



2018
Resident Edition



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YO Info

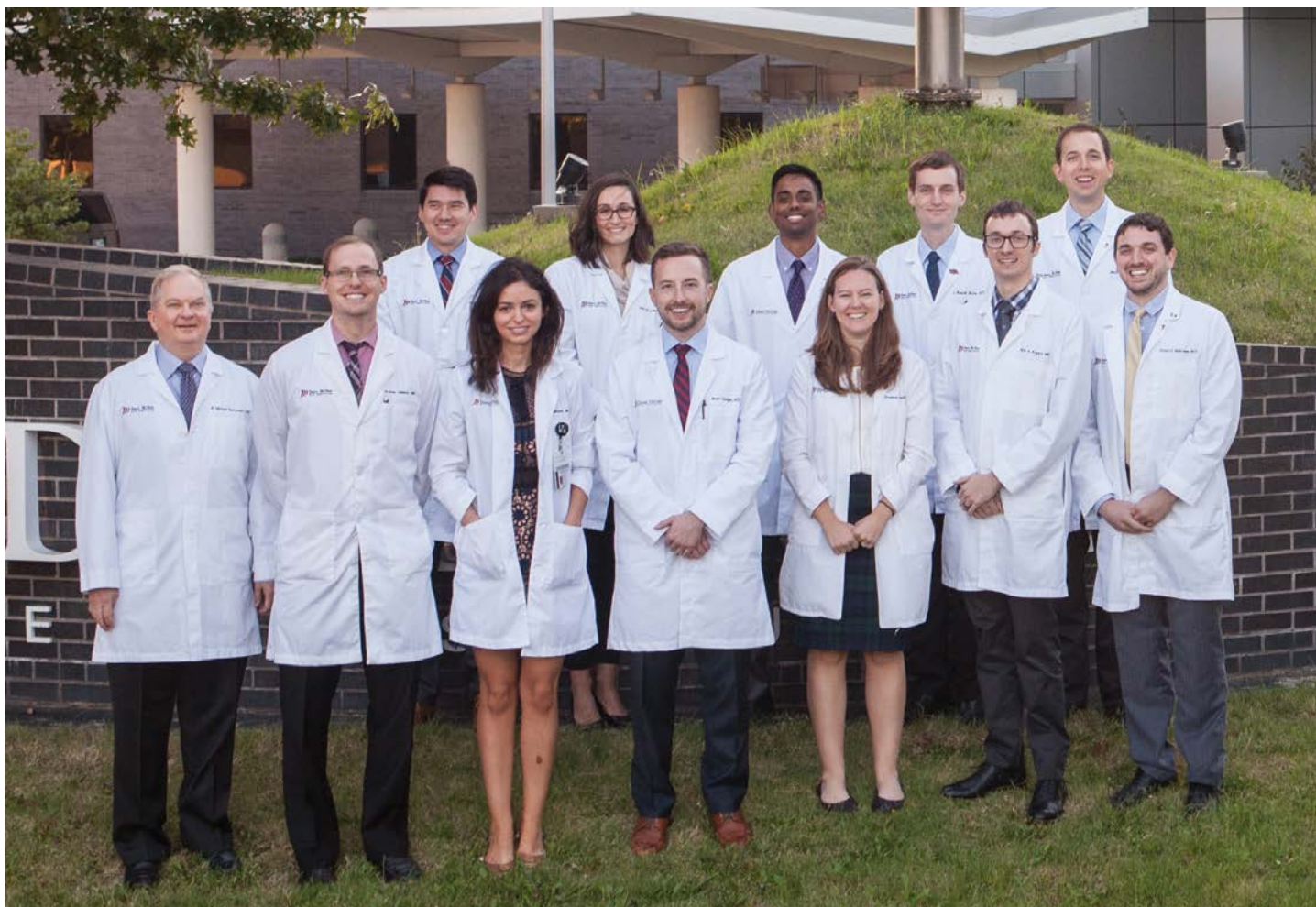
THE YOUNG OPHTHALMOLOGIST'S NEWSLETTER

Your source for clinical pearls, coding, practice management advice and more

8 Keys for a Successful Ophthalmology Residency

Congratulations on your ophthalmology residency! You are entering a highly rewarding profession and are poised to make an enormous impact both on many individuals and society as a whole. Thirty years ago, I was where you are now; over the last quarter century, I have watched new residents adapt and mature. Here are some of the things I've seen help residents maximize their experience:

- 1. Embrace/own your cluelessness.** You are used to always being at the top and in command of the material you deal with. But that's over now (at least temporarily). Lower your personal expectations to a realistic level. If you can't do a peripheral retinal exam or don't know what monofixation syndrome is, don't beat yourself up. Instead of being discouraged, use this cluelessness to help you take control of your individual learning and devise your own goal-oriented pathway to success.
- 2. Don't take constructive criticism personally.** Your faculty are tremendously dedicated to teaching you — but they would do you a disservice if they did not point out your mistakes. One of their most effective techniques is to learn how you think and process information so they can point out errors and help you learn better and faster. This interaction with faculty should not make you feel inferior; instead, you should be thankful that they are invested in you and respect you enough to work through the kinks.
- 3. Enjoy dealing with different personalities and communication styles.** You will interact with people from different cultural, ethnic, social, religious and moral backgrounds and a wide variety of interests and dislikes. Faculty, staff and patients will expose you to new ideas and communication methods. You will want to adopt some of them yourself and will disagree with others. Have fun with the diversity and do not allow areas of difference to alter your ability to think and act with respect.
- 4. Practice technical skills early.** Due to changes in medical school training, most students experience far fewer hands-on experiences than they did 20 years ago. Often you have to do some remedial work, starting with basics of instrument use, tissue handling and suturing. Get in your wet lab during the first month and begin to practice. Keep it up a minimum of one hour per week through your first year. You will get to do more procedures if you are prepared, and your education in the OR can focus on more advanced concepts sooner if you take these steps.



Dr. Siatkowski (pictured left) with the 2017-2018 residents at Dean McGee Eye Institute in Oklahoma City.

5. Don't limit yourself to one type of reference material. Wonderful as it may be, there is more to the literature than the *Basic and Clinical Science Course*™ (BCSC®) set. Expand your knowledge base and learn the “hows” and “whys” by reading things like articles, textbooks and the Academy's *Focal Points*. The Academy also has great webinars and podcasts on various topics, as do subspecialty societies.

6. Learn to have difficult conversations. Most errors in medicine (as well as most relational difficulties) stem from problems in communication. Medicine is a very verbal profession. You have to talk in order to educate and comfort patients, hand off a complicated patient, resolve your call schedules, teach a medical student or perform high-quality research. Talking will never become defunct. And it's not a natural skill — it takes practice. Use your residency to become as proficient in verbal communication as you will in phacoemulsification.

7. Balance to avoid burnout. Most of you will look back fondly on your residency for the rest of your career, but it can be exhausting, stressful and incredibly difficult at times. It will make you burn out if you don't

have fulfillment in the other parts of your life. Make new friends — especially those out of medicine, maintain ties with your family, enjoy or develop new hobbies, eat well, exercise, go to movies, take vacations and listen to great music. Medicine is a huge part of your life. To do it well, you must regard it as an avocation (a calling) rather than just a vocation (job). But it's only a part of your life story. Make sure you participate in the other chapters.

8. Take the long view. Don't sweat the small things: many issues that upset us are relatively unimportant in the big picture. But you can, and should, cultivate a love for learning throughout your entire career. The pursuit of excellence through lifelong learning means that although we may never fully arrive at our destination, we will never cease the journey.

R. Michael Siatkowski, MD, is the David W. Parke II, MD Endowed Professor, Vice Chair for Academic Affairs and Residency Program Director at Dean McGee Eye Institute in Oklahoma City. He is also the 2018 president of the Program Director's Council of the Association of University Professors of Ophthalmology (AUPO).



From the Editor's Desk

Congratulations on entering your ophthalmology residency and getting one big step closer to your career goals! Ophthalmology is a tremendous field and we young ophthalmologists on the *YO Info* editorial board want to help your transition. We hope our newsletter arms you with some of the tools needed to make that happen.

Throughout the year, we will continue to publish clinical and surgical pearls and help prepare you for the Academy's annual meeting and the Mid-Year Forum, where we get to advocate for patients and the principles of our profession.

The Academy defines you as a young ophthalmologist while you are in training or the first five years of practice thereafter — a status that brings some special benefits and programming. You join a group of over 6,000 young ophthalmologists in the United

States and abroad. We're very happy to add you to this large but select group and want to use our expertise and abilities to prepare you for as much success as we can.

You can find us by our e-newsletter, our website at aao.org/yo and relevant posts (#AAOYO) through the Academy's Twitter account (@aao_ophth) and Facebook page — or even just by googling “YO Info.” Like and follow us so we can keep our conversation going! We want to hear all about new members from our community, and we hope to hear about your own personal accomplishments and the ways we can be more helpful to each of you. Welcome!

James G. Chelnis, MD, is assistant professor in oculoplastics at the New York Eye and Ear Infirmary of Mount Sinai. He is also chair of the Academy's YO Info editorial board.



Learning the Lingo: Ophthalmic Abbreviations

My first encounter with an ophthalmology note was as a third-year medical student. I was taking care of a patient with Stevens-Johnson syndrome, and we had requested an ophthalmology consult. The attending told me to call and talk to the resident: “Don’t even look at the note — it won’t make any sense! You just have to talk to them.”

We have assembled a list of common abbreviations that you are bound to encounter. Soon enough you’ll be the one interpreting for the poor student on a medicine service! In the meantime, we hope you’ll find this to be a helpful resource as you navigate the confusion of the first few months of residency. The longer version of this list is available on aao.org.

AC	Anterior chamber
ACIOL	Anterior chamber intraocular lens
APD, RAPD	(Relative) Afferent pupillary defect
ARMD, AMD	Age-related macular degeneration
BRAO	Branch retinal artery occlusion
BRVO	Branch retinal vein occlusion
BSCL	Bandage soft contact lens
cc	With correction
CE/IOL	Cataract extraction with intraocular lens implant
CF	Counting fingers
CME	Cystoid macular edema

CNV, CNVM	Choroidal neovascularization (neovascular membrane)
CR, CRX	Cycloplegic refraction
CRAO	Central retinal artery occlusion
CRVO	Central retinal vein occlusion
DES	Dry eye syndrome
DME	Diabetic macular edema
DSAEK	Descemet stripping automated endothelial keratoplasty
ERM	Epiretinal membrane
ET	Esotropia
FAX, AFx	Fluid-air exchange
HM	Hand motions

HVF	Humphrey visual field
HZO	Herpes zoster ophthalmicus
IRF	Intraretinal fluid
IRH	Intraretinal hemorrhage
K	Cornea or keratometry
KCS	Keratoconjunctivitis sicca
KP	Keratic precipitate
LP	Light perception
LPI	Laser peripheral iridotomy
MA	Microaneurysm
MGD	Meibomian gland dysfunction
MP	Membrane peeling or macular pucker
MR, MRX	Manifest refraction
NAION	Nonarteritic ischemic optic neuropathy
NLP	No light perception
NPDR	Nonproliferative diabetic retinopathy
NS	Nuclear sclerosis
NVA	Neovascularization of the angle
NVD	Neovascularization of the disc
NVE	Neovascularization elsewhere
NVG	Neovascular glaucoma
NVI	Neovascularization of iris (rubeosis iridis)
OGR	Open globe repair
PACG	Primary angle-closure glaucoma
PAS	Peripheral anterior synechiae
PCIOL	Posterior chamber intraocular lens
PCO	Posterior capsule opacity
PDR	Proliferative diabetic retinopathy
PED	Pigment epithelial detachment
PEE	Punctate epithelial erosion
PH	Pinhole
PK, PKP	Penetrating keratoplasty
POAG	Primary open-angle glaucoma

POHS	Presumed ocular histoplasmosis syndrome
PPV	Pars plana vitrectomy
PRP	Panretinal photocoagulation
PS	Posterior synechiae
PSC	Posterior subcapsular cataract
PVD	Posterior vitreous detachment
PVR	Proliferative vitreoretinopathy
PXG	Pseudoexfoliation glaucoma
RD	Retinal detachment
RGR	Ruptured globe repair
ROP	Retinopathy of prematurity
RP	Retinitis pigmentosa
RPE	Retinal pigment epithelium
RRD	Rhegmatogenous retinal detachment
SB	Scleral buckle
sc	Without correction
SLE	Slit-lamp examination
SLT	Selective laser trabeculoplasty
SO, SiO	Silicone oil
SPK	Superficial punctate keratopathy
SRF	Subretinal fluid
SRH	Subretinal hemorrhage
TA	Tonometry by applanation
TBUT	Tear breakup time
TRD	Tractional retinal detachment
VA	Visual acuity
VF	Visual field
VH	Vitreous hemorrhage
XT	Exotropia

Jason D. Rupp, MD, is a glaucoma and advanced anterior segment surgeon in private practice at Clarus Vision Clinic in Salt Lake City. Dr. Rupp completed his residency and fellowship training at Washington University in St. Louis. He joined the YO Info editorial board in 2016.



To-Do List for the Young Ophthalmologist

The Academy has developed an extensive range of resources to help the young ophthalmologist embark on a successful career. This to-do list will help you along the way.

Make the Most of Membership

Who are the YOs? The young ophthalmologist designation was established so the Academy could focus resources on members at a formative phase of their career — during residency, fellowship and the first five years of practice. Bookmark the YO and residents landing pages — aao.org.org/yo and aao.org/residents.

Enhance Your Clinical Education

- Learn from the #1 peer-reviewed journal in the specialty with your free subscription to the *Ophthalmology*® journal.
- Get the latest industry news and clinical roundups with free access to *EyeNet*® Magazine.
- Test your clinical knowledge — aao.org/self-assessments.
- View surgical videos and images showing basic skills — aao.org/browse-multimedia.
- Read the *Preferred Practice Pattern Guidelines* — aao.org/ppp.
- Stock up on the latest clinical education, patient education and practice management materials at the Academy Store — aao.org/store.

Be an Advocate

- Advocate for your patients and profession — aao.org/advocacy (click “Get Involved”).
- Learn about the issues — aao.org/advocacy/eye-on-advocacy.
- Advocate locally — aao.org/statesociety.
- Go to Washington, D.C., for the Mid-Year Forum and Congressional Advocacy Day in April 2019 — aao.org/myf.
- Contribute to three critical funds — aao.org/advocacy/action/give.

Discover Art + Science at AAO 2018

Get ready for AAO 2018 (Oct. 27-30) and Subspecialty Day (Oct. 26 and 27).

- Download the YO guide to AAO 2018 — aao.org/yo.
- Get the Mobile Meeting Guide — download it starting mid-September at aao.org/mobile.
- Attend Sunday’s YO Program, Oct. 28, 10 a.m. to 2 p.m.
- Visit the YO Lounge and attend one of the daily networking events.
- Attend the Global YO Reception on Sunday, Oct. 28 (tickets are available in the YO Lounge, but run out fast).



Get Involved with the Academy

The Academy is a member organization that depends highly on our physician volunteers. Go to aao.org/yo and click “Engage with the Academy” to find out how you can get involved.

Join the Academy Today!

All physicians engaged in a full-time ophthalmology residency training program or a full-time ophthalmology fellowship training program in the United States or Canada are eligible for complimentary Academy membership for the duration of their training. Additionally, they are eligible to receive complimentary American Academy of Ophthalmic Executives (AAOE) memberships (a \$285 value).

Apply as a member in training at aao.org/member.

For the complete list of Academy and AAOE benefits, go to aao.org/benefits.

Annual Dues*:	Academy	AAOE
Member in training	Free	Free
1st year in practice	\$475	Free
2nd year in practice	\$675	\$285
3rd-5th year in practice	\$975	\$285

* Per calendar year.

Why Advocate

“The practice of medicine is an art, not a trade; a calling, not a business; a calling in which your heart will be exercised equally with your head.” — Sir William Osler

If you remember only one thing from this article, let it be this: you have made a wise choice to pursue a career in ophthalmology, but this decision is not about you. I remind myself of this each and every day. Now that you’ve completed four years of undergraduate studies and four years of medical school, graduated at the top of your class, accumulated hundreds of thousands of dollars in student loans, excelled at all three USMLE step exams and completed tens of thousands of hours of directly supervised training, including hundreds of surgeries and procedures, you have earned something special. You have earned the privilege of serving patients and improving their lives by protecting and improving their vision through medical care and surgery.

As you move through your training, never forget from where you came and how hard you worked to get to this point. Enjoy the process of becoming an eye surgeon each and every day. And know — and this is critical — that becoming a physician and a surgeon is not only about you. It’s also about the people who got you here; it’s about your family, your significant other and your friends, colleagues and mentors. And most importantly, it’s about your patients — each and every single one of them, from the grateful to the challenging.

Each patient trusts you with his or her vision, and each is grateful for your years of quality education and training. Nearly every week, a patient or family member will hug you, sometimes with tears in their eyes, and express gratitude for what your ophthalmology team has done to save, protect and improve their eyesight.

For some patients, the visual improvements appear miraculous. Their lives will be forever changed, and you, as their eye surgeon, will never forget their joy and gratitude.

I can honestly say that I love my job and thoroughly enjoy going to work each day. What makes ophthalmology such a fulfilling profession is the number of ways in which we can serve our patients. This is why we should be so passionate about advocating for our profession.

First and foremost, strive to excel each day in the clinic and operating room. We have been given awesome responsibilities. In turn, we must do our best to prepare for each surgery, procedure and clinic visit.

Secondly, we must work together with our colleagues in ophthalmology and medicine to give our patients the best possible outcomes. There are many ways to advocate for your patients; some of the most effective means involve collaboration with your peers.

Join your state ophthalmology society, attend the Academy’s Mid-Year Forum as part of the Advocacy Ambassador Program or meet with your legislative representative. By working together throughout the years, ophthalmologists have compiled a long list of legislative successes.

Ophthalmology had several major federal and state victories in 2017, including regulatory relief from penalties, halting a misguided Medicare Part B drug demonstration, preserving access to compounded drugs like Avastin and increasing federal funding for vision research.

Advocating at the state level for patient safety and working together with the Academy’s Surgical Scope Fund have never been more critical. Optometrists are spending heavily, building political capital to include surgical privileges in their scope of practice instead of completing the appropriate medical education and clinical training.

In 2018, 8 states have battled optometric scope of practice efforts. Other states are being closely monitored. Participation by every physician is crucial, whether that consists of signing onto a letter to a

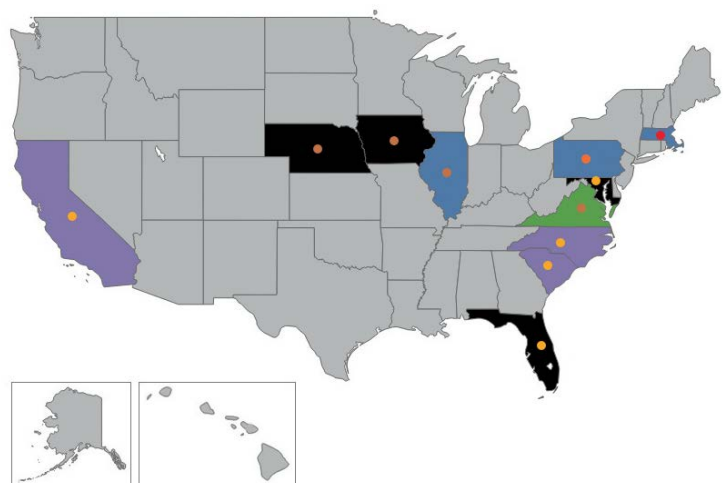
2018 Optometric Surgery Bills

Bill Status

- Active
- Watch
- Dead
- Enacted/surgery provisions removed
- No action


Bill Subject

- Board powers
- Injections
- Lasers/scalpels
- Scalpels/injections




Surgical Scope Fund	OPHTHPAC Fund	State Eye PAC
Fights optometric surgical initiatives at the state level that pose a threat to patient safety and quality of surgical care	Supports candidates for U.S. Congress	Supports candidates for state legislature
Lobbyists, media, public education, grassroots efforts	Campaign contributions and political education	Campaign contributions and political education
Contributions: individual or corporate	Contributions: individual	Contributions: individual or corporate — check state PAC laws
Contributions are 100% confidential	Contributions above \$200 are on the public record	Contributions are on the public record — check state PAC laws


2018 State Victories




Derailed dangerous OD surgical scope expansion initiatives in FL, IA, MD, MS, NE and VA




Preserved ophthalmologists' rights to use innovative telerefraction technology in KY, MN, MO, NJ and RI



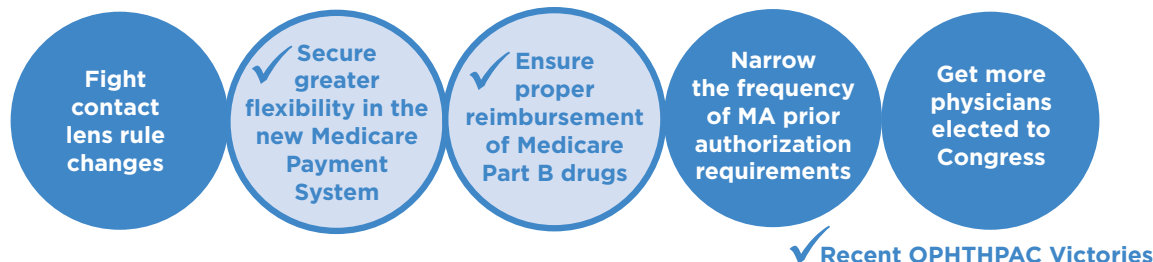
Derailed wasteful OD pediatric refractive exam legislation proposed in CA, MD and MS



Enacted legislation for early prescription eye drop refill in WI



2018 OPHTHPAC Focus



2017 Federal Victories





Obtained regulatory relief from the burdens and penalties associated with the existing legacy Medicare quality programs for 2018



Halted CMS' misguided Medicare Part B drug demonstration



Preserved access to compounded drugs, such as Avastin



Increased federal funding for vision research



Prevented additional cuts to Medicare

2018 Cycle Goals

\$2 million

Strengthens ophthalmology's impact on Capitol Hill

20% member participation

Shows our professional commitment to providing quality eye care

state representative, meeting with a legislator, testifying at a state capital or simply donating every year to three funds; OPHTHPAC, the Surgical Scope Fund and your state's PAC.

We have to work with other physicians, technicians and family members to achieve the best outcomes for our patients; advocating for both our patients and our profession is no different. No one person is an island

and we cannot advocate successfully without working cooperatively. With each person's participation, we will continue to improve eye care throughout the nation.

Darby D. Miller, MD, MPH, is an assistant professor of ophthalmology at Mayo Clinic Florida and a member of the Academy's YO Advocacy Subcommittee.



Cutting Edge: One Corneal Layer at a Time

More than a century has passed since the first successful corneal transplant. Today, corneal transplantation remains an important tool for visual rehabilitation. Here's a review of the most common techniques used for modern keratoplasty.

The major indications for keratoplasty include Fuchs' dystrophy, pseudophakic bullous keratopathy, repeat transplants and keratoconus.

Evolving Techniques

A little over a decade ago, 95 percent of harvested corneal grafts were used for penetrating keratoplasty (PK), the surgical replacement of a full-thickness host cornea. The long-recognized limitations of PK include prolonged visual rehabilitation, unpredictable refractive outcomes and vulnerability to trauma.

With advances in surgical instruments and techniques, three lamellar keratoplasty methods have gained popularity. Each of these selectively removes diseased corneal tissue while preserving healthy tissue: deep anterior lamellar keratoplasty (DALK), Descemet stripping endothelial keratoplasty (DSEK) and Descemet membrane endothelial keratoplasty (DMEK).

These lamellar techniques have several advantages over PK, such as less surgically induced astigmatism (especially for DSEK and DMEK), expedited visual rehabilitation and reduced risk of rejection. Consequently, these techniques have largely replaced PK.

Deep Anterior Lamellar Keratoplasty

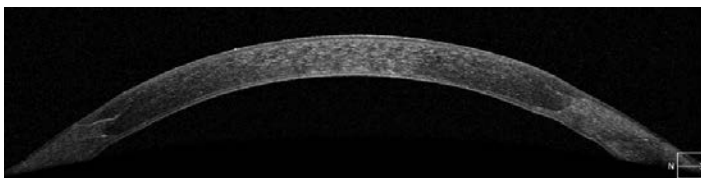


Fig. 1. Anterior segment OCT (AS-OCT) image of femtosecond DALK.

You can use DALK to treat keratoconus, corneal dystrophies and partial-thickness corneal scarring. The goal of DALK is to remove the corneal stroma down to the Descemet membrane in order to create a smooth graft-host interface. You can achieve this by using techniques like the Anwar big-bubble technique and the Melles technique and the use of the femtosecond laser (Fig. 1). However, DALK has only accounted for about 2 percent of total corneal transplants since 2005 — likely because it is more technically demanding and time consuming than PK.

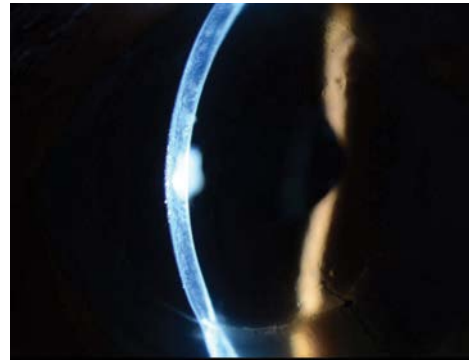


Fig. 2. Slit-lamp photo of postoperative DALK graft (suture remaining at 5:00).

Endothelial Keratoplasty

This method involves selectively replacing the diseased corneal endothelium. EK is the preferred technique in patients with corneal endothelial dysfunction. Since 2012, it has rapidly overtaken the number of PK procedures in the United States as it provides faster and more reliable visual rehabilitation while maintaining the eye's structural integrity.

You have two possible ways to perform EK:

Descemet stripping endothelial keratoplasty

The most widely used technique, DSEK involves stripping the host Descemet membrane and endothelium (descemetorhexis) and inserting a posterior lamellar donor button, which you position against the host with an air bubble to promote adherence. The button is comprised of Descemet membrane, endothelium and a small portion of posterior stroma. A variation of DSEK using thinner donor grafts is called ultra-thin DSEK. (Fig. 3).

Descemet membrane endothelial keratoplasty

DMEK eliminates the donor stromal layer found in DSEK by only using donor Descemet membrane and endothelium. Compared to DSEK, the donor preparation for DMEK is more technically challenging given the graft's thinness and chance of tearing as you peel it off the underlying stroma.

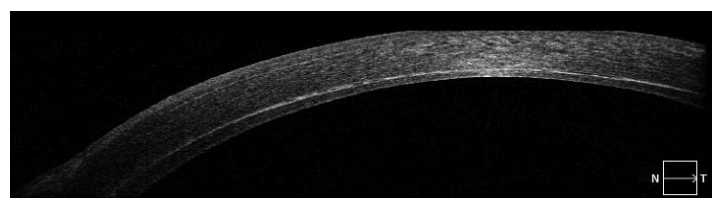


Fig. 3. AS-OCT image of DSEK graft.

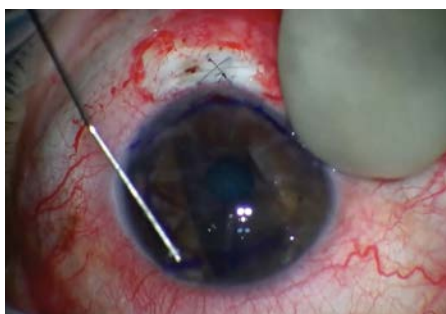


Fig. 4. DMEK scroll.

The technique used to insert and unscroll the DMEK donor tissue requires a “no-touch” technique or a series of maneuvers such as tapping and pressing along wounds to help unfold the donor in the correct orientation (Fig. 4).

For many surgeons, the increased surgical times of DMEK compared to DSEK has made DSEK the procedure of choice for routine EK. In eyes with more significant structural abnormalities, such as aniridia and aphakia, DSEK is generally preferable to DMEK. A DMEK graft can more easily escape into the posterior chamber or be damaged by contact with plastic IOLs or artificial irises. While the use of sulfur hexafluoride (SF_6) gas in DMEK has reduced the incidence of postoperative complications, DMEK still has increased rates of graft detachments and rebubbling compared to DSEK (Fig. 6).

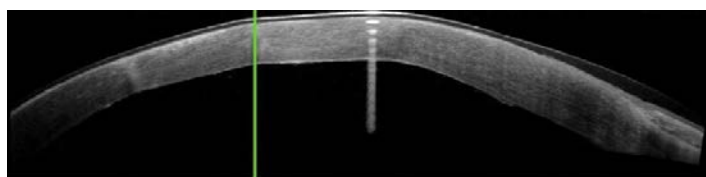


Fig. 5. AS-OCT image of DMEK graft in place.

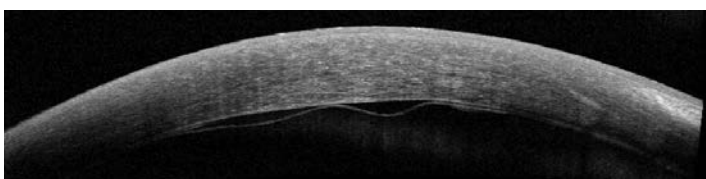


Fig. 6. AS-OCT image of partial DMEK graft detachment.

Despite the surgical challenges associated with DMEK, its use has grown. In fact, the number of DSEK procedures peaked in the United States in 2013 as surgeons began to adopt DMEK. Notably, DMEK can provide even quicker visual rehabilitation, better final visual acuity and reduced risk of immunologic rejection compared to DSEK.

Hopefully, this gives you a quick primer on the newer keratoplasty techniques, so you can start to familiarize yourself with the indications and limitations of the various types of lamellar keratoplasty.

Victoria H. Yom, MD, MSCI, is a cornea specialist at UCLA and has been a member of the YO Info editorial board since 2018.



Residents' Timeline

2018

July	All: Academic year begins. Set up your OKAP (Ophthalmic Knowledge Assessment Program) reading schedule.
	PGY-2 (first-year ophthalmology): Many programs have a buddy-call phase that pairs a PGY-2 with an upper-level resident for the initial several weeks. If you're lucky enough, use this time for maximum learning! You should also start exploring research projects for residency research day, meeting submissions, etc.
	PGY-4 (third-year ophthalmology): Fellowship applications: PGY-4 residents who plan to apply for fellowships should submit applications to SF Match (registration begins June 1, 2018). This does not include those applying for American Society of Ophthalmic Plastic and Reconstructive Surgery (ASOPRS) fellowships.
August	PGY-4: Registration deadline for American Board of Ophthalmology written exam. Get registration information through your residency program or at www.abop.org .
September	PGY-4: Fellowship interviews start.
	All: Prospective residency interviews start. Be involved in the process that selects those to follow in your footsteps!
October	PGY-4: Fellowship interviews continue.
	All: Prospective residency interviews continue.
	PGY-3: Oculoplastic fellowship applications (ASOPRS) open.
November	All: • AAO 2018, Oct. 27-30 in Chicago. The largest single meeting on the ophthalmology calendar offers many courses and opportunities for young ophthalmologists. Subspecialty Day occurs immediately beforehand and requires additional registration and fees. • Prospective residency interview continues.
	PGY-4: Fellowship interviews continue.



December

All: Association for Research in Vision and Ophthalmology (ARVO) poster/paper submissions deadline. Submission generally requires study design information, but not final results.

PGY-4: SF Match fellowship rank lists due, and SF Match fellowship results released.

All: Prospective residency interviews continue.

2019**January**

All: OKAP studying kicks into higher gear.

PGY-3: ASOPRS fellowship interviews start.

All: Residency match occurs.

February

All: OKAPs season really heats up.

PGY-3: ASOPRS fellowship interviews continue.

March

All: OKAP exam.

PGY-3: ASOPRS fellowship interviews continue.

April

PGY-3: ASOPRS rank lists due, and ASOPRS match occurs.

All: • Submit abstracts for papers/posters for AAO 2019 in San Francisco.

• Academy's Mid-Year Forum, April 18-21 in Washington, D.C.

May

PGY-3: Start preparation for SF Match fellowship applications (draft personal statement and CV, identify letters of support, etc.).

All: ARVO 2019 annual meeting, April 28 to May 2 in Vancouver.

June

PGY-4: Local residency research day presentations/recognition of graduating residents.

PGY-3: Continue preparation for the fellowship match (except for ASOPRS fellowships).

Essentials for Top 10 Eye Emergencies

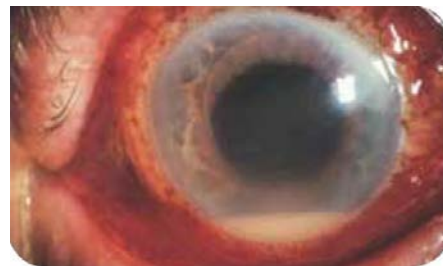
1. Ischemic Optic Neuropathy



SXS: Painless loss of vision and disc pallor.

Pro tip: Get an ESR/CRP (erythrocyte sedimentation rate/C-reactive protein) to rule out giant-cell arteritis.

2. Endophthalmitis



SXS: History of trauma or surgery. Pain, vision loss and hypopyon.

Pro tip: Arrange for intravitreal antibiotics. Time is vision, so work quickly!

3. Carotid-Cavernous Fistula



SXS: History of blunt head trauma, arterIALIZATION of conjunctival vessels and proptosis.

Pro tip: Get a CT scan with contrast (shows a dilated superior ophthalmic vein).



Jiaxi Ding, MD, is a glaucoma specialist and cataract surgeon who practices in Greensboro, N.C. She completed her glaucoma fellowship at the University of Iowa and her residency at SUNY Buffalo. She has been a member of the YO Info editorial board since 2016.



4. Macula-on Retinal Detachment



SXS: History of flashes, floaters and curtains.

Pro tip: Dilate both eyes. Rule out tear or detachment in the fellow eye.

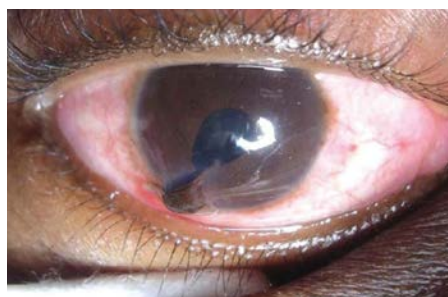
5. Bacterial Keratitis



SXS: Severe eye pain and vision loss.

Pro tip: Ask about contact lenses. Do a corneal sensation test. Get cultures.

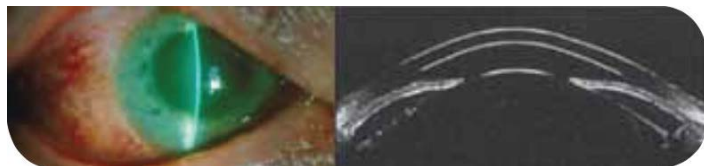
6. Open Globe



SXS: Trauma (projectiles), vision loss and pain.

Pro tip: Get a CT scan to rule out intraocular foreign body. Get the patient ready for emergent surgery.

7. Angle-Closure Glaucoma



SXS: Painful red eye, nausea and vomiting.

Pro tip: Dynamic gonioscopy may open the angle.

Christopher Nathaniel Roybal, MD, PhD, is in practice at Eye Associates of New Mexico in Albuquerque and joined the YO Info editorial board in 2017. He completed his vitreo-retinal fellowship training at the University of Iowa.



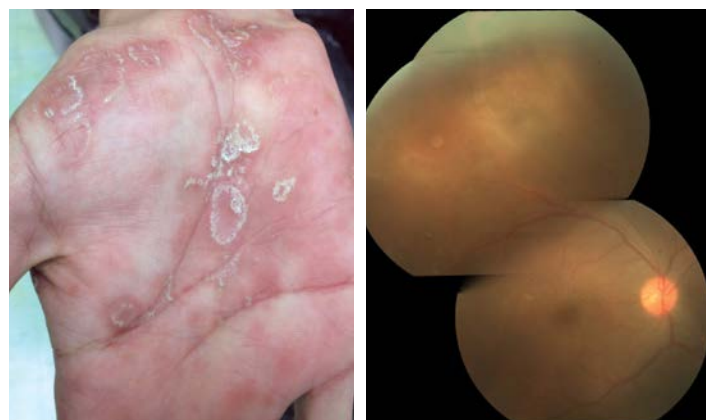
8. Retrobulbar Hemorrhage



SXS: Orbital or postoperative trauma. Severe pain, loss of vision and proptosis.

Pro tip: Urgent canthotomy/canthalysis. Practice in your wet lab.

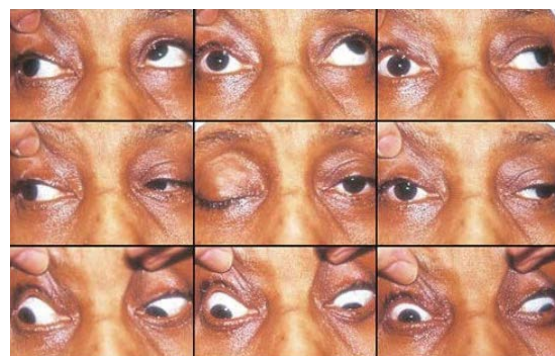
9. Ocular Syphilis



SXS: Red eye, photophobia, skin rash and vision loss.

Pro tip: Never forget about syphilis. Remember HIV testing.

10. Acute Third Nerve Palsy



SXS: Ptosis, dilated pupil and an eye that is down and out.

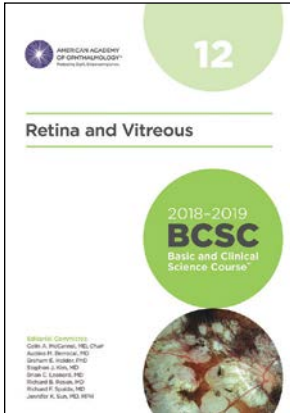
Pro tip: Get a CTA or MRA to

evaluate for aneurysm of the posterior communicating artery.

OKAP Resources for Incoming Residents

The Ophthalmic Knowledge Assessment Program (OKAP®) is a 260-question, multiple-choice test administered to ophthalmology residents to measure basic science and clinical knowledge. The in-training exam helps you develop good study habits and identify areas of weakness in your knowledge. It also serves as a gauge for the written qualifying exam (boards) that you take once you've graduated. Use these print and online resources to prepare for success on the OKAP.

1. Basic and Clinical Science Course™ (BCSC®)



Published by the Academy, this series serves as the basis of questions that appear on the exam. Set a schedule and stick to it; reading all 13 volumes will take you a full year. Find reading schedules designed to cover the entire BCSC® series from July to February in the YO Info section of aao.org (www.aao.org/young-ophthalmologists/yo-info/article/first-year-resident-reading-guide).

Leading up to the exam, it can also be helpful to review the pictures, italicized terms, illustrations and pathology slides. Finally, use the questions at the end of each book to gauge your understanding of the material. Get the series in print or e-book format.

2. OphthoQuestions.com

This online question bank offers thousands of quality test questions spanning all subspecialties. Its editors add to the database of questions often and actively manage the site and respond to specific issues raised about questions. You can monitor your performance by subspecialty and compare yourself with your peers. Use the site's tutor mode or sit for a full-length mock exam — or anything in between.

Editor's note: In June 2018, the Academy launched the BCSC® Self-Assessment Program, designed for residents in collaboration with residency program directors to help you effectively prepare for the OKAP. Content is written and approved by experienced question writers, and each answer provides a full discussion and excerpts from the BCSC®. Because each question is tied directly to the BCSC® outline, the program keeps you focused on areas of further study.

3. The ONE Network

The Academy's Ophthalmic News and Education (ONE®) Network has a vast wealth of information, including videos and cases. Use the self-assessment quizzes to augment your OKAP preparation. The more than 400 "Diagnose This" quizzes also offer a quick and engaging challenge and provide discussions.

4. Review of Ophthalmology

William Trattler, MD, Peter K. Kaiser, MD, and Neil Friedman, MD
This review book uses a bullet-point format that emphasizes the highest-yield information. It is well organized and packed with information, illustrations and review questions. To make the most of any review book,

add your own notes and annotations as you read and do practice questions throughout the year.

5. Ophthalmology Review Manual

Kenneth C. Chern, MD, and Michael A. Saidel, MD

The information presented may be slightly less detailed than other resources, but it provides a nice review.

6. Review Questions in Ophthalmology: A Question and Answer Book

Kenneth C. Chern, MD, and Kenneth W. Wright, MD

This question book provides a nice complement to the *Ophthalmology Review Manual*. The questions are less rigorous than those in some other resources, but they still serve as another high-quality resource.

7. The Massachusetts Eye and Ear Infirmary Review Manual for Ophthalmology

Veeral S. Sheth, MD, Marcus M. Marcet, MD, Paulpoj Chirananand, MD, Harit K. Bhatt, MD, Jeffrey C. Lamkin, MD, and Rama D. Jager, MD, MBA

This question book offers a high-yield review section that uses mnemonics to help with retention. It covers all ophthalmic subspecialties and includes many high-quality pictures and photos, plus explanations of answers.

8. Last-Minute Optics: A Concise Review of Optics, Refraction, and Contact Lenses

David G. Hunter, MD, PhD, and Constance E. West, MD

This short book serves as a good resource during the last few weeks before the OKAP — especially if you consider optics a weakness. It covers the gamut of clinical and non-clinical optics. Dr. Hunter also has a four-part lecture series you can view on iTunes.

9. Quizlet

Quizlet is a mobile and web-based study application that lets you create your own flashcards to use as study tools. What makes Quizlet unique is that flashcard sets are public. Do a quick search for "ophthalmology" to find hundreds of flashcards that other trainees have created. Available for iPhone and Android, this app is great for quickly quizzing yourself on the go. Remember, though, that this resource is publically sourced and hasn't been checked for accuracy.

Andrea A. Tooley, MD, is a fourth-year resident at the Mayo Clinic in Rochester, Minn. This July, Dr. Tooley will start an oculoplastics fellowship at Manhattan Eye and Ear Hospital/Institute of Reconstructive Plastic Surgery-New York University Medical Center in New York City. She joined the YO Info editorial board this year.



3 Procedures for Eye-emergencies

When on call, response time can be critical to saving sight. Here are three procedures that, under the right circumstances, can help you respond quickly. The first two address high intraocular pressure (IOP), the third eyelid trauma.

1. Lateral Canthotomy and Cantholysis

In the case of high IOP after orbital trauma, this can be an eye-saving procedure. Here's how to do it:

1. If time allows and the patient is conscious, use lidocaine for local anesthesia. A 25-gauge needle on a 3-cc syringe should suffice.
Note: Especially if anesthesia is not delivered, it may be helpful to use a straight hemostat in the lateral fornix (one end on the skin and one on the conjunctival side of the eyelid). This can help with hemostasis.
2. Use a straight Stevens scissor or other similar type to incise the eyelid. This is the canthotomy!
3. Next, sever the canthal tendon. This is by far the most important step! With the lateral lid distracted from the face, place the scissors perpendicular and posterior to the lid (parallel with the cheek surface). Between the tynes, strum for the inferior crus of the tendon.
4. Cut! You may have to make more than one cut. If you control the lateral edge of the lid, you will feel the edge of the eyelid come loose.
5. If needed, apply pressure for three minutes for hemostasis. Make sure you check the IOP to confirm your handiwork.

2. Anterior Chamber Tap

When heightened IOP results from an intraocular process, you can instead use a tap.

1. Make sure the patient is comfortable and not going to accidentally move. Without a slit lamp, lie them supine on a firm bed. Do NOT use a pillow.
2. Numb the ocular surface and consider placing a lid speculum if you have one handy.
3. Place a 30-gauge needle on an open 1-cc syringe. This acts as a handle for your needle. Position your hand with the wrist supported and the needle bevel up. Use your non-procedural hand to hold the head steady and the eyelids open if a speculum is not available.
4. Slide the needle into the cornea slow and steady, just anterior to the lateral limbus. Once you enter the anterior chamber, you will lose resistance against the needle.
5. Withdraw the needle. You may see aqueous humor in the needle hub.
6. Consider a betadine drop. Make sure to confirm the reduced IOP!

3. Marginal Eyelid Laceration Repair

Eyelid trauma can be delicate to examine and repair. Remember to rule out canalicular involvement, absence of foreign body, globe rupture and violation of the septum (entry into the orbit). Any of these may necessitate the use of imaging, either by B scan, CT or otherwise. Now to the eyelid margin:

1. Flip the eyelid and examine defects for the above reasons and to examine the extent of tarsal plate damage. As a rule, you need to repair each rupture of the tarsus with partial-thickness sutures that do not extend posteriorly to the conjunctival side of the eyelid. A spatulated needle is preferable.
2. Suture the wound:

If treating children and patients with developmental limitations, consider a vertical mattress, but note that this is not a beginner's technique:

- a) Use a 7-0 vicryl suture and pass from inside the wound, through the tarsus, to the lid margin.
- b) Start a new bite further from the wound back into the wound passing through the tarsus again.
- c) Do this in reverse on the opposing side of the wound (far throw to a short throw, back into the wound via the tarsus).
- d) Tie a 2-1-1 knot in the wound. This creates a vertical mattress (good wound eversion) with a knot in the wound that you do not need to remove in the future.
- e) Close the skin with absorbable interrupted sutures.

For an easier technique:

- a) Start with placing a 6-0 interrupted silk suture through the lash line and another through the gray line. Do not tie them yet; one throw can help you maintain the lid orientation.
- b) Next, place a 5-0 vicryl spatulated needle partial thickness through the tarsus, away from the margin.
- c) Tie this in a 2-1-1 knot. The upper lid may require an additional tarsal throw, but typically the lower lid does not.
- d) Now, close the skin with interrupted throws. Smaller wounds can be closed with one or two sutures.
- e) Once you've tied the marginal throws, tie the skin sutures over them to hold them away from the ocular surface until you remove them.

James G. Chelnis, MD



How to Conquer the Pediatric Eye Exam

When I explain to parents, residents and colleagues why I chose pediatric ophthalmology as a subspecialty, I always include in my reasons, “I get to play all day long.” I use toys, funny faces, weird noises, beat boxing, singing and play to get the examination I need from children.

Conquering the pediatric exam takes several keys: be observant, be quick, be flexible, be fun. In addition, know the goal of your examination. What is the chief complaint? What is the most important part of your entire examination?

Consider starting with that last question, since children have short attention spans. For difficult patients, work from least confrontational (corneal light reflex and motility) to most “in your face” (alternating cover test, monocular visual acuity).

In the era of cameras in every parent’s pocket, don’t hesitate to ask the parents for examples of what they are seeing at home.

Here’s how to conquer each part of your pediatric examination.

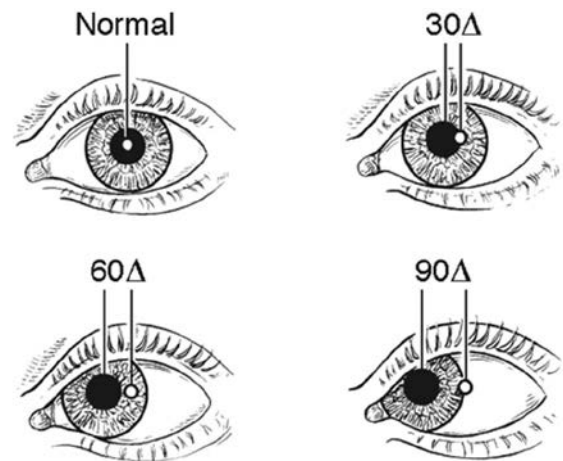
Motility and alignment:

You can use *anything* to assess motility (extraocular muscle function). This includes lighted toys, your phone tuned to YouTube (*Little Baby Bum*), Netflix (*Moana*) or your face (best for infants). In general, you get one look per toy. Have a pocket or drawer filled with fun, visually interesting toys.



Dr. Silverstein

When measuring alignment, kids can be scared of occluders. As an alternate, your thumb or hand can serve as an excellent occluder. You can also use a Hirschberg light reflex (cornea light reflex with a Finoff light) for children who won’t let you get near them. Light reflex outside the pupil = esotropia; inside pupil = exotropia.



Visual acuity:

Fix/follow only provides a rudimentary idea of a patient’s vision. Do not use a toy that makes any noise, as you may unintentionally test hearing instead of vision.

When testing subjective acuity, do not be afraid to patch the contralateral eye. Children are excellent peekers. Do not trust them! I often test vision with Allen (pictures), HOTV eye chart (using crowding bars if testing with single letters as you will overestimate vision without them) or Snellen chart.

If the child cannot participate in subjective acuity, a central/steady/maintained (CSM) approach will give you excellent information about fixation preferences and presence of amblyopia.

- Central (monocular test): review central or eccentric fixation.
- Steady (monocular test): look for absence or presence of nystagmus or roving eye movements.
- Maintained (binocular test): see if the child can hold fixation with the eye. For children with eye misalignment, *can the patient maintain fixation with the viewing eye when you uncover the previously covered eye?*

If all else fails, equal versus unequal objection to occlusion (for example, crying when one eye is patched but not the other) can give excellent information.

Pupils:

The retinoscope provides an excellent way to check for anisocoria from a distance. Place the retinoscope light bar at 180 degrees, sit far enough from the child to have the light hover over both pupils and peer into the retinoscope. This is good for dim and light settings, as well as dark irises.

Confrontational visual fields:

Use the two-toy method: have a child fix on a toy in front of them. Slowly bring a second toy into the child's visual field. If they then look toward the new toy (either with their entire head or their eyes), then they can see in that field!

Globe examination:

The red reflex test with a retinoscope can give you excellent information about the state of a child's cornea, iris shape and lens without having the child sit at a slit lamp. Do this on every child and you will pick up small opacities you may otherwise have missed.

Fundus:

Good luck. Distraction is key. Use your phone again for videos. Ask the child what animals they think you'll find in their eyes. Make sure you get a good look at the macula and optic nerves. The 28 diopter lens allows you get see more than a 20 diopter lens (70° vs 60°), but you sacrifice zoom (2.27x vs 3.13x).

Refraction:

Cycloplegic retinoscopy is key for every child's examination. Watch this excellent tutorial to understand how retinoscopy works (<https://timroot.com/retinoscopy-workshop-video/>). Expert tips:

1. If your reflex already appears neutralized, but blunted, without any lenses, the child likely has a high refractive error. Try a -10.00 and a +10.00 and see what happens.
2. It's much easier to see "with" motion of the retinoscope reflex than "against" motion. I prefer to work my way up from less plus (or more minus) to the neutralized reflex.
3. Know your working distance. Don't forget to subtract 1/working distance (in meters) from the lens you used to neutralize the reflex. Measure your working distance on day 1.

Bottom line: Kids are fun. Have fun with them and trick them into giving you the crucial information you need to help them achieve a lifetime of good vision.

Evan Silverstein, MD, is an assistant professor of ophthalmology and associate residency program director at Virginia Commonwealth University in Richmond, Va. Dr. Silverstein completed his residency at Vanderbilt University and a pediatric and adult strabismus fellowship at Duke University. He joined the YO Info editorial board in 2017.



Ophthalmic Suturing 101

Even in an age of sutureless cataract surgery, knowing how to suture is still an essential skill that every eye surgeon should master. Part of that skill set involves deciding which suture to use. In addition to the basic options, this guide will also discuss some basic suturing techniques that will help you develop your skills regardless of the tissue you're working with. Take advantage of wet lab resources; your suturing will get better with practice, and the better you are, the more opportunities you'll get in the OR.

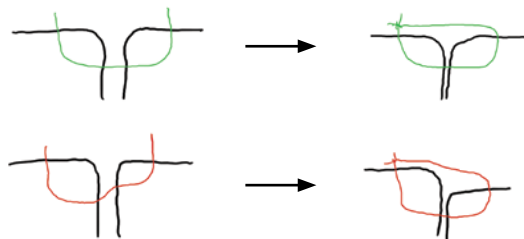


Figure 1. Make sure the needle exits and enters the tissue at the same depth on both sides of the incision/laceration (green suture). Otherwise, you'll end up with a surface that is not aligned (red suture). This is particularly important with deep skin closures and when suturing cornea during penetrating keratoplasties.

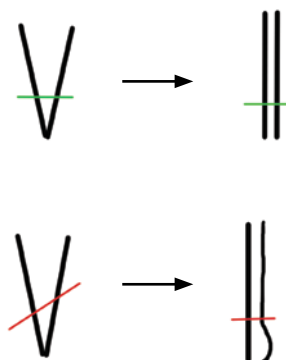


Figure 2. Make sure that the suture engages the tissue at an equal distance from the end of the incision/laceration. When done properly, the entire length of the wound will line up (green suture). If it is not aligned (red suture), you will end up with a wound gape.

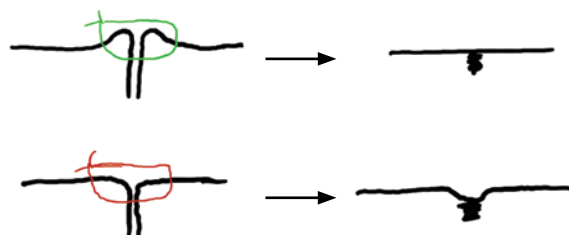


Figure 3. Scars contract as they heal. As such, the skin incision/laceration will heal flatter if the tissue edge is initially everted (green suture). If it is flat or inverted initially (red suture), then the final scarring will lead to further inversion and a possible divot in the tissue.



Ophthalmic Suturing 101

Table 1. Suture Type





Brand Name	Material	Duration of Wound Support	Common Uses
<i>Absorbable</i>			
Fast Gut	Beef serosa or sheep submucosa	7 days	Superficial skin
Plain Gut	Beef serosa or sheep submucosa	7-10 days	Superficial skin
Chromic Gut	Beef serosa or sheep submucosa	21 days	Subcutaneous tissue
Vicryl	Polygalactin 910	21 days	Subcutaneous tissue, muscle reattachment, conjunctiva, cornea
<i>Non-Absorbable</i>			
Ethilon	Nylon	NA	Cornea, sclera, skin
Prolene	Polypropylene	NA	Superficial skin
	Silk	NA	Traction sutures, lid margin

Table 2. Suture Size

Size	Common Uses
10-0	Cornea
9-0	Limbus, conjunctiva
8-0	Sclera
7-0	Muscle reattachment, conjunctiva, eyelid skin
6-0	Eyelid skin, traction sutures, muscle surgery
5-0	Brow, facial skin, levator advancement

When you're on call, you may find that not every location has the sutures you need. Make it a point to know what is available and if they're not, either ask for them to be ordered or bring your own. The last thing you want to be doing on call is looking for equipment

Table 3. Needle Types

Name	Symbol	Description	Common Uses
Tapered		Cuts at the point and leaves behind the smallest hole surrounding the suture	Conjunctiva when you need a water-tight seal (e.g., trabeculectomy closure)
Cutting		Cuts on the inside curve	Some plastics uses; overall not common
Reverse Cutting		Cuts on the outside curve	Plastics, skin
Spatulated		Cuts on the lateral edges of the needle rather than the curve	Most common type of needle used for suturing sclera and tarsus

Jason D. Rupp, MD



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