subjects with DME.

32. EyeGate Pharmaceuticals, Protocol EGP-437-004, Phase III, 2012-2013
Sub-Investigator. A prospective, multi-center, randomized, double-masked, positive controlled, clinical trial designed to evaluate the safety and efficacy of iontophoretic dexamethasone phosphate ophthalmic suspension (1%) in patients with non-infectious anterior segment uveitis

33. Quark Pharmaceuticals, Protocol QRK202 (MATISSE), Phase II, 2012-2013
Sub-Investigator. An open-label dose escalation study of PF-04523655 (Stratum I) combined with a prospective, randomized, double-masked, multi-center, controlled study (Stratum II) evaluating the efficacy and safety of PF-04523655 alone and in combination with ranibizumab versus ranibizumab alone in diabetic macular edema

34. Xoma, Protocol X052130/CL3-78989-005, Phase III, 2012-Present
Principal Investigator. A randomized, double-masked, placebo-controlled study of the safety and efficacy of gevokizumab in the treatment of active non-infectious intermediate, posterior, or pan-uveitis

Sub-Investigator. A phase 2, multi-center, randomized, double-masked, placebo-controlled, multi-dose study to investigate the efficacy, safety, pharmacokinetics and pharmacodynamics of RN6G (PF-04382923) in subjects with geographic atrophy secondary to age-related macular degeneration

36. Xoma, Protocol X052131/CL3-78989-005 (EYE GUARD™-C), Phase III, 2012-Present
Principal Investigator. A randomized, double-masked, placebo-controlled study of the safety and efficacy of gevokizumab in the treatment of subjects with non-infectious intermediate, posterior, or pan-uveitis currently controlled with systemic treatment

37. Regeneron Protocol VGFTe-AMD-1124 (RE-VIEW), Phase IV, 2012-Present
Sub-Investigator. Rigorous evaluation of vision and safety with intravitreal aflibercept injection dosed every 8 weeks over 2 years in neovascular AMD

38. Merck Protocol MK8931 — 017 (SCH 900931, P07738), Phase 2/3, Collaborative Study, 2012-Present
Ophthalmology Investigator. A randomized, placebo controlled, parallel-group, double blind efficacy and safety trial of MK-8931 in subjects with mild to moderate Alzheimer's disease
   Sub-Investigator. A randomized, double-masked, controlled trial to establish the safety and efficacy of intravitreous administration of Fovista™ (Anti-PDGF-B pegylated aptamer) administered in combination with Lucentis® compared to Lucentis® monotherapy in subjects with subfoveal neovascular macular degeneration

ABSTRACTS


02. Wong CG, You TT, Carvalho RAP. Natural history of progressive experimental CNV in the rabbit after sustained release of both VEGF and bFGF within the supra-choroidal space. Association for Research in Vision and Ophthalmology Meeting. May 2009. Abstract

03. Wong CG, Bruice TC, You TT. Experimental CNV after transcleral implantation of VEGF/bFGF-implant within the suprachoroidal space for defining potential long-term synergistic actions of ranibizumab (Lucentis) with small low-cost molecules in ameliorating wet AMD. Association for Research in Vision and Ophthalmology Meeting, May 2008. Abstract


PAPERS AND PUBLICATIONS

01. You TT, Youn DW, Chen S, Alexandrescu B, Casiano ME, Maggiano JM. Intraocular penetration by acupuncture needle. (submitted for publication; Retina)


Revised: 31Dec2013.MC

T. You, MD

Page 9 of 12
POSTERS & PRESENTATIONS

01. Updates in Retina Care: Macular Degeneration and Implantable Miniature Telescope
Course Director, Retina Care Symposium, Costa Mesa, California; December 5, 2013.

02. Healthcare

03. Updates in Macular Degeneration
Invited speaker (JCAPO). South Coast Eye Center, Laguna Hills, California; November 8, 2013.

Invited speaker, NVision Centers, Costa Mesa, California; August 22, 2013.

05. Retinopathy of Prematurity and Eye Care for Infants
Invited speaker, Anaheim Regional Medical Center, Anaheim, California; February 21, 2013.

06. Healthcare


08. Updates in Age-Related Macular Degeneration
Invited speaker, Forest Home Conference Center, Forest Falls, California; July 5, 2012.

09. Update on Retinal Venous Disease
Guest speaker (JCAPO). South Coast Eye Medical Centers, Laguna Hills, California; March 9, 2012.

10. Healthcare

11. Management of Ophthalmic Emergencies
Invited speaker, Forest Home Conference Center, Forest Falls, California; July 5, 2011.

12. Retinal Disease Management
Invited Speaker, Fuentes de Gracia Hospital Grand Rounds, Chimaltenango, Guatemala; March 2011.

13. Diabetes and the Eye
Invited Speaker. St. Joseph’s Hospital, Orange, California; February 26, 2011.

14. Overcoming Retina Hurdles to 20/20 Vision for Your Patients
Invited Speaker, Orange County Optometric Society, Western Medical Center, California; August 8, 2010

15. Diabetes and the Eye

16. Retinopathy of Prematurity and Other Ocular Anomalies
Invited Speaker. Anaheim Regional Medical Center, Anaheim, California; October 27, 2009.

18. *Retinopathy of Prematurity and Neonatal Eye Diseases*
   Invited Speaker. Children's Hospital of Orange at Mission Viejo, California; September 28, 2009.

19. *Retinopathy of Prematurity and Neonatal Eye Diseases*
   Invited Speaker. Department of Neonatology, Children's Hospital of Orange County, California; July 13, 2009.

20. *Updates in Ophthalmic Care*
    Invited Speaker, Fuentes de Gracia Hospital Grand Rounds, Chimaltenango, Guatemala; July 2009.

21. *Updates on New Treatment for Retinal Diseases*
    Invited Speaker. TLC Annual Symposium, Anaheim, California; June 7, 2009.

22. *Macular Degeneration*
    Invited Speaker, Foundation for Fighting Blindness. Low Vision Symposium, Southern California College of Optometry, Fullerton, California; May 9, 2009.

23. *The Refractive Surgery Retinal Evaluation: Pearls and Pitfalls*
    Invited Speaker. TLC, Newport Beach, California; April 22, 2009.

24. *Retinal Disease Update*

25. *Emerging Treatment Strategies for Exudative AMD.*
    Novartis Speaker Program. Costa Mesa, California; March 12, 2008.

26. *Emerging Treatment Strategies for Exudative AMD.*
    Novartis Speaker Program. Newport Beach, California; February 20 2008.

27. *Retinopathy of Prematurity and Other Ocular Anomalies*

28. *Toxoplasma Uveitis*
    Invited Speaker, Continuing Medical Education Lecture. Children’s Hospital of Orange County, Orange, California; October 23. 2006

29. *Retinopathy of Prematurity*
    Invited Speaker. Anaheim Regional Medical Center, Anaheim, California; March 14, 2006.

30. *Retinopathy of Prematurity and Neonatal Eye Diseases*
    Invited Speaker. Hoag Presbyterian Hospital, Newport Beach, California; July 12, 2005.

31. *The Great Debates: Controversies in Retinal Disease 2005*
    Invited Speaker, Medical Education Seminar. University of California, Irvine, Beckman Laser Center, Irvine, California; March 26, 2005.

32. *Pediatrics Case Conference*
    Invited Speaker. Rhode Island Hospital, Providence, Rhode Island; January 20, 2003.

33. *Advances in Retina*
    Rhode Island Eye Institute, Providence, Rhode Island; 2002.
34. *Posterior Segment*

35. *Medicine 2000*

36. *Retinal Diagnoses*
   Pacific Northwest Conference, Bend, Oregon; 2000.

37. *Retinal Surgery throughout the Ages*
   Lane County Optometric Society Meeting, Eugene, Oregon; 1999.

38. *You TT* and Arroyo JG. Surgical approaches to dislocated lenses. Annual Fellows’ Conference, Massachusetts Eye & Ear Infirmary, Boston, Massachusetts; 1998.


45. *Cognitive Decision Making - A Computer Based Model*


47. *Bacterial Utilization of Dissolved Organic Matter in a Natural, Oligotrophic Aquatic System*
   California Academy of Science Meeting, Los Angeles, California; 1981.
Continuing Education Course Approval Checklist

Title: Idiopathic Orbital Inflammatory Syndrome
Provider Name: John Lee

☑ Completed Application
   Open to all optometrists? ☑ Yes ☐ No
   Maintain record agreement? ☑ Yes ☐ No

☐ Detailed Course Description
☐ PowerPoint and/or other presentation materials
☐ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
   Disciplinary History? ☐ Yes ☑ No
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Idiopathic orbital inflammatory syndrome</td>
<td>05/15/2016</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Course Provider Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>Provider Name</td>
</tr>
<tr>
<td>John</td>
</tr>
<tr>
<td>(First)</td>
</tr>
<tr>
<td>H</td>
</tr>
<tr>
<td>(Middle)</td>
</tr>
<tr>
<td>Provider Mailing Address</td>
</tr>
<tr>
<td>Street 2575 Yorba Linda Blvd</td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td></td>
</tr>
<tr>
<td>Provider Email Address</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Will the proposed course be open to all California licensed optometrists?</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES □ NO</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES □ NO</td>
</tr>
</tbody>
</table>

Course Instructor Information

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Munish Sharma</td>
<td>14962TLG</td>
<td>Optometry</td>
<td>909 469-8486</td>
<td><a href="mailto:sharmam@westernu.edu">sharmam@westernu.edu</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider 437

Date 4/1/2016

Form CE-01, Rev. 2/16
ASIAN AMERICAN OPTOMETRIC SOCIETY
PRESENTS

2016 May Honors Symposium

Sunday, May 15, 2016
FEATURING 5 HOURS OF CONTINUING EDUCATION

Agenda:

9:00am – 9:10am  Welcome
Jason Lam, OD, MBA
President, AAOS

9:10am – 10:50am (2 Hours CE)  Decision Making in Glaucoma
Pinakin Davey, OD
Western University of Health Sciences

10:50am – 11:10am (20 min)  Break

11:10am – 12:00pm (1 Hour CE)  Idiopathic Orbital Inflammatory Syndrome
Munish Sharma, MD, OD
Western University of Health Sciences

12:00pm – 1:00pm (60 min)  Lunch

1:00pm – 1:50pm (1 Hour CE)  Culinary Guide to Ophthalmic Diseases
Timothy You, MD
Orange County Retina

1:50pm – 2:40pm (1 Hour CE)  Retinal Toxicity of Systemic Medications
Rajiv Rathod, MD, MBA
Orange County Retina
OMNI EYE SERVICES OF NJ & NJSOP

BILATERAL PROPTOSIS

MUNISH SHARMA, OD, MD

CASE

FOLLOWED BY

LITERATURE

UPDATES

HISTORY

- 57 YO HISPANIC MALE FOR PROPTOSIS OU
- PAINLESS SLOWLY PROGRESSIVE FOR 9 MONTHS
- ASSOCIATED INTERMITTENT TEARING
- NO OTHER RELEVANT OCULAR AND SYSTEMIC SYMPTOMS
- HO SEASONAL ALLERGIES ASTHMA WELL CONTROLLED WITH LEVOCETIRIZINE AND PROAIR
- HO HYPERLIPIDEMIA WELL CONTROLLED WITH CRESTOR

EXAMINATION

- BCVA OD: 20/20
  OS: 20/20
- GOLDMANN APPLANATION PRESSURE: 14/14 @9:43 AM
EXAMINATION

EXTERNAIS

* OU MILD PTOSIS UL/LAXITY LL. LID MARGINS ARE QUIET

EXOPHTHALMOMETRY: BASE: 100 OD 27 OS 27

* CONJUNCTIVA: DIFFUSE CHEMOSIS TEMPORAL > NASAL OU

* COLOR VISION OD 14/14 OS 14/14 ISHIHARA
PLASTY W/U LIDS

Brow position:
OD brow position normal
OS brow position normal
Punctae:
RUL normal RLL normal
LUL normal LLL normal
Upper lids:
Levator function: OD 15mm OS 15mm
Lid crease: OD 8mm OS 8mm
Margin reflex distance 1: OD 3mm OS 3mm
Orbicularis function: OD 4+ OS 4+
Palpebral fissure: OD 10mm OS 10mm
Spasm: OD 0 OS 0

Lower Lids:
Orbicularis function: OD 4+ OS 4+
Margin reflex distance 2: OD 7mm OS 7mm
Scleral show: OD 2mm OS 2mm
Snapback: OD good OS good
Spasm: OD 0 OS 0
Brow:
Brow elevation: OD good OS good
Brow ptosis: OD none OS none
Herniated orbital fat:
RUL 0 RLL 0
LUL 0 LLL 0

PLASTY W/U LACRIMALS

Puncta:
RUL normal RLL normal
LUL normal LLL normal
Canaliculus:
RUL patent RLL patent
LUL patent LLL patent
Nasal:
OD normal OS normal
Sac:
OD flat OS flat

Lower lid tone:
OD normal OS normal
Tear film:
OD normal OS normal
Tear function tests:
Dye disappearance test:
OD normal OS normal
Tear break-up time:
OD normal OS normal

PLASTY W/U ORBIT

Orbit:
OD negative
OS negative
Dependent head position:
OD no change
OS no change

Orbital rim:
OD normal
OS normal
Globe position:
OD no masses
OS no masses
Retropulsion
OD Soft OS Soft
EXAMINATION

* VITREOUS
  OD CLEAR
  OS CLEAR

* OPTIC NERVE
  OD C:D 0.40 FLAT, SHARP, GOOD COLOR
  OS C:D 0.40 FLAT, SHARP, GOOD COLOR

* MACULA
  OD FR (+) FLAT INTACT
  OS FR (+) FLAT INTACT

* PERIPHERY
  OD FLAT ATTACHED WITH NO BREAKS
  OS FLAT ATTACHED WITH NO BREAKS

WHAT SHOULD WE DO NEXT?
## Blood Work
### THYROID PANEL

<table>
<thead>
<tr>
<th>Test Name</th>
<th>In Range</th>
<th>Out of Range</th>
<th>Reference Range</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>THYROID PANEL - TSH</td>
<td>3.40</td>
<td>0.40-4.50 mU/L</td>
<td>TSH</td>
<td>TSH</td>
</tr>
<tr>
<td>THYROID PANEL</td>
<td>6.3</td>
<td>1.5-12.0 mcg/dL</td>
<td>THY</td>
<td>THY</td>
</tr>
<tr>
<td>T3 TOTAL</td>
<td>31</td>
<td>22.35 Percent</td>
<td>14.5-3.0 U/L</td>
<td></td>
</tr>
<tr>
<td>T3 UPTAKE</td>
<td>2.0</td>
<td>14.5-3.0 U/L</td>
<td>T3 UPTAK</td>
<td></td>
</tr>
</tbody>
</table>

Performing Laboratory Information:
TSH Westerwinds Diagnostic Laboratory Onshore 405 1st Second Third Fourth Floor, E.

### Upper Resp Allergy

<table>
<thead>
<tr>
<th>Upper Respiratory Allergy</th>
<th>&lt;0.10</th>
<th>&lt;0.35</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cat Dander Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Dog Dander Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Bermuda Grass Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Johnson Grass Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Junie Grass/Kentucky Blue Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Marshfield Rough Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Oak Tree Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>rainy Mountain Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>red Oak</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>brown Oak</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>walnut California Free Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Alternaria tenuis/Alternaria Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Cladosporium Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Dust C. Fariniae Ige</td>
<td>0.10</td>
<td></td>
</tr>
<tr>
<td>Cockroach German Ige</td>
<td>0.10</td>
<td></td>
</tr>
</tbody>
</table>

Performing Laboratory Information:
TSH Westerwinds Diagnostic Laboratory Onshore 405 1st Second Third Fourth Floor, E.

### CBC/DIFF

<table>
<thead>
<tr>
<th>Collection Date</th>
<th>7/27/2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>RBC</td>
<td>4.73</td>
</tr>
<tr>
<td>Hemoglobin</td>
<td>13.4</td>
</tr>
<tr>
<td>Hematocrit</td>
<td>40.6</td>
</tr>
<tr>
<td>MCV</td>
<td>86</td>
</tr>
<tr>
<td>MCH</td>
<td>26.3</td>
</tr>
<tr>
<td>MCHC</td>
<td>33.0</td>
</tr>
<tr>
<td>RBC</td>
<td>14.3</td>
</tr>
<tr>
<td>Platelets</td>
<td>234</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>4.0</td>
</tr>
<tr>
<td>Lymphs</td>
<td>30</td>
</tr>
<tr>
<td>Monocytes</td>
<td>0.9</td>
</tr>
<tr>
<td>Eos</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Performing Laboratory Information:
TSH Westerwinds Diagnostic Laboratory Onshore 405 1st Second Third Fourth Floor, E.

### CMP

<table>
<thead>
<tr>
<th>Collection Date</th>
<th>7/27/2022</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hemoglobin</td>
<td>13.4</td>
</tr>
<tr>
<td>Hematocrit</td>
<td>40.6</td>
</tr>
<tr>
<td>MCV</td>
<td>86</td>
</tr>
<tr>
<td>MCH</td>
<td>26.3</td>
</tr>
<tr>
<td>MCHC</td>
<td>33.0</td>
</tr>
<tr>
<td>RBC</td>
<td>14.3</td>
</tr>
<tr>
<td>Platelets</td>
<td>234</td>
</tr>
<tr>
<td>Neutrophils</td>
<td>4.0</td>
</tr>
<tr>
<td>Lymphs</td>
<td>30</td>
</tr>
<tr>
<td>Monocytes</td>
<td>0.9</td>
</tr>
<tr>
<td>Eos</td>
<td>2.2</td>
</tr>
</tbody>
</table>

Performing Laboratory Information:
TSH Westerwinds Diagnostic Laboratory Onshore 405 1st Second Third Fourth Floor, E.
**MRI REPORT BUT NO SCANS**

- EXAM: MR ORBITS WITHOUT CONTRAST.
- CLINICAL INDICATION: BILATERAL EXOPHTHALMOS.
- TECHNIQUE: MRI ORBIT-PROTOCOL WITHOUT CONTRAST. NO PERTINENT PRIOR STUDIES HAVE BEEN SUBMITTED FOR COMPARISON.

**FINDINGS:**
- PROPTOSIS BILATERALLY: NORMAL SYMMETRIC CONTOUR BILATERAL GLOBES.
- THE OPTIC NERVES, OPTIC CHIASM, AND OPTIC NERVE TRACTS APPEAR NORMAL.
- ASYMMETRIC ENLARGEMENT OF THE BILATERAL LACRIMAL GLANDS.
- ABNORMAL ENLARGEMENT OF THE BILATERAL LATERAL AND INFERIOR RECTUS AND TO LESSER EXTENT SUPERIOR RECTUS MUSCLES.
- SOME OF THESE FINDINGS MAY BE DUE TO THYROID EYE DISEASE.
- COMBINATION OF FINDINGS AND ENLARGEMENT OF THE LACRIMAL GLANDS RAISES THE SUSPICION OF LYMPHOMA.
- POST GADOLINIUM IMAGING IS ADVISED TO FURTHER EVALUATE.
- A LIMITED VIEW OF THE BRAIN PARENCHYMA APPEARS NORMAL.
- THERE IS MUCOSAL THICKENING IN THE BILATERAL ETHMID, SPHENOID AND MAXILLARY SINUSES.
- RECOMMEND CORRELATION WITH PATIENT CLINICAL HISTORY AND SYMPTOMS.

**IS THYROID PANEL COMPLETE?**

**WHAT MORE BLOOD WORK SHOULD BE DONE?**

**IS IT IMPORTANT TO SEE SCANS??**

**WHAT MORE TESTING SHOULD BE DONE IN CLINIC THAT DAY?**

**BESIDES HERTEL'S AND ISHIHARA?**

---

**WHAT MORE TESTING SHOULD BE DONE IN CLINIC THAT DAY?**

---

---

---
**MRS SUMMARY**

- **ABNORMAL ENLARGEMENT OF THE BILATERAL LACRIMAL GLANDS.**
- **ABNORMAL ENLARGEMENT OF THE BILATERAL LATERAL AND INFERIOR RECTUS AND TO LESS EXTENT SUPERIOR RECTUS MUSCLES.**
- **MUCOSAL THICKENING IN THE BILATERAL ETHMOID, Sphenoid and maxillary sinuses.**
- **LACK OF SOFT TISSUE FIBROUS HYPERPLASIA.**

**WHAT MORE BLOOD WORK SHOULD BE DONE?**

**ACE Guidelines**

**AMERICAN ASSOCIATION OF CLINICAL ENDOCRINOLOGISTS**
**MEDICAL GUIDELINES FOR CLINICAL PRACTICE**
**FOR THE EVALUATION AND TREATMENT OF**
**HYPERTHYROIDISM AND HYPOTHYROIDISM**

Thyroid autoantibodies, including TSH receptor antibodies (TRAb) or thyroid-stimulating immunoglobulins (TSI)

These studies are not routinely necessary but may be helpful in selected cases, such as in patients with hyperthyroidism during pregnancy.

**Thyroid Function Tests**

**Thyroid-stimulating Immunoglobulins (TSI) Test**

TSI is an antibody present in Graves' disease, the most common cause of hyperthyroidism. TSI binds TSH by stimulating the thyroid cells, causing the thyroid gland to secrete excess hormones. The TSI test detects TSH-stimulating antibodies in the blood and is usually measured to specific instances in people with Graves' disease—when the diagnosis is obscure, during pregnancy, and to determine if remission has occurred.

**Antithyroid Antibody Test**

Antithyroid antibodies are present in Hashimoto's disease, the most common cause of hypothyroidism. Antithyroid antibodies are markers in the blood, and their presence is extremely helpful in diagnosing Hashimoto's disease. Two principal types of antithyroid antibodies are:

- T3 Abs or serum antibodies, which attack the protein (T3) in the thyroid called thyroglobulin
- anti-thyroid peroxidase, or anti-TPO, antibodies, which attack an enzyme in thyroid cells called thyroglobulin
### Blood Work

**What More Blood Work Should Be Done?**

<table>
<thead>
<tr>
<th>Test</th>
<th>Result</th>
<th>Flag</th>
<th>Unit(s)</th>
<th>Reference Interval</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antithyroglobulin Ab</td>
<td>&lt;1.0</td>
<td></td>
<td>IU/mL</td>
<td>0.0 - 0.9</td>
<td>01</td>
</tr>
<tr>
<td>Thyroglobulin, Antibody</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please Note: Low positive Thyroglobulin antibodies are seen in a portion of the asymptomatic populations. Antithyroglobulin antibodies measured by Beckman Coulter Methodology</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Angiotensin-Converting Enzyme</td>
<td>82</td>
<td>High</td>
<td>U/L</td>
<td>12 - 68</td>
<td>01</td>
</tr>
<tr>
<td>ACE</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Effective December 3, 2013 the reference interval for Angiotensin Converting Enzyme will be changing to:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>To:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>0 - 2 years</td>
<td>18 - 95</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 - 14 years</td>
<td>22 - 108</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15 years or older</td>
<td>14 - 82</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thyrotropin Receptor Ab, Serum</td>
<td>ELEVATED</td>
<td>ICE</td>
<td>IU/L</td>
<td>0.00 - 1.75</td>
<td>02</td>
</tr>
<tr>
<td>Thyroid Stim Immunoglobulin</td>
<td>36</td>
<td></td>
<td>%</td>
<td>0 - 139</td>
<td>02</td>
</tr>
<tr>
<td>Thyroid Peroxidase (TPO) Ab</td>
<td>7</td>
<td></td>
<td>IU/mL</td>
<td>0 - 34</td>
<td>01</td>
</tr>
<tr>
<td>Lysosome, Serum</td>
<td>5.1</td>
<td></td>
<td>ug/mL</td>
<td>3.0 - 12.8</td>
<td>02</td>
</tr>
</tbody>
</table>

---

#1 Differential Now & Next Test?

**Seven lacrimal clinical signs that are suggestive of ocular sarcoidosis are:**

1. Mutton-fat KPs (large or small) and/or iris nodules at the pupillary margin (Koeppe) or in the stroma (Blussacca)
2. Tilt modules and/or tent-shaped PAGS
3. Snowballs/totting of pearly white opacities
4. Multiple choroidal peripheral lesions (active and atrophic)
5. Nodular and/or segmental perileiostitis (a candel-wax dripping)
6. And/or microaneurysms in an inflamed eye
7. Optic disc nodules/glaucoma and/or solitary choroidal nodule

**Bilaterality (assessed by clinical examination or laboratory tests showing subclinical inflammation)**

**Sheffield Critical Criteria for the diagnosis of ocular sarcoidosis results of the first International Workshop on Ocular Sarcoidosis (IWOS), Ocul Immunol Inflamm. 2009;17:160-93**

---

**#1 Differential Now & Next Test?**

**First of all other possible causes of uveitis, in particular tuberculosis, uveitis, must be ruled out.**

- **Biopsy supports** diagnosis of a compatible uveitis
- **Not consistent**; presence of BHL with a compatible uveitis
- **Biopsy not done**; presence of BHL with a compatible uveitis
- **Biopsy not done and BHL negative**; presence of three of the suggestive intracocular signs and two positive laboratory tests
- **Biopsy negative**; presence of four of the suggestive intracocular signs and two positive laboratory tests

**Used in the sense of intracocular inflammatory lesions both in patients with systemic disease and in patients with disease seemingly limited to the eye without any clinically detectable involvement of another organ**

(Adapted from: BHL: Blaschot hilar lymphadenopathy; Source: Herbert CP, Rao NA, Mochizuki M. International criteria for the diagnosis of ocular sarcoidosis results of the first International Workshop on Ocular Sarcoidosis (IWOS), Ocul Immunol Inflamm. 2009;17:160-93)

---

**Right Anterior Orbitotomy and Lacrimal GLAND Biopsy**

**First Post-op Visit Started on 20mg Prednisone Pending Pathology Report**

IWOS 2009
**PATH REPORT**

**DX:** ATYPICAL LYMPHOID HYPERPLASIA

- H&E: Fibrosis around lacrimal duct and Lymphoplasmocytic infiltrates around germinal centers with rare Eosinophils No Lymphoepithelial lesion **NO GRANULOMA**
- Trichome: Mild Fibrosis
- IgG or IgG4 staining: **NO Ig4 RELATED SCLEROSING** disease

**IMUNOHISTOCHEMISTRY**
- B-Cells: CD20 & Pax-5 secondary follicles with Ki-67 suggest Germinal center proliferation as expected
- T-Cells: CD3, CD43 staining
- CD-21: Follicular Dendritic cell meshwork
- AE1/AE3: Ductal Epithelium staining
- CD68: Scattered Histiocytes

**PATH REPORT**

**DX:** ATYPICAL LYMPHOID HYPERPLASIA

- **B CELL PCR**
  - NO GENE REARRANGEMENTS FOR
    - Immunoglobulin Heavy chain genes (IGH) for FR1, FR2, FR3
    - Immunoglobulin Kappa Light Chain (IGK)

**FOLLOW-UP**

- SENT FOR HEM-ONCOLOGY CONSULT
- PREDNISONE DECREASED TO 10MG AND TAPER STARTED
REVIEW

* FORMERLY TERMED PSEUDOTUMOR: 6% OF ORBITAL DISEASE
* CAN BE UNILATERAL OR BILATERAL
* CAN BE DIFFUSE INVOLVING LACRIMAL, MUSCLE, ORBITAL SOFT TISSUE OR LOCALIZED TO ONE
* CAN BE ACUTE OR SUBACUTE OR CHRONIC
* SCLEROSING VARIANT: TYPE OF CHRONIC: PROGRESSIVE PROPTOSIS, RESTRICTED MOTILITY, DULL: CHRONIC PAIN
* DIAGNOSIS OF EXCLUSION

ANATOMIC SUBTYPES

* DIFFUSE - ANTERIOR OR POSTERIOR
* MYOSITIS
* DACRYOADENITIS
* TENONITIS OR POSTERIOR SCLERITIS - ASSOCIATED WITH INTRAOCULAR FINDINGS
* OPTIC PERINEURITIS - ACCOMPANIED BY PAPILLITIS

EXACT SYMPTOMS DETERMINE PRIMARY TISSUE AFFECTED

LEFT SUPRASHIAL ADENITIS
ORBITAL EVALUATION
* ORBITAL CONTENTS, VASCULARIZATION, AND BONE MALFORMATIONS
* ORBITAL PALPATION MAY REVEAL ORBITAL MASS, LESIONS OR ABNORMALITIES
* CLOSURE OF THE DRAINAGE ORIFICES OF THE EYE OR THE TEAR DRAINAGE SYSTEM
* DYNAMIC OBSERVATION DURING VOLUME OR BONE MALFORMATIONS
* GLIOTIC OR PHOMPHEM CORNEAL SIDEBERNAL
* OCCULAR MOCULAR
* ORBITAL MASS, LESIONS OR ABNORMALITIES

HISTORY
* ONSET AND DURATION
* MILDEPALMOCORNER INJURIES, IDIOPATHIC INFLAMMATION, OR SUDDEN CHANGE IN A PRE-EXISTING CONDITION
* MEDICOSOCIAL HISTORY INCLUDING MEDICATIONS, ALCOHOL USE, AND SMOKE OR SMOKE ALTERNATIVE
* FAMILY HISTORY
* ACUTE OR CHRONIC HISTORY OF SYMMETRIC OR ASYMMETRIC EyE DISEASE

PHYSICAL EXAMINATION
* COMPLETE OPHALMIC EXAM INCLUDING ENGAGING VASCULAR SYSTEM
* PALPATION OF THE DIFFERENT DIAGNOSIS OF ORBITAL LESIONS
* ORBITAL PALPATION MAY REVEAL ORBITAL MASS, LESIONS OR ABNORMALITIES
* DYNAMIC OBSERVATION DURING VOLUME OR BONE MALFORMATIONS
* GLIOTIC OR PHOMPHEM CORNEAL SIDEBERNAL
* OCCULAR MOCULAR
* ORBITAL MASS, LESIONS OR ABNORMALITIES

EXOPHTHALMOMETRY
* STANDARD WAY AND DIRECTION OF LANDMARKS OR THE TEAR DRAINAGE SYSTEM
* DYNAMIC OBSERVATION DURING VOLUME OR BONE MALFORMATIONS
* GLIOTIC OR PHOMPHEM CORNEAL SIDEBERNAL
* OCCULAR MOCULAR
* ORBITAL MASS, LESIONS OR ABNORMALITIES

VASCULARIZATION
* CLOSURE OF THE DRAINAGE ORIFICES OF THE EYE OR THE TEAR DRAINAGE SYSTEM
* DYNAMIC OBSERVATION DURING VOLUME OR BONE MALFORMATIONS
* GLIOTIC OR PHOMPHEM CORNEAL SIDEBERNAL
* OCCULAR MOCULAR
* ORBITAL MASS, LESIONS OR ABNORMALITIES

HISTOCHEMISTRY
* ORBITAL PALPATION MAY REVEAL ORBITAL MASS, LESIONS OR ABNORMALITIES
* DYNAMIC OBSERVATION DURING VOLUME OR BONE MALFORMATIONS
* GLIOTIC OR PHOMPHEM CORNEAL SIDEBERNAL
* OCCULAR MOCULAR
* ORBITAL MASS, LESIONS OR ABNORMALITIES
- Endocrine exophthalmos: Thyroid
- Systemic granulomatous diseases
  - Sarcoidosis (discussed above)
  - Wegner's systemic vasculitis: Renal, respiratory, sinus, orbit (50%)
- Erdheim-Chester is a systemic non-Langerhans histolytic xanthogranulomatous inflammatory disease: Orbital, brain, heart, lung, liver, kidney, retroperitoneal space, and musculoskeletal system.
- Churg-Strauss syndrome: Necrotizing eosinophilic vasculitis, eosinophilia, and asthma
- Tolosa-Hunt syndrome: Painful ophthalmoplegia
D/D

- NEOPLASM
  - LYMPHOMA
  - LYMPHOPROLIFERATIVE DISORDERS
  - Rhabdomyosarcoma
  - CHOROIDAL MALIGNANT MELANOMA WITH EXTRASCLERAL SPREAD
  - METASTATIC DISEASE
  - CONGENITAL MALFORMATION
  - DERMOID CYST
  - LYMPHANGIOMA
  - INFECTIOUS DISEASE
  - TRAUMA

ORBITAL & ADNEXAL LYMPHOPROLIFERATIVE DISEASE

THREE GENERAL CATEGORIES
  + BENIGN (REACTIVE) LYMPHOID HYPERPLASIA
  + ATYPICAL LYMPHOID HYPERPLASIA
  + MALIGNANT LYMPHOMA

- BENIGN LESIONS ARE POLYCLONAL; MALIGNANT LESIONS ARE MONOCLONAL
  - ALH - MAY REPRESENT A GROUP OF TUMORS WHICH ARE "BORDERLINE" OR INCIPIENT MALIGNANCIES
TESTING

- BLOOD WORK
- CBC, ESR, CRP
- ANA, ANCA, RF
- SERUM PROTEIN ELECTROPHORESIS, ACE
- THYROID PROFILE AS NOTED ABOVE
- CXR OR CT CHEST SARCOIDOSIS OR CONGENITAL
- ORBITAL ULTRASONOGRAPHY
- INSERTIONS OF EXTRAOCULAR MUSCLES
- EXTRASCLERAL EXPANSION OF INTRAOCULAR TUMORS
- IDENTIFYING ENLARGEMENT AND INTERNAL REFLECTIVITY OF LACRIMAL GLAND TUMORS
RADIOLGY

* LACRIMAL GLAND ENLARGEMENT WITH ILL-DEFINED BORDERS, ISOLATION OR WITH CHANGES IN OTHER ORBITAL STRUCTURES
* ORBITAL FAT, WHEN INVOLVED, EXHIBITS DIFFUSE OR ILL-DEFINED INFILTRATION
* EXTRAOCULAR MUSCLE-ENLARGEMENT OF THE INSERTION: DIFFERENTIATION FROM THYROID-ASSOCIATED ORBITOPATHY
* ORBITAL APEX INFLAMMATION EITHER INFLTRATE OR MASS EFFECT
* OPTIC NERVE: ENLARGEMENT OF THE OPTIC NERVE SHEATH WITH ASSOCIATED CHANGES IN CONTIGUOUS ORBITAL FAT

CT FINDINGS

ORBITAL LYMPHOPROLIFERATIVE DISEASE

* NO DIFFERENCE BETWEEN BENIGN AND MALIGNANT LESIONS
* MOLDING OF LESIONS TO ADJACENT ORBITAL STRUCTURES
* INFILTRATE IS ISODENSE TO EXTRAOCULAR MUSCLE
* SHARP ANGULATION TO NORMAL STRUCTURES

BIOPSY

* GENERALLY NOT REQUIRED
* DIAGNOSTIC CONCERN OR UNRESPONSIVENESS TO THERAPEUTIC INTERVENTIONS
* CAN RANGE FROM FINE-NEEDLE ASPIRATION BIOPSIES (FNAB) TO INCISIONAL OR EXCISIONAL BIOPSY
* SUSPECTED LYMPHOPROLIFERATIVE DISEASES, PATHOLOGIST ALERTED AND CONSULTED BEFORE BIOPSY TO OPTIMALLY HANDLE & DELIVER SPECIMEN
* SPECIAL PROCESSING FOR MICROBIAL IDENTIFICATION, IMMUNOLOGIC TESTING, AND RETRIEVAL OF GENETIC INFORMATION
TREATMENT

* PRESERVATION OF VISION AND ORBITAL FUNCTION
* REDUCING THE ACUTE INFLAMMATORY PROCESS

TREATMENT

* ANTIMICROBIAL OR ANTI-FUNGAL THERAPY: INFECTIOUS DISEASE SPECIALISTS.
* HIGH-DOSE CORTICOSTEROIDS; TYPICALLY 60-80 MG OF PREDNISONE, IS THE MAINSTAY: DRAMATIC INITIAL RESPONSE CONFIRMS DIAGNOSIS IN ACUTE OR GRANULOMATOUS DISEASE GROUPS; TAPER SLOWLY
* ADVERSE EVENTS MOOD OR WEIGHT CHANGES; HYPERGLYCAEMIA, DYSPEPSIA, OR ACCELERATED BONE CHANGES; BONE DENSITY EVALUATIONS BE PERFORMED IF NEED LONG-TERM STEROID THERAPY

TREATMENT

* RADIATION THERAPY
* IMPORTANT FOR METASTATIC LESIONS OR LYMPHOPROLIFERATIVE DISORDERS
* NOT INITIAL THERAPY FOR IDIOPATHIC OID
* LOW-DOSE RADIOTHERAPY RECURRENT MYOSITIS BUT RECURRENCES
* THYROID ASSOCIATED ORBITOPATHY: RT MAY IMPROVE OPTIC NERVE FUNCTIONING IN COMPRESSION OPTIC NEUROPATHIES: CONTROVERSIAL
TREATMENT

Immunomodulating Agents
- TNF-Alpha
  - Induces differentiation of histiocytes, dendritic cells
  - Churg-Strauss Syndrome and Erdheim-Chester Disease
- Anti-TNF-α
  - Emerging including sarcoidosis and inflammatory eye disease
- Monoclonal antibodies, infliximab, adalimumab, tocilizumab, etanercept
  - Woresen demyelination, reactivate infections

Table 2 OED: Medical therapy

<table>
<thead>
<tr>
<th>Agent</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Systemic</td>
<td>Monitor bone density on long-term therapy</td>
</tr>
<tr>
<td>Corticosteroid</td>
<td>Adverse effects include fatigue, GI distress, liver toxicity, hair loss, headaches, arthralgia</td>
</tr>
<tr>
<td>Methotrexate</td>
<td>Useful steroid sparing agent</td>
</tr>
<tr>
<td>Cyclomethaphamide</td>
<td>Cytotoxicity with haemorrhagic cystitis, bone marrow suppression, malignancy potential</td>
</tr>
<tr>
<td>Azathioprine</td>
<td>Adverse effects include bone marrow suppression, GI distress, myalgia, and there is malignancy potential</td>
</tr>
<tr>
<td>Cyclosporine</td>
<td>Adverse effects include renal dysfunction, hypertension, liver toxicity</td>
</tr>
<tr>
<td>Mycophenolate mofetil</td>
<td>Adverse effects include haematuria, constitutional symptoms, cough, peripheral oedema, arthralgia, GI distress, haematologic abnormalities</td>
</tr>
<tr>
<td>Anti-TNF-α</td>
<td>Adverse effects include demyelinating disease, reactivation of infectious disease, bone marrow suppression, dermatitis, liver toxicity, potential for malignancy induction</td>
</tr>
<tr>
<td>IFN-α</td>
<td>Adverse effects include bone marrow toxicity, fatigue, flu-like symptoms, diarrhea, skin rash, hair loss</td>
</tr>
</tbody>
</table>

ACKNOWLEDGEMENT

Special thanks to Dr. Milité for providing cases and guidance.

THANK YOU
MUNISH SHARMA, MD OD FAAO
ASSISTANT PROFESSOR

EDUCATION

- Residency (Refractive & Ocular Surgery/Ocular Disease) 2014, OMNI Eye Services, Iselin, NJ
- Doctor of Optometry 2013, SUNY College of Optometry, New York, NY
- Fellowship (Pediatric Ophthalmology) 2007, Children’s National Medical Center at George Washington University, Washington, DC.
- Fellowship (Pediatric Ophthalmology and Adult Strabismus) 2006, Wilmer Eye Institute, Johns Hopkins University, Baltimore, MD
- Fellowship (Cornea and Refractive Surgery) 2005 UCI & Boxer Wachler Vision Institute, Beverly Hills, CA
- MD (Ophthalmology) 2004, Dr. R.P. Center of Ophthalmic Sciences, AllMS, New Delhi, India
- MB,BS (Bachelor of Medicine, Bachelor of Surgery) 2001, All India Institute of Medical Sciences, New Delhi, India

BOARD CERTIFICATIONS

- National Board of Examiners in Optometry (NBEO) 2013 with TMOD
- Education Certificate for Foreign Medical Graduates (ECFMG) 2001 after USMLE 1,2, CSE & TOEFL

PROFESSIONAL POSITIONS

- Assistant Professor 2014, College of Optometry, Western University of Health Sciences, Pomona, CA
- Resident Optometry, OMNI eye services of NJ
- Clinical Fellow (Pediatric Ophthalmology) 2006-2007 CNMC at George Washington University, Washington, DC.
- Clinical Fellow (Pediatric Ophthalmology & Adult Strabismus) 2006-2007, Wilmer Eye Institute at Johns Hopkins University Medical Institution, Baltimore, MD
- Clinical Fellow (Cornea and Refractive Surgery) 2004-2005, University of California Irvine and Boxer Wachler Vision Institute, Beverly Hills & Irvine, CA

TEACHING EXPERIENCE

- Course leader of Posterior Segment and Retina Course OD-IV Fall 2014 - present
- Course leader of Systemic Disease Course Fall 2015 - present
- Co-Developer of Inter-professional Education Case 4 (IPE 6100) on Toxoplasmosis: Winter 2015 - present
- Facilitator Inter-professional Education (IPE 5000/5100) Case 3 and Case 4 discussion groups Fall 2015 and Winter 2015
- NBEO review lectures on Posterior Segment and Retina for OD Class 2016
- NBEO review lecture on Pathophysiology of systemic diseases for OD Class 2016 CLINICAL STUDIES
INVITED SPEAKER

- Webinar “Advances in Retina Diagnosis and Management” June 2015
- CE Talk “Cataract Surgery Co-Management” for Luxotica Optomterist Association June 2015
- OMNI New York CE 2014 Retinal Grand Rounds
- Bergen Passaic Society of Optometric Physicians 2014, Idiopathic Orbital Inflammatory Syndrome
- Bergen Passaic Society of Optometric Physicians 2013, Retina Grand Rounds
- Hudson Valley Optometric Society 2013, Advances in AMD
- OMNI CE Event 2013, Adaptive Optics.

ACADEMIC SERVICES

- Student Performance Committee: 2014 - present
- American Optometry Association: Evidence Based Optometry Committee member 2015 – present
- Inland Empire Optometry Society: Communication and IT Chair 2015 - present

RESEARCH TRIALS

- Co-Investigator: Maestro 4 Topcon Normative Database study for FDA approval Jan 2015- completion
- Co-Investigator NovaBay clinical trial on Blepharitis management.
- Co-Investigator in IRB approved clinical study on “Adjustable muscle surgery in pediatric patients9” at Wilmer Eye Institute at Johns Hopkins University Medical Institution, Baltimore, MD 2006
- Co-Investigator in clinical study “Comparison of single-segment and double-segment Intacs for keratoconus and post-LASIK ectasia8,” at Boxer Wachler Vision Institute, Beverly Hills, CA 2005
- Co-Investigator in clinical study “Effect of inferior-segment Intacs with and without C3-R on keratoconus6,” at Boxer Wachler Vision Institute, Beverly Hills, CA 2005
- Co-Investigator in clinical study “Intacs for Keratoconus and Lasik-Induced Ectasia. at Boxer Wachler Vision Institute, Beverly Hills, CA 2005

PROFESSIONAL SOCIETY MEMBERSHIPS

- American Academy of Optometry (Fellow) 2012- Present
- American Optometry Association 2012- Present
- California Optometry Association and Inland Empire Optometry association 2014- present
- American Academy of Ophthalmology (International Member) 2006 – present
- American Society of Cataract and Refractive Surgery 2005-2008
- American Academy Pediatric Ophthalmology and Strabismus 2006-2009

AWARDS

- Fellow of the American Academy of Optometry 2014, American Academy of Optometry. Denver, CO
- Received Irvin M Borish Student fellowship at American Academy of Optometry meeting at Seattle, WA 2013
- Represented SUNY in Prestigious Varilux Student Bowl 2012 at Optometry’s Meeting in Chicago
• Recipient of Graduate Diversity scholarship, Alcon's Academy for Eye Care Excellence, Allergan AOSA Travel Grant for Essay on Dry Eye Management.

• Apple Product Professional and Apple Sales Professional by Apple Inc.
• Top rank in All India Pre-Medical and Pre-Dental Examination, 1995 (conducted by CBSE).
• Top rank in Pre-Medical Examination of Banaras Hindu University, 1995.
• Top rank in Combined Pre-Medical Test, Punjab, 1995.
• Top rank in AIIMS MBBS Entrance Examination, 1995.
• Received National Talent Search Scholarship (National Council Education Research Training), 1993.

INVITED SPEAKER
• OMNI New York CE 2014 Retinal Grand Rounds
• Bergen Passaic Society of Optometric Physicians 2014, Idiopathic Orbital Inflammatory Syndrome
• Bergen Passaic Society of Optometric Physicians 2013, Retina Grand Rounds
• Hudson Valley Optometric Society 2013, Advances in AMD
• OMNI CE Event 2013, Adaptive Optics.

PEER REVIEWED PUBLICATIONS
1. Nehmad L, Yang A, Sharma M. A Comparative Study of Methods used to evaluate Visual field Progression in Glaucoma Poster Presentation at American Academy of Optometry Annual Meeting 2013 at Seattle, WA.


Continuing Education Course Approval Checklist

Title: 2016 Maloney Vision Institute OD Dinner Educational Lecture
Provider Name: Gabriela Quezada

☑ Completed Application
  Open to all optometrists? ☑ Yes ☐ No
  Maintain record agreement? ☑ Yes ☐ No
☒ Detailed Course Description
☐ PowerPoint and/or other presentation materials
☐ Advertising (optional)
☑ CV for EACH course instructor
☑ License Verification for each course instructor
  Disciplinary History? ☐ Yes ☑ No
CONTINUING EDUCATION COURSE APPROVAL APPLICATION

$50 Mandatory

Pursuant to California Code of Regulations (CCR) § 1536, the Board will approve continuing education (CE) courses after receiving the applicable fee, the requested information below and it has been determined that the course meets criteria specified in CCR § 1536(g).

In addition to the information requested below, please attach a copy of the course schedule and topical outline of the subject matter. Applications must be submitted 45 days prior to the course presentation date.

<table>
<thead>
<tr>
<th>Course Title</th>
<th>Course Presentation Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016 Maloney Vision Institute OD Dinner Educational Lecture</td>
<td>06/16/2016</td>
</tr>
</tbody>
</table>

**Course Provider Contact Information**

<table>
<thead>
<tr>
<th>Provider Name</th>
<th>Provider Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gabriela Quezada</td>
<td><a href="mailto:gquezada@maloneyvision.com">gquezada@maloneyvision.com</a></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Provider Mailing Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>10921 Wilshire Blvd., Suite 900</td>
</tr>
<tr>
<td>City Los Angeles</td>
</tr>
<tr>
<td>State Ca</td>
</tr>
<tr>
<td>Zip 90024</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Will the proposed course be open to all California licensed optometrists?</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES □ NO □</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Do you agree to maintain and furnish to the Board and/or attending licensee such records of course content and attendance as the Board requires, for a period of at least three years from the date of course presentation?</th>
</tr>
</thead>
<tbody>
<tr>
<td>YES □ NO □</td>
</tr>
</tbody>
</table>

**Course Instructor Information**

Please provide the information below and attach the curriculum vitae for each instructor or lecturer involved in the course. If there are more instructors in the course, please provide the requested information on a separate sheet of paper.

<table>
<thead>
<tr>
<th>Instructor Name</th>
<th>License Number</th>
<th>License Type</th>
<th>Phone Number</th>
<th>Email Address</th>
</tr>
</thead>
<tbody>
<tr>
<td>Robert Maloney K</td>
<td>G71227</td>
<td></td>
<td>310 208-3937</td>
<td><a href="mailto:rm@maloneyvision.com">rm@maloneyvision.com</a></td>
</tr>
</tbody>
</table>

I declare under penalty of perjury under the laws of the State of California that all the information submitted on this form and on any accompanying attachments submitted is true and correct.

Signature of Course Provider

Date 1/27/16
Robert K. Maloney MD, MA, (Oxon)

1. Cataract surgery in patients with prior refractive surgery: Consultation & Preoperative evaluation

A key part of the preoperative evaluation of these patients is determining if the visual loss is related solely to the cataract or if there is also a component of irregular astigmatism. This can be determined by obtaining old records and determining how good uncorrected vision was after the refractive surgery or by using an RPG contact lens.

Surgical planning is more challenging because IOL power calculation is less accurate. Several methods for performing IOL power calculation are reviewed, including the clinical history method and the modified Maloney method. Because of the inaccuracy in IOL power calculation it is important to choose a refractive goal that allows for enhancement if needed; for example, a patient who is a high myope preoperatively would probably be a better target for mild hyperopia to avoid further flattening the central cornea. IOL power choices should be made by taking into consideration the spherical aberration induced by the original refractive surgery. Previous radial keratotomy or myopic LASIK will induce positive spherical aberration which can be compensated for by a choice of negative spherical aberration IOLs. Conversely hyperopic LASIK will result in positive spherical aberration which can be similarly compensated by the appropriate choice of IOL.

2. Cataract surgery in patients with prior refractive surgery: surgery and post-op

The surgical procedure is generally unchanged in patients with prior refractive surgery. The exception is patients with previous RK where the phaco incision needs to be placed carefully not to intersect the prior RK incisions. Sometimes this necessitates a scleral rather than a corneal incision. Patients who develop cataract associated with prior phakic IOL lens implants need explanation of the phakic intraocular lens which can be done at the time of the cataract surgery.

Postoperatively, care of these patients is different in some ways from standard cataract patients. Refraction takes longer to stabilize because corneal edema induced by the surgery will produce refractive shifts. Wound leaks can occur from incisions made for explanation of phakic IOLs or from RK incisions.

Finally, generally these patients wish to be spectacle free after cataract surgery so enhancement is often indicated. Either PRK or LASIK enhancement can be used successfully but RK or relaxing incisions are generally not recommended.

3. Indications for the use of advanced lenses and femtosecond laser in cataract surgery

Femtosecond laser is a quantum advance in the cataract surgical procedure. It offers a precise capsularexis, nuclear fragmentation, and more accurate astigmatic keratotomy. It is particularly advantageous in patients with hard lenses or patients with zonular weakness, anterior capsular fibrosis, or who at risk for an Argentinean flag sign. It is contraindicated in patients with small pupils or patients where reliable suction cannot be obtained.

Advanced intraocular lenses offer the possibility of spectacle-free vision after surgery. Toric lenses are appropriate for patients with 1.25 diopters of astigmatism or more. The Crystallens, which also has a toric version, offers good distance and intermediate vision, but limited reading vision. Multi-focal lenses offer excellent distance and close vision, but reduce quality of vision and contrast sensitivity to some degree. The balance of these relative advantages and disadvantages are covered here.

4. The Acufocus Intracorneal Inlay

The Acufocus inlay is an investigational device. It is a 3.4mm circle with a 1.4mm hole in the middle that is place in a pocket the central cornea over the pupil. It created a permanent inbuilt pinhole effect, resulting in a significant improvement in reading vision without degradation of distance vision. This device is currently in FDA trials. The latest data from the FDA phase 3 trial will be presented.
Maloney Vision Institute®
CURRICULUM VITAE

Robert Keller Maloney, M.D., M.A. (Oxon)

Personal

Birthplace: Los Angeles, California
Present Position: Director, Maloney Vision Institute
Address: Maloney Vision Institute
10921 Wilshire Boulevard, Suite 900
Los Angeles, CA 90024
Telephone: (310) 208-3937
Facsimile: (310) 208-8058
Medical Licensure: California G071227
New York 229012-1 (Inactive)

Positions Held:

1998-Present Director, Maloney Vision Institute
2005-Present Clinical Professor of Ophthalmology, UCLA-David Geffen School of Medicine
1998-2004 Associate Clinical Professor of Ophthalmology, UCLA-David Geffen School of Medicine
1996 – 1998 Associate Professor of Ophthalmology, UCLA-David Geffen School of Medicine
1991 – 1996 Assistant Professor of Ophthalmology, UCLA-David Geffen School of Medicine
1999-Present Calhoun Vision, Inc.
Chief Medical Officer, 1999-present
Interim Chief Executive Officer, December 2007 – April 2008

Community and Institutional Service:

Clinical Committee, 1991-1998
Research Committee, 1991-1998
Resident Selection Committee, 1991-1994
Practice Committee, 1991-1998
Library Committee, 1994-1998

1994-1998 UCLA Committees
Medical Center Infection Control Committee, 1994-1998
Office for the Protection of Research Subjects Task Force, 1995-1996

1998-2000 Lasik Institute Board of Directors
2001-Present Good Samaritan Hospital Board of Trustees
Executive Committee, 2002-Present

2009-2011 Board of Trustees, Children Mending Hearts
2010-Present Board of Trustees, Van Nuys Charities

Education:

Undergraduate: A.B., Summa Cum Laude in Mathematics
Harvard College
Honors thesis: "Linear Representations of Finite Groups in Non-Algebraically Closed Fields."
September 1976 to June 1979

Graduate Studies: Master of Arts in Philosophy, Politics, and Economics
Rhodes Scholar
Magdalen College
Oxford University
October 1979 to June 1981

Medical School: Doctor of Medicine
University of California, San Francisco
September 1981 to June 1985

Postgraduate Training

Research Fellow: Kenneth Craik Laboratory
Department of Physiology
Cambridge University
Cambridge, England
Spring, 1985

Internship: Department of Medicine
University of California, Los Angeles
June 1985 to June 1986

Residency Wilmer Ophthalmological Institute
The Johns Hopkins Hospital
July 1986 to June 1989

Heed Fellow: Cornea and Refractive Surgery
Emory University Department of Ophthalmology
July 1989 to June 1991

Honors and Awards

Best 34 Ophthalmologists in America. Becker’s ASC Review. 2010
Secretariat Award, American Academy of Ophthalmology, 2003, for outstanding and valuable contributions to the American Academy of Ophthalmology and to its scientific and educational programs
Senior Achievement Award, American Academy of Ophthalmology, 2002
Lans Distinguished Refractive Surgery Award, International Society of Refractive Surgery, 2001, given annually to one surgeon worldwide for innovative contributions to the field of refractive surgery.
Pioneer in Refractive Surgery Award, Lasik Institute, 1999
Mericos Whittier Prize, Scripps Institute, 1997, awarded for outstanding achievements and contributions to the field of ophthalmology
Best Ophthalmologist in America Award, 1996. Voted one of America’s top 10 refractive surgeons in a nationwide survey of eye surgeons conducted by Ophthalmology Times
The Best Doctors in America Award, Best Doctors, Inc., 1994-2015
America’s Top Doctors Award, Castle Connolly Medical, Inc., 2001-2015
Honor Award, American Academy of Ophthalmology, 1993
Heed/Knapp Fellow, 1990-91
Heed Foundation Fellow, 1989-90
Rhodes Scholarship, 1979
Phi Beta Kappa Society, Harvard College (early election)
John Harvard Scholarship, for Academic Distinction, 1978
Rotary Foundation Fellowship for International Study, 1978 (declined)
Detur Prize, Harvard College, for Academic Distinction, 1977
National Merit Scholarship, 1976
Edward Whitaker Prize, Harvard College; for Academic Distinction, 1976
Sophomore Standing on admission to Harvard College (finished college in three years)
Daniel Webster Scholarship, Dartmouth College, 1976 (declined)
Regents' Scholarship, University of California, 1976 (declined)

Directorships

Calhoun Vision, Inc 1999-2004
VisionRx, Inc. 1994-2004

Consultancies

VisionRx, Inc. for the development of ophthalmic diagnostic instruments, 1994-2004
Calhoun Vision for the development of a light adjustable intraocular lens, 1998-present
Refractec, Inc., 2001-2002
VISX, Inc. 2002-2005
Advanced Medical Optics, Inc., 2005-present
IntraLase Corp., 2007
Presbia Corp., Medical Monitor for the FDA clinical trial of the Flexivue Microlens, 2012-present
Better Vision Network, Medical Advisory Board, 2012
Research Grants

Research to Prevent Blindness Career Development Award, 1992-1996, $140,000
Principal Investigator, Weingart Foundation grant, for purchase of excimer laser, 1991, $250,000

Professional Societies

Diplomate, American Board of Ophthalmology, 1991
American Academy of Ophthalmology
  Spokesperson, 2000-2004
  Young Ophthalmologists' Committee, 1992-1994
  Advisory Group to the Ad Hoc Committee on Organizational Design, 1991
  Chairman, Annual Meeting Program Committee for Young Ophthalmologists, 1990-1992
  Long Range Planning Committee, 1989-1992
  Quality of Care Committee, 1987-1991
  Retina Preferred Practice Pattern Subcommittee
  Refractive Errors Preferred Practice Pattern Subcommittee
American Society of Cataract and Refractive Surgery
International Society of Refractive Surgery
California Association of Ophthalmology
Max Fine Corneal Society
American-European Congress of Ophthalmic Surgery
  Board of Directors 2011-present

Peer Review Activities

Editorial Board, Ophthalmology Times, 1995-present
Editorial Board, Video Journal of Ophthalmology, 1999-present
Editorial Board, Eye Care Tomorrow, 2000-2002
Editorial Board, Review of Refractive Surgery, 2000-2011
Editorial Board, Eyenet, 2002-2009
Editorial Board, Cataract & Refractive Surgery Today, 2006-present
Editorial Board, Advanced Ocular Care, 2010-present
Reviewer:
  American Journal of Ophthalmology
  Ophthalmology
  Archives of Ophthalmology
  Journal of Cataract and Refractive Surgery
  Ophthalmic Surgery and Lasers
  Journal of Refractive Surgery

Patents


Books


Peer-Reviewed Research Papers


Scientific Presentations


44. Smith RJ, Manche EE, Maloney. Radial Keratotomy Enhancement Following Myopic Keratomileusis In Situ (ALK) (paper). International Society of Refractive Surgery annual meeting, Atlanta, GA, October, 1995.

45. Manche EE, Elkins BS, Maloney RK. Keratomileusis In Situ (Automated Lamellar Keratoplasty) for High Myopia (paper). International Society of Refractive Surgery annual meeting, Atlanta, GA, October, 1995.


50. Smith RJ, Manche EE, Maloney, RK. Radial Keratotomy Enhancement Following Myopic Keratomileusis In Situ (paper). International Society of Refractive Surgery annual meeting, Minneapolis, MN, July, 1996.

51. Maloney RK. Epithelial Ingrowth after Lamellar Refractive Surgery (paper). International Society of Refractive Surgery annual meeting, Chicago, IL, October, 1996.

52. Hersh PS, Berkeley RG, Brint SF, Durrie DS, Gordon M, Maloney RK, Michelson MA, Thompson VM. Photorefractive Keratectomy (PRK) and Laser Assisted In-Situ Keratomileusis on the Correction of Myopia Greater Than -6.0 Diopters (paper). American Academy of Ophthalmology annual meeting, Chicago, IL, October, 1996.

53. Smith RJ, Chan WK, Maloney RK. The Prediction of Surgically Induced Refractive Change from Corneal Topography (paper). International Society of Refractive Surgery annual meeting, Chicago, IL, October, 1996.

54. Smith RJ, Maloney RK. A New Technique for Marking the Ablation Zone for Photorefractive Keratectomy (paper). International Society of Refractive Surgery annual meeting, Chicago, IL, October, 1996.

55. Faktorovich EG, Maloney RK, Price F, the ARC-T Study Group. The Coupling Ratio in Astigmatic Keratotomy (paper). International Society of Refractive Surgery annual meeting, Chicago, IL, October, 1996.


78. Maloney RK. Results of the U.S. FDA Phase I and II studies of the Artisan phakic IOL for myopia (paper). American Society of Cataract and Refractive Surgery Annual Meeting, Seattle, WA. April, 1999.


83. Davidorf JM, Maloney RK, Eghbali F. Hyperopic LASIK: Varying the ablation zone diameter with the VISX star (paper). American Academy of Ophthalmology annual meeting, Orlando, FL, October 1999.


100. Asbell PA, McDonald MB, Maloney RK, Davidorf JM, Hersh PS, Manche EE. One-year results of a multi-center U.S. Clinical Trial on conductive keratoplasty (ck) for correcting hyperopia (paper). The World Refractive Surgery annual meeting, Orlando, FL, July 2001.


106. McDonald MB, Hersh PS, Davidorf JM, Maloney RK, Manche EE. One-year results of a multi-center United States Clinical Trial on conductive keratoplasty (CK) for correcting hyperopia (paper). International Society of Refractive Surgery annual meeting, New Orleans, LA, November 2001.


111. Asbell PA, McDonald MB, Hersh PS, Davidorf JM, Maloney RK, Manche EE. United States multicenter trial on conductive keratoplasty (CK) for correcting spherical hyperopia: recent results of two-year follow-up (paper). Contact Lens and Eyecare symposium annual meeting, Lake Buena Vista, FL, January 2003.


120. Maloney RK. Flap Thickness & Variability with the XP Microkeratome (paper). American Society of Cataract and Refractive Surgery annual meeting, San Francisco, CA, March 2006.


125. Maloney RK. Nomogram to Improve Flap Centration with the IntraLase FS-60 Laser (paper). American Society of Cataract and Refractive Surgery annual meeting, Chicago, IL, April 2008.


127. Maloney, RK. Effect of Operating Room Humidity on the Outcome of LASIK. American Society of Cataract and Refractive Surgery annual meeting, Boston, MA, April 2010.


Abstracts


**Book Chapters and Monographs**


Letters, Commentary, Brief Reports


34. Maloney RK. The Light Adjustable Lens: The surgeon may optimize this IOL’s power postoperatively. Cataract & Refractive Surgery Today 2003; 3(10):45-46

35. Maloney RK. Therapeutic wavefront-guided LASIK may help patients unhappy with previous correction. Ophthalmology Times 2004 May; 29(9):54.


61. Maloney RK. Postop Day-1 Results with the iLASIK Technology Suite. Refractive Eyecare 2010; 14(2):27.


**Named Lectureships**


Courses, Invited Lectures, and Symposia


18. Invited Speaker. Egresados del Hospital General de Mexico annual meeting, Queretaro, Mexico, July 1993.


51. Invited Speaker. Instituto de Molestias Oculares, Associacao Brasileira de Bancos de Olhos e Transplante de Cornea, Sao Paulo, Brazil, May 1995.


73. Visiting Professor. Stanford University. Stanford, CA, April 1996.


77. Visiting Professor. Sinai Hospital of Baltimore, MD, May 1996.


80. Course Director. Photorefractive keratectomy (certification course). Jules Stein Eye Institute, University of California, Los Angeles, CA, September 1996.


82. Special Invited Speaker. 62nd Annual Meeting of the Mid-Japan Ophthalmological Society. Osaka, Japan, October 1996.


89. Visiting Professor. Naval Regional Medical Center, San Diego, CA, June 1997.


92. Invited Speaker. Santa Monica Rotary Club, Santa Monica, CA, August 1997.


94. Invited Speaker. Optical Society of America annual meeting, Long Beach, CA, October 1997.


156. Invited Speaker. The Cleveland Clinic annual meeting. Cleveland, OH, May 2002.


163. Invited Speaker. A multicenter trial of wavefront guided lasik. XXI Congress of the European Society of Cataract and Refractive Surgeons, Munich, Germany, September 2003.

164. Invited Speaker. Results of U.S. FDA reduced acuity wavefront ablation study. XXI Congress of the European Society of Cataract and Refractive Surgeons, Munich, Germany, September 2003.


229. Moderator and Invited Speaker. Factors Affecting Consistent High Quality Results. AMO Users Group meeting, San Francisco, CA, October 2009.


To: Practice and Education Committee Members
From: Madhu Chawla, OD
Member Committee Chair
Subject: Agenda Item 5. – Adjournment

Date: May 27, 2016
Telephone: (916) 575-7170