IMAGING—Revolution in Resolution
Teresa Chen, MD, and Elias Reichel, MD

MODERATORS
Robert Noecker, MD

PROGRAM COMMITTEE COORDINATOR

SURGICAL COMPLICATIONS:
How to Anticipate, Avoid and Treat Cataract Surgery Complications
Bradford Shingleton, MD

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April 21, 2017 Back Bay Event Center
180 BERKELEY STREET | BOSTON, MA 02110
the 764th meeting of

New England Ophthalmological Society
A Public Foundation for Education in Ophthalmology

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Accreditation:
The New England Ophthalmological Society designates this live activity for a maximum of 7 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

The New England Ophthalmological Society is accredited by the Massachusetts Medical Society to provide continuing medical education for physicians.
With today’s meeting, NEOS has nearly completed another outstanding academic year. In addition to our regular slate of important topical meetings, such as those focusing on cataract, glaucoma, and retina, we have worked hard to introduce novel programs to our members. Sessions focusing on ethics, controversies, systemic advances, and even surgical challenges and imaging (as in today’s program) are but a few. The Program Committee, under the guidance of the Executive Committee, is constantly looking to broaden our members’ knowledge base, insight into clinical advances, and understanding of the constantly evolving healthcare environment.

More recently, the newly formed Young Ophthalmologist Committee, has undertaken a similar initiative, and is focused on means of helping the “younger” NEOS members adapt to their new careers, new practices, new colleagues. You will hear more about many of these efforts in the next year.

Also, beginning with today’s meeting, *NEOS Grand Rounds* will be introduced. Many of our members have commented repeatedly about the benefits of case presentations, and the opportunity to discuss such cases with their colleagues. NEOS Grand Rounds provides an opportunity for our members to hear interesting and timely case presentations, with a panel of experts to guide discussion with the audience. We anticipate Grand Rounds to be offered several times each academic year, prior to the morning programs, from 7:30-8:30. We look forward to the opportunity to share and discuss challenging cases with our colleagues, highlighting yet another of the tremendous advantages of our Society. The Executive Committee would like to thank each of the academic institutions that will be preparing and presenting the cases, and we will formally acknowledge them at the meetings. We would also like to thank our members for joining us in the mornings, sharing both their insight and their expertise, helping to make all of the NEOS clinicians even more able to care for their patients.

We will continue to provide innovative and instructive programs five times each academic year to allow you, our members, to become even more skilled at caring for your patients. Coupled with the benefits of committees such as the Ophthalmic Services Committee and the Public Health and Education Committee, we believe NEOS continues to provide tremendous value for our members. We are both proud and honored to serve the NEOS membership.

Respectfully,

Jeffrey S. Heier, MD
President
James Fujimoto is Elihu Thomson Professor of EECS at the Massachusetts Institute of Technology, visiting professor of ophthalmology at Tufts University School of Medicine, and adjunct professor at the Medical University of Vienna. His group and collaborators were responsible for the invention and development of optical coherence tomography (OCT). Working with Carmen Puliafito and Eric Swanson, he was a co-founder of the startup company Advanced Ophthalmic Devices, which developed ophthalmic OCT and was acquired by Carl Zeiss. He also co-founded, with Eric Swanson and Mark Brezinski, LightLab Imaging, which developed cardiovascular OCT and was acquired by Goodman, Ltd. and St. Jude Medical.

Dr. Fujimoto published over 450 peer-reviewed journal articles and co-edited 13 books. He is a director of the International Society for Optics and Photonics (SPIE), has been general co-chair of the SPIE BIOS symposium since 2003, and was program and general co-chair for the 2002 and 2004 Conferences on Lasers and Electro Optics (CLEO), co-chair of the 2005 European Conferences on Biomedical Optics, and director of the Optical Society of America from 2000 to 2003. He received the Zeiss Research Award in 2011, IEEE Photonics Award in 2014, and Optical Society of America Ives Medal in 2015. Dr. Fujimoto is a co-recipient of the 2002 Rank Prize in Optoelectronics, the 2012 António Champalimaud Vision Prize and the 2017 Fritz J. and Dolores H. Russ Prize of the National Academy of Engineering. He is a member of the National Academy of Engineering, National Academy of Sciences, and American Academy of Arts and Sciences, and has an honorary doctorate from the Nicolaus Copernicus University in Poland.
DAVID F. CHANG, MD

We are privileged to have Dr. David Chang as our Guest of Honor for our Cataract Complications Meeting. Dr. Chang is no stranger to NEOS or the Boston area. He served as our NEOS guest of honor in 2012 and got his start in this area graduating Summa Cum Laude and Phi Beta Kappa from Harvard College in 1972. He attended Harvard Medical School and completed his ophthalmology residency at the University of California, San Francisco. He has established a world-class private practice in ophthalmology in Los Altos, California and also serves as clinical professor in the Department of Ophthalmology at University of California, San Francisco and manager of the Peninsula Eye Surgery Center.

Dr. Chang is an extraordinary clinician and superb surgeon. He has remarkable observational skills that have enhanced his gift for teaching for which he has become world renowned. Dr. Chang is a leader in teaching phacochop techniques, phacoemulsification of dense cataracts, treatment of capsule tears and zonular weakness and management of IOL complications. He wrote the original and definitive article on intraoperative floppy iris syndrome (IFIS) and has guided ophthalmologists around the world on how to manage this significant intraoperative complication. Innovation arises from his skill set and as one of his lecture topics for NEOS, he will be discussing the latest in capsulorrhexis techniques. Honors naturally follow as a result of his many accomplishments and Dr. Chang has given numerous named lectures, received many teaching and guest speaker awards at national and international meetings. In 2006, Dr Chang became only the third ophthalmologist to ever receive the Charlotte Baer Award honoring the outstanding clinical faculty member at the UCSF Medical School. He has received the highest honor for a cataract surgeon from ASCRS (Binkhorst Medal), AAO (Kelman Lecture), Asia Pacific Association of Cataract and Refractive surgery (Lim Medal), United Kingdom and Ireland Society of Cataract and Refractive Surgery (Rayner Medal), Canadian Society of Cataract and Refractive Surgery (Award of Excellence), All India Ophthalmology Society (President’s Lecture), Royal Australia and New Zealand College of Ophthalmologists (Gregg Medal) and the Asia-Pacific Academy of Ophthalmology (Jose Rizal International Medal). He currently serves on the Board of the American Society of Cataract Refractive Surgery, after leading the Society as President in 2012-2013.

Dr. Chang not only gives back to our specialty through lectures and publications, but he has long maintained a strong commitment to serving those with unmet eye care needs on an international basis. He currently serves as Chair of the ASCRS Foundation International Committee and has extended his outreach over the years to China, Nepal, India and Africa. We are fortunate to have a person of Dr. Chang’s knowledge, stature and integrity to serve as our guest of honor.
MORNING SESSION:

Imaging – Revolution in Resolution

*Moderator: Teresa Chen, MD and Elias Reichel, MD*

*Program Committee Coordinator: Robert Noecker, MD*

**Educational Gaps:** Based on evaluations of prior glaucoma, cornea, and retina meetings, participants expressed a desire for more information about optical coherence tomography and its use in clinical practice. The value of imaging in glaucoma, corneal, and retinal diseases will be evaluated in this session.

**Learning Objectives:**

1. To know when imaging is necessary in the clinic.
2. To learn about new types of imaging technology.
3. To better understand the background and scientific principle of OCT and newer imaging modalities.

7:00 am  Registration/Exhibits

7:30  NEOS GRAND ROUNDS – FREEDOM ROOM

7:30  Best of the NEOS Hal Freeman Video Library – MAIN HALL

8:30  Introduction.................................................................................. Teresa Chen, MD

8:32  What Spectral Domain-OCT (SD-OCT)
Scan is the Best ................................................................. Manishi Desai, MD

8:42  Is that Progression on OCT or not?.......................... Robert Noecker, MD

8:52  Angle Imaging: OCT or UBM? ......................... David Sola-Del Valle, MD

9:02  Corneal Imaging with OCT and
In Vivo Confocal Microscopy ............................................. Joseph Ciolino, MD

9:12  Anterior Segment Panel.................................................. Teresa Chen, MD, *Moderator*

    Joseph Ciolino, MD  Robert Noecker, MD
    Manishi Desai, MD  David Sola-Del Valle, MD

9:22  Introduction to Guest of Honor, James Fujimoto, PhD ...... Elias Reichel, MD

9:25  The Development of OCT and its Translation from Fundamental
Research to Clinical Practice ............................................. James Fujimoto, PhD

9:45  *Business Meeting*

9:55  *Refreshment break / Exhibits*

10:25  Imaging Diabetes with a Focus on OCTA.............. Nadia Waheed, MD, MPH

10:37  OCTA and Doppler Techniques using Ultrahigh Speed
Swept Source OCT ......................................................... James Fujimoto, PhD
10:57 Imaging CNV with a Focus on OCTA.......................Caroline Baumal, MD
11:09 Management of Vitreomacular Traction ..................Chirag Shah, MD, MPH
          John Miller, MD
11:21 Smart-device Imaging........................................Shizuo Mukai, MD
11:33 Posterior Panel Discussion.................................Elias Reichel, MD, *Moderator*
          Caroline Baumal, MD     Shizuo Mukai, MD
          James Fujimoto, PhD      Chirag Shah, MD, MPH
          John Miller, MD          Nadia Waheed, MD
11:45 Adjourn
11:45 LUNCHEON SEMINAR: Endophthalmitis and Hemorrhagic Occlusive
          Retinal Vasculitis (HORV) – Drs. David Chang and Bradford Shingleton
AFTERNOON SESSION

Surgical Complications: How to Anticipate, Avoid and Treat Cataract Surgery Complications

Bradford Shingleton, MD, Moderator
Robert Noecker, MD, Program Committee Coordinator

Professional Practice Gaps:

A. There are multiple ways the cornea can impact cataract surgery. Members desire information on how to deal with both endothelial and epithelial problems that can impact cataract surgery.

B. New and developing technology with regard to artificial irides are being developed. Membership requires an update on status of the technology and the availability.

C. Vitreous management from the anterior segment surgeon with particular reference to techniques to aid the anterior segment surgeon and how the posterior segment surgeon manages this problem.

Program Objectives:

1. To be able to assess needs and develop plans for cataract surgery in patients with compromised corneas.
2. To appreciate technology available for dealing with iris defects and when to utilize the various treatment options.
3. To be able to incorporate anterior segment vitrectomy techniques and know when to utilize posterior segment support.

1:00 pm  Introduction............................................................Bradford Shingleton, MD
1:05      How to Deal with the Compromised Cornea in Cataract Surgery ............................................. C. Mitchell Gilbert, MD
1:13      Managing the Compromised Iris, Utilizing Iris Support Systems and Surgical Repair of Iris Defects............................... Helen Wu, MD
1:23      Introduction of Guest of Honor, David Chang, MD..........................................................Bradford Shingleton, MD
1:25      Preventing and Managing Capsulorhexis Complications .... David Chang, MD
1:45      Intraoperative Management of Weak Zonules ..........Susan MacDonald, MD
1:55      Intraocular Lens Choices in the Compromised Eye ......C. Douglas Evans, MD
2:05      Refreshment Break/Exhibits
2:35      Oops – the Dropped Nucleus from the Posterior Segment Surgeon’s Perspective ...............................Frank J. McCabe, MD
2:45    Strategies for Anterior Vitrectomy following Posterior Capsular Rupture .................................David F. Chang, MD

3:05    IOL Subluxation – Reposition Techniques ................Michael B. Raizman, MD

3:18    IOL Dislocation – Exchange Techniques ..................Peter A. Rapoza, MD

3:30    Panel Discussion ........................................Bradford Shingleton, MD, Moderator
         David F. Chang, MD    Michael B. Raizman, MD
         Douglas Evans, MD     Peter A. Rapoza, MD
         C. Mitchell Gilbert, MD    Helen K. Wu, MD
         Susan MacDonald, MD
         Frank J. McCabe, MD

4:00    Adjourn
What Spectral Domain-OCT (SD-OCT) Scan is the Best?

Manishi Desai, MD

BOSTON MEDICAL CENTER AND BOSTON UNIVERSITY SCHOOL OF MEDICINE | BOSTON, MA

Objective: The objective of this presentation is to demonstrate to the audience the most useful SD-OCT scans for glaucoma available on various commercial platforms.

Glaucoma is a degenerative and progressive optic neuropathy that results in irreversible vision loss. More specifically, the disease is characterized by the loss of retinal ganglion cells (RGC) which in turn lead to functional deficits. With the advent of optical coherence tomography (OCT), this glaucomatous structural change (i.e., RGC loss and subsequent retinal nerve fiber layer thinning) could be identified, characterized, and followed throughout stages of the disease. These structural changes are often detected prior to glaucomatous changes manifesting on a functional test such as the visual field. In this way, the OCT has armed clinicians with more objective and quantitative measures to supplement their evaluation. Also with OCT, clinicians can make an earlier diagnosis in glaucoma suspects or potentially detect progression sooner in existing glaucoma patients such that they can adjust treatment sooner than by using standard visual field testing alone. Today, spectral domain-OCT (SD-OCT) offers improved resolution and faster scanning rates. SD-OCT is available on more than one commercial platform/machine. This talk will review the SD-OCT scans that are most useful for glaucoma diagnosis or disease progression on the various available commercial platforms.


Abe RY, Gracitelli CPB, Medeiros FA. The use of Spectral-Domain Optical Coherence Tomography to Detect Glaucoma Progression. The Open Ophthalmology Journal 2015; 9, (Suppl 1: M4);78-88.
Is That Progression on OCT or Not?

Robert Noecker, MD, MBA
FAIRFIELD, CT

Objective: To clarify findings on imaging that would confirm or refute progression of glaucoma.

Structural imaging is a powerful tool that has become a standard of care in the diagnosis and treatment of glaucoma. Analysis of the retinal nerve fiber layer, optic nerve and retinal ganglion cell layer can help to guide therapy decisions in glaucoma. While imaging can yield more information than or confirm what is seen on clinical exam, it should only be viewed as a tool. Like any tool, artifacts can occur that may provide imperfect information about the structure of the retina and optic nerve. The data that these devices provide should be evaluated in the context of other structural and functional findings, as well as clinical information obtained during the follow-up exam.


Angle Imaging: OCT or UBM?

David Solá-Del Valle, MD

EYE HEALTH SERVICES | WEYMOUTH, MA

**Objective:** The objective of this presentation is to discuss the pros and cons of two commonly used devices for anterior segment imaging.

Glaucoma is the leading cause of irreversible blindness worldwide, and approximately half of all the cases that have been diagnosed can be classified as angle-closure glaucoma. This disease entity is heterogeneous, and it can sometimes be difficult to distinguish between the various subtypes of angle closure glaucoma. Imaging techniques such as optical coherence tomography (OCT) and ultrasound biomicroscopy (UBM) can be extremely helpful to help diagnose some of these subtypes of angle closure glaucoma. These tests are objective, precise and typically less dependent on patient cooperation than gonioscopy. This talk will review the benefits and drawbacks of OCT and UBM when it comes to imaging of the anterior chamber angle. This talk will largely consist of picture examples of both imaging techniques. Examples will be given of when each imaging technique would be appropriate and how each imaging technique can be a useful adjunct to gonioscopy.

**References:** Schcknow PN, Samples JR. The Glaucoma Book, A Practical, Evidence-Based Approach to Patient Care. New York: Springer; 2010.


Corneal Imaging with OCT and in Vivo Confocal Microscopy

Joseph Ciolino, MD

MASSACHUSETTS EYE AND EAR INFIRMARY | BOSTON, MA

Objective: The objective of this presentation is to increase the audience’s knowledge of ways that OCT and in vivo confocal microscopy can be used to image the cornea.

OCT and in vivo confocal microscopy are noninvasive imaging and diagnostic tools that enable anatomic evaluation of the cornea. OCT is typically used to image the cross-section of the cornea and can be used to evaluate the depth of cornea scars, cornea tissue loss in cases of keratolysis, the location of graft tissue after endothelial keratoplasty, as well as other indications. In vivo confocal microscopy provides morphological and quantitative analysis of corneal microstructures and is most commonly used to identify structures associated with fungal and acanthamoeba keratitis. Confocal microscopy can also be used to evaluate the corneal nerves and ocular surface.


The Development of OCT and its Translation from Fundamental Research to Clinical Practice

James G. Fujimoto, PhD
Department of Electrical Engineering and Computer Science
MASSACHUSETTS INSTITUTE OF TECHNOLOGY | CAMBRIDGE, MA

Objective: To learn how OCT was translated from physics and engineering to clinical medicine.

Optical coherence tomography (OCT) was developed in 1991 and has evolved to become a standard diagnostic imaging tool in ophthalmology. Today, it is estimated that there are ~20-30 Million OCT imaging procedures performed worldwide every year and the OCT system market is approaching $1B per year. OCT has helped diagnose patients with retinal disease at early treatable stages, preventing or greatly reducing irreversible vision loss. The technology has facilitated pharmaceutical development and contributed to fundamental understanding of disease mechanisms in multiple fields. The invention and translation of OCT from fundamental research to daily clinical practice would not have been possible without a complex ecosystem involving interaction among physics, engineering, and clinical medicine; government funding of fundamental and clinical research; collaborative and competitive research in the academic sector; entrepreneurship and industry; addressing clinical needs; harnessing the innovation that occurs at the boundaries of disciplines; and economic and societal impact. This presentation discusses the development of OCT and how the combination of technological innovation, clinical studies and commercialization drove its translation from fundamental research to clinical practice in ophthalmology as well as other clinical specialties.

**Imaging Diabetes with a Focus on OCTA**

*Nadia Waheed, MD, MPH*

TUFTS NEW ENGLAND EYE CENTER | BOSTON, MA

**Objective:** To review the imaging modalities used in clinical decision making and in clinical trials in diabetic patients.

For the last 2 decades, imaging of the retina has been critical in the clinical care as well as in clinical trial design in diabetics. Color fundus photos have been used to grade the level of retinopathy, fluorescein angiography is used to evaluate for neovascularization, macular edema and macular ischemia, and optical coherence tomography (OCT) is used to quantify the extent and location of diabetic macular edema. With the development of OCT angiography, we now also have the ability to non-invasively and rapidly image the vasculature of the retina and correlate this to the structural changes on OCT. It also allows for the visualization of changes in diabetics earlier and with much better resolution than traditional imaging and examination techniques. In this presentation, we will review how OCT angiography findings relate to level of diabetic retinopathy severity, response to treatment and visual prognosis.

**References:**


OCTA and Doppler Techniques
Using Ultrahigh Speed Swept Source OCT

James G. Fujimoto, PhD
Department of Electrical Engineering and Computer Science
MASSACHUSETTS INSTITUTE OF TECHNOLOGY | CAMBRIDGE, MA

Objective: Understanding functional OCT imaging using ultrahigh speed swept source OCT.

Recent advances in OCT technology enable dramatic increases in imaging speed. Swept source OCT (SS-OCT) can achieve speeds ~4-5x faster than current commercial spectral domain OCT (SD-OCT). In addition SS-OCT enables imaging at longer 1050nm wavelengths compared with SD-OCT at 840nm. Long wavelengths have increased immunity to ocular opacities as well as improved image penetration, enabling imaging of choroidal structure. The ultrahigh imaging speeds achieved by SS-OCT are important not only for improving retinal coverage, but also enable functional OCT imaging. OCT angiography (OCTA) detects motion contrast by performing repeated B-scans in the same retinal location and measuring decorrelation signals generated by moving erythrocytes. OCTA has the advantage that it generates three dimensional, depth resolved images of vasculature, but does not require dye injection and therefore can be performed rapidly and on every patient visit. However, since OCTA requires repeated scanning, extremely high acquisition speeds are required in order to achieve retinal coverage. OCTA using SS-OCT is especially promising for imaging of the choriocapillaris, detecting flow impairment and atrophy. Ultrahigh speeds also enable functional OCT methods for measuring total retinal blood flow. En face Doppler OCT measures blood flow in an en face plane by volumetrically scanning the central retinal vasculature. En face Doppler has the important advantage that determination of the Doppler angle is not required and flow can be measured using automated algorithms. However, ultrahigh speeds are required because flow measurements involve acquisition of OCT volumes rather than B-scan images as in standard Doppler OCT. In addition, rapidly repeated volumes are required to average cardiac pulsatility. We describe the development SS-OCT prototype technology at 400 kHz axial scan rates and its application for studies of age related macular degeneration and diabetic retinopathy, obtained during the follow-up exam.
Imaging CNV with a Focus on OCTA

Caroline Baumal, MD
TUFTS-NEW ENGLAND EYE CENTER | BOSTON, MA

Objective: To discuss imaging of CNV with focus on OCT angiography.

With the advent of anti-VEGF therapy for choroidal neovascularization (CNV), earlier diagnosis of CNV may lead to earlier treatment with improved visual results. Dye based angiography has traditionally been used to diagnose CNV. OCT Angiography (OCTA) is a new, novel imaging modality that can demonstrate flow in the retinal and choroidal vasculature. OCT Angiography has many advantages over dye-based angiography including increased speed and efficiency with a noninvasive technique. The utility of OCTA to diagnose and manage CNV compared to other modalities will be discussed.

References:


Management of Vitreomacular Traction

Chirag Shah, MD, MPH
OPHTHALMIC CONSULTANTS OF BOSTON

John Miller, MD
MASSACHUSETTS EYE AND EAR INFIRMARY | BOSTON, MA

Objective: To review the treatment options for vitreomacular traction, along with the success rates and risks of each.

Vitreomacular traction (VMT) is an age-related change that can occur in the vitreous gel of some patients. The resulting disruption in the foveal anatomy can lead to decreased visual acuity and metamorphopsia. There are several treatment options for VMT, including vitrectomy, ocriplasmin, pneumatic vitreolysis, and even observation. Approximately 30-40% of VMT cases will resolve spontaneously without intervention. Vitrectomy is the most definitive way to treat VMT, with a 100% release rate, but requires a trip to the operating room, has higher infection rates and leads to early cataract formation. Ocriplasmin (Jetrea, ThromboGenics, Inc., Iselin, NJ) is a $4,000 FDA-approved intravitreal injection for enzymatic vitreolysis that releases VMT 26.5% of the time. It can be more successful in cases without epiretinal membrane, diabetes, or broad vitreomacular adhesion. Pneumatic vitreolysis is an office-based intravitreal injection of an expansile gas bubble, which hopes to create a posterior vitreous detachment. Authors have hypothesized that as the gas contracts vitreous syneresis is enhanced, allowing fluid to move into the pocket formed by the gas and into the subhyaloid space, gently inducing a PVD. All of the treatment options, including observation, have risk of macular hole formation and permanent vision loss. More recent literature on ocriplasmin has raised photoreceptor toxicity concerns limiting its real world application.

Smart-device Imaging

Shizuo Mukai, MD

MASSACHUSETTS EYE AND EAR INFIRMARY | BOSTON, MAA

Objective: To introduce clinicians to the current and future technologies for retinal imaging using smart devices such as the smartphone.

Recent advances in smart devices such as the smartphone and related technologies have greatly improved the facility and quality of imaging the retina in a variety of ways. These advances include improvements in the devices themselves especially the cameras, other technologies such as 3-D printing that allows for hardware add-ons, and easy and inexpensive availability of parts. The smart device can serve in a variety of ways for retinal imaging. It can be used as an image-transfer device for images captured on conventional devices, a camera that captures images in conjunction with an examination device such as a slit lamp, a stand-alone imaging device with hardware attachments, or an imaging device without any attachments. With the increase in the computational power of these devices and ability to hack into and program some of the devices, image recognition and machine learning can be used to enable automated diagnosis of some of the conditions. In addition, numerous technologies are being developed that would further advance the ability to image the retina using smart devices.


How to Deal with the Compromised Cornea in Cataract Surgery

C. Mitchell Gilbert, MD
CONSULTING OPHTHALMOLOGISTS | FARMINGTON, CT

Objective: To summarize recognition and management of corneal disorders that impact performance and results of cataract surgery.

Corneal disorders can have a prominent effect on both the performance and results of cataract surgery. At the conclusion of this presentation the listener should have an understanding of how to recognize and manage these disorders as related to cataract surgery. Pre-operative recognition and patient counseling are essential for satisfactory surgical results. Fuchs’ Corneal Endothelial Dystrophy is the principal corneal disorder that impacts cataract surgery. Pre-operative evaluation and operative techniques, including endothelial keratoplasty, will be reviewed. The effect on cataract surgery by Dry Eye Syndrome, Corneal Epithelial Basement Membrane Dystrophy, Corneal Ectasias, prior Keratorefractive Surgery and conditions that affect corneal clarity will also be reviewed. Management recommendations to facilitate surgery and improve outcomes will be presented.

Holland E. Management of Corneal Disease and Cataract. http://www.cincinnatieye.com/wp-content/uploads/2014/05/e0c53d14944c400e75fc1a8f6b973ee2.pdf.
Managing the Compromised Iris, Utilizing Iris Support Systems and Surgical Repair of Iris Defects

Helen K. Wu, MD
TUFTS MEDICAL CENTER | BOSTON, MA

Objective: The participant will become familiar with techniques to manage challenging iris issues during cataract surgery, including pupil expansion devices and repair of iris trauma.

Small pupils during cataract surgery can increase the risk of complications, including posterior capsular rupture and vitreous prolapse, iris trauma and retained lens fragments. The use of mechanical intraoperative devices to enlarge small pupils can transform a potentially challenging case into a more routine case. Preparation is particularly important in cases of potential intraoperative floppy iris syndrome, frequently seen in patients taking tamsulosin and other Alpha-1 adrenergic receptor antagonists. Iris hooks and pupillary expansion devices both may be helpful in individual circumstances to stabilize the pupil. In cases with intraoperative iris trauma, including iridodialysis or iris stromal loss, repair of iris defects will help prevent or alleviate symptoms of glare and photophobia. Common techniques include the use of mattress sutures to reattach the iris to the sclera for iridodialysis, and imbricating sutures for the repair of iris defects. Pupillary cerclage can be used to repair a dilated atonic pupil after cataract surgery. Prosthetic iris devices, not approved by the FDA, may be the best option in the setting of larger iris defects or fragile iris tissue.

Preventing and Managing Capsulorhexis Complications

David F. Chang, MD

LOS ALTOS, CA

Objective: To review pearls for the capsulorhexis in complicated eyes; to outline strategies for managing capsulorhexis complications; to update and discuss new technologies for automating the capsulotomy step.

The single most important step in cataract surgery is at the same time the most difficult to master, according to most trainee surveys. The elusive goal of a perfectly circular, centered, and continuous curvilinear capsulotomy of a consistent diameter has fueled interest in automated capsulotomy technologies, such as the femtosecond laser. This lecture will use video clips to highlight pearls for successfully capsulorhexis in challenging eyes – those with a poor red reflex, small pupils, weak zonules, crowded anterior chambers, intumescent white lenses, and elastic capsules. Strategies for managing complications such as radial tears or insufficient CCC diameter will be demonstrated. Finally, the pros and cons of femtosecond laser capsulotomy will be reviewed and next generation technologies for automated capsulotomy creation will be introduced and updated.


Off-label use: Intracameral antibiotic prophylaxis
Intraoperative Management of Weak Zonules

Susan MacDonald, MD
CONCORD, MA

**Objective:** Review the keys steps to diagnose and manage weak zonular support during cataract surgery.

Weak zonules can increase anxiety in most cataract surgeons. Having a strong understanding of surgical management is the best preparation for a surgeon. Being prepared with knowledge, skill set and proper tools gives the the best opportunity to provide excellent post operative result. Intraocular management includes early diagnosis, utilization of capsular support and surgical techniques to limit the progression of the zonular dehiscence. And once the natural lens is removed, proper support of the intraocular lens needs to be addressed. Fortunately there have been many advances in this to help manage these complex surgical challenges This lecture will review intraocular signs of zonular dehiscence, management of cataract stability during removal and proper IOL placement.

**References:** Chakrabarti A. Strategies for pseudoexfoliation and weak zonules. Kerala Journal of Ophthalmology. 2012, XXIV.


Intraocular Lens Choices in the Compromised Eye

C. Douglas Evans, MD

NORTH SUBURBAN EYE ASSOCIATES | WAKEFIELD, MA

Objective: The talk will serve to educate members about the role that pathologic clinical conditions inform our choices for intraocular lens implantation at the time of cataract surgery in pursuit of optimal outcomes.

Successful cataract surgery in the compromised eye requires taking measures to set one’s self up for an optimal outcome by anticipating potential surgical issues outside of the routine, making sound choices for IOL design and material that will take into account any structural limitations and being prepared to handle any potential intraoperative problems that might be more likely due to the particular situation. Key objectives include a careful history to identify past injury, prior refractive or other ocular surgery, previous episodes of ocular disease and a careful preoperative exam to identify undiagnosed conditions that could potentially complicate cataract surgery. Furthermore, choosing an intraocular lens that will be compatible with any potentially complicating conditions in a compromised eye is paramount. Lastly, being prepared in the operating room with instruments and equipment that could be critical to an optimal outcome and being familiar with techniques and strategies to address those possibilities raise the chance of a successful outcome in these challenging cases. The talk will address the areas of anatomic compromise that factor into our choices for an intraocular lens, including: 1) what to avoid and what to embrace when confronted with ocular pathology beyond a straightforward cataract, 2) how additional considerations come into play with the specialty lenses and 3) how anticipated disease progression can enlighten our choices for IOLs that will avoid eventual disappointment for the patient in the future.


Christopher Kent, Senior Editor Review of Ophthalmology Choosing the Best IOL for the Nonstandard Eye.
Oops - the Dropped Nucleus
from the Posterior Segment Surgeon’s Perspective

Frank J. McCabe, MD
WORCESTER, MA

Objective: The presentation will address the management of retained lens material after cataract surgery.

Retained lens material can be a significant complication after cataract surgery, occurring in 0.3-1.1% of cases. This surgical complication can lead to visual loss from corneal edema, glaucoma, cystoid macular edema and retinal detachment. This presentation will address intra-operative management of retained lens fragments from the anterior segment surgeon’s perspective, including initial IOL implantation. The retinal surgeon’s approach to managing this complication will be outlined, including medical management, timing of retinal intervention and small-gauge vitrectomy for the dropped nucleus. Fortunately, if this complication is handled appropriately, most patients will have good outcomes.


Strategies for Anterior Vitrectomy
Following Posterior Capsular Rupture

David F. Chang, MD
LOS ALTOS, CA

**Objective:** To review methods for managing posterior capsule rupture, vitreous prolapse, and retained lens material.

Every cataract surgeon should have a game plan for when and how to perform an anterior vitrectomy following posterior capsule rupture. This lecture will review the goals, the indications, and the techniques. Understanding and mentally rehearsing these strategies will better prepare cataract surgeons to make correct decisions amidst the stress of an unexpected complication. Highlighted strategies will include posterior assisted levitation (PAL) of a descending nucleus, and preventing further descent of retained lens material using the “Viscoelastic Trap” combined with bimanual pars plana anterior vitrectomy. Video will be used to demonstrate the aforementioned techniques, along with adjunct triamcinolone staining of the vitreous.


IOL Subluxation - Reposition Techniques

Michael B. Raizman, MD
OPHTHALMIC CONSULTANTS OF BOSTON | BOSTON, MA

Objective: Make appropriate recommendations to patients on the timing and strategy for correcting dislocated IOL’s through repositioning surgery.

Intraocular lenses may dislocate. Eyes with exfoliation are prone to late dislocation of the entire IOL/capsule bag complex. Complicated cataract surgery can lead to placement of an IOL in the sulcus or only partially in the bag. These IOL’s may shift, causing visual symptoms or uveitis, macular edema, and recurrent hemorrhage. In general, I advocate repositioning an IOL rather than exchanging it, whenever possible. Repositioning can lead to faster recovery of vision and fewer complications. I reviewed my experience with 246 cases of surgical repositioning of IOL’s. I will share strategies for office evaluation and video of surgical techniques. Fixation to the sclera and the iris will be compared. Potential complications will be discussed.


IOL Dislocation—Exchange Techniques

Peter A. Rapoza, MD

OPHTHALMIC CONSULTANTS OF BOSTON | BOSTON, MA

Objective: To provide ophthalmic surgeons with a systematic approach to the evaluation and surgical treatment of patients with dislocated IOLs from pre-operative evaluation through surgical maneuvers and post-operative care.

Evaluation of the zonular/capsular apparatus is paramount. Imaging may include specular microscopy, anterior segment or retinal OCT. With an intact anterior capsular annulus, a 3-piece PC-IOL may be held in the sulcus by capsular remnants. If a defect or radial tear extending through the equator is present, sulcus fixation can be achieved by fixing a haptic of the IOL to the iris or sulcus. In the absence of capsular support, surgeons can consider an AC-IOL, a 3 piece PC-IOL fixated to the iris or sulcus or a PMMA PC-IOL fixated to the sulcus. Prolene sutures can be placed in a McCannel fashion for haptic fixation to the iris. Prolene or Gore-Tex can anchor haptics of a 3 piece or PMMA PC-IOL to the sulcus. Alternatively, a scleral tunnel can hold the haptics of a 3 piece PC-IOL. Surgeons should be adept at pars plana vitrectomy for anterior segment surgery.


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<table>
<thead>
<tr>
<th>2017</th>
<th>2018</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>June 2</strong></td>
<td><strong>March 9</strong></td>
</tr>
<tr>
<td>Glaucoma</td>
<td>Retina (with Miller Lecture)</td>
</tr>
<tr>
<td>Controversies: Anterior Posterior</td>
<td>Innovations</td>
</tr>
<tr>
<td>Bonnie Henderson, MD</td>
<td>Peter Veldman, MD</td>
</tr>
<tr>
<td>Joan Miller, MD</td>
<td></td>
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<tr>
<td>Dean Eliott, MD</td>
<td></td>
</tr>
<tr>
<td><strong>October 20</strong></td>
<td><strong>April 20</strong></td>
</tr>
<tr>
<td>Pediatric Ophthalmology</td>
<td>Glaucoma (with Simmons Lecture)</td>
</tr>
<tr>
<td>Erin Salcone, MD</td>
<td>Susan Liang, MD</td>
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<tr>
<td>Cataract</td>
<td>Ocular Infections</td>
</tr>
<tr>
<td>Sherleen Chen, MD</td>
<td>Lucia Sobrin, MD</td>
</tr>
<tr>
<td><strong>December 1</strong></td>
<td><strong>June 1</strong></td>
</tr>
<tr>
<td>Ocular Surface/Dry Eye</td>
<td>Complications</td>
</tr>
<tr>
<td>Erin Fogel, MD</td>
<td>Samir Melki, MD</td>
</tr>
<tr>
<td>Ethics/Risk Management (with Hutchinson Lecture)</td>
<td>Subspecialities: Neuro-ophthalmology Oculoplastics Uveitis</td>
</tr>
<tr>
<td>Shiyoung Roh, MD</td>
<td>Thomas Hedges, MD</td>
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<td>Daniel Lefebvre, MD</td>
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<td>Nicholas Butler, MD</td>
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*Eliot Berson, MD*

*March, 2017*
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for Best Resident, Fellow, and Trainee Posters

JUNE 2, 2017

Residents, fellows, and trainees from all the New England ophthalmologic teaching programs are invited and encouraged to submit abstracts for a scientific poster presentation contest to be conducted at the June 3, 2016, NEOS meeting. Posters will be judged on originality and scientific merit. Awards will be made for the first prize $500.00, second prize $300.00, third prize $200.00 and three honorable mentions of $50.00 each. Funding for the awards is derived from a gift to the NEOS Education Endowment Fund honoring the late Sanford Hecht, MD. Poster presentations exhibited at ARVO in 2016 and at the AAO meeting in of 2015 may be submitted. We encourage all trainees to participate in this event.

TO SUBMIT POSTERS:
Go to neos-eyes.org – future meetings/June 2/abstract submission form.

DEADLINE:
Deadline for abstract to appear in printed program MAY 1.

QUESTIONS?
For questions, please contact Judy Cerone Keenan at 617.227.6484 or neosjudy@aol.com