



At Pacific Vision Institute, we are committed to advancing co-managed care. Through hands-on learning and discussions, PVI surgeons and co-managed care representatives are ensuring transfer of the most up-to-date knowledge. From Laser Vision Correction to ICL, RLE, and cataract surgery, we are available to promptly answer any question, provide guidance, support learning, and elevate the skill set while delivering seamless and exceptional experience to each patient.

## CO-MANAGEMENT TODAY: Clinical Pearls for Delivering the Best in Contemporary Eye Care to Refractive and Cataract Surgery Patients in 2022

Eye care is experiencing a surge in ocular surgery procedures and it is likely to continue. There are many reasons for this surge and they include: aging population, pandemic-associated factors, such as mask-related glass fogging, increasing myopic population, technology advances, patients' increasing desire for a quick solution to their ocular problem, and increasing physician comfort with early surgical intervention.

According to the recent article in Ocular Surgery News, the top 5 procedures currently performed in the US are: intravitreal injections (6+ million per year in the US), cataract surgery and IOL implantation/refractive cataract surgery (4+ million procedures/year), refractive corneal surgery (1+ million/year), YAG laser capsulotomy (1+ million/year), and glaucoma surgery (500,000/year). Co-management is a crucial component of optimal patient care, with a significant positive impact on both patients and doctors. The question is no longer "is this patient a candidate?" but instead "What is the patient a candidate for?"

# Clinical News & Views

## Pearls for Co-managing Laser Vision Correction Patient

Three most significant recent advances in Laser Vision Correction have been (1) Genetic testing to rule out predisposition to keratoconus; (2) Artificial intelligence to integrate different diagnostic parameters and determine what procedure is best for the patient; and (3) Eysivis to improve the quality of tear film in patients with significant meibomian gland dysfunction. At Pacific Vision Institute, we have incorporated all three advances into our refractive surgery protocols.

### Identifying keratoconus risk with AvaGen genetic testing



The test examines 75 related genes and more than 2,000 variants of those genes to develop a genetic score. AvaGen is useful in patients who have borderline topography, tomography, and epithelial thickness mapping with widefield OCT. When these patients come in for LASIK, the test is helpful in determining if LASIK, PRK, or no corneal surgery is best for them. If corneal maps are borderline but the patient does not carry the genetic risk for keratoconus, there is a piece of mind in proceeding with laser vision correction. On the other hand, for patients who do have greater risk, the test gives us the ability to monitor them closely. The test requires a cheek swab, which is then sent to Avellino's high-

complexity CLIA-certified lab for analysis. From there, we receive the results in approximately 10 days in a report through a HIPPA-secured patient portal. Genetic counseling is provided alongside the test results to give us a clear understanding of the results and their effect on patient management. Patients with mild corneal irregularities and/or somewhat thin corneas whose genetic test is normal, may be good candidates for LASIK or PRK. If the genetic test suggests predisposition to keratoconus, we avoid corneal surgery and, instead, follow patient closely to possibly intervene early with corneal cross-linking, if necessary. Early intervention with crosslinking, may preserve a relatively normal corneal shape that may respond well to subsequent PRK. Whereas patient who come in with a diagnosis of keratoconus already, have more advanced corneal distortion which is rarely amenable to PRK even after Crosslinking. Adding AvaGen genetic testing to the pre-LASIK screening protocol, we can help guide the patient toward choices that are best for their long-term outcome, not just giving them vision for one or two years, but for the rest of their lives without running into complications. We are also able to make decisions as to whether we should go through corneal cross-linking sooner rather than later, preserving vision, and potentially avoiding invasive surgery down the line.

### Artificial intelligence (AI) in refractive surgery screening

With the increase demand for optimal visual and refractive outcome and minimal risk of postoperative complications, there has been an increase amount of AI-related research in the field of refractive surgery, particularly preoperative screening for risk of ectasia following corneal laser refractive surgery, guiding the selection of the type of refractive surgery. AI is designed to mimic human behaviour and make human-like decisions by programming a computer. Early AI systems were rule-based models, where conditions (e.g. if "A" then "B") were pre-defined by human experts based on their experience for a particular task. These rule-based methods normally had limited application scenarios and were often not robust to handle different situations in real-world environments. More recently, as a subset of AI, machine learning (ML) methods become more popular due to their superior performance in comparison to rule-based systems. ML algorithms build a model (e.g. logistic regression, artificial neural network, decision trees) using sample training data, in order to make predictions or decisions without being explicitly programmed. At Pacific Vision Institute, we use a multi-modal approach to screening refractive surgery which includes, Belin-Ambrosio enhanced ectasia total derivation (BAD-D) in detecting keratectasia, Corneal Hysteresis and Corneal Resistance Factor, ETM indices from Widefield OCT to optimize sensitivity and specificity in accurate patient screening and procedure recommendation.



### Short-term pre-LASIK/PRK treatment with Eysuvis



Loteprednol etabonate ophthalmic suspension 0.25% (Eysuvis, Kala Pharmaceuticals) is a safe and effective steroid drop FDA-approved for short-term use in patients with meibomian gland dysfunction. We have found it to be very helpful in improving tear film in patients who have significant MGD. We typically treat the patients QID for two weeks, measuring their IOP before and after. LASIK/PRK can be performed short after stopping Eysuvis, providing no change in Rx.

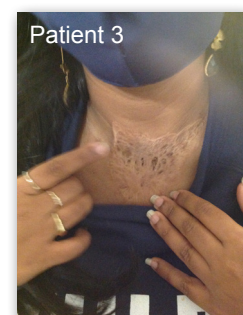
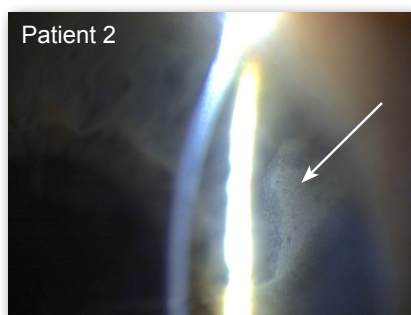
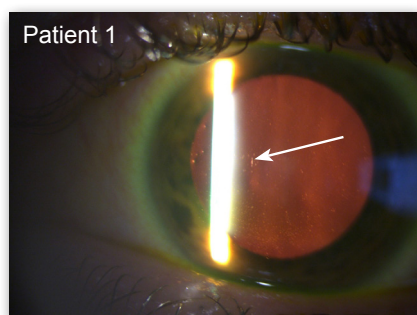


# Clinical News & Views

## To SMILE or not to SMILE?

Four year results in a group of patients treated with topography-guided LASIK in one eye and SMILE in the contralateral eye showed that LASIK provides superior visual outcomes. This is likely due to the eye tracking, cyclorotation compensation, active centration control, and the ability to correct not just sphere and cylinder but also higher order aberrations with LASIK technology. A new study currently in press in the Journal of Cataract and Refractive Surgery used Pentacam to look at radial and angular displacement of the center ablation with respect to the corneal vertex and found a significant difference between LASIK and SMILE eyes. The SMILE eyes had three times deviation from the vertex compared with LASIK eyes. Such deviation can potentially cause unpredictable refractive outcome and visual distortion. SMILE may have some potential advantages in some patients, but still a lot of work needs to be done in order to reach the level that excimer lasers have reached today.

## What procedure is best?



**Patient 1** - A moderate myope was referred for a refractive surgery consultation. Corneal microcysts (arrows) were observed on retroillumination. Microcysts are, most likely, due to Epithelial Basement Membrane Dystrophy (EBMD). PRK is best for patients with EBMD. Wavefront-optimized rather than topography-guided PRK is best, since corneal irregularity is likely due to epithelial, rather than stromal irregularity and will be removed once the epithelium is removed. Topography-guided PRK is actually contraindicated in these patients and will induce aberrations rather than remove them. A crucial part of pre-surgical evaluation involves determining whether topographic irregularity is due to epithelium or stroma. If due to stroma, it can be treated with topography-guided ablation.

**Patient 2** - This very interesting patient was referred for evaluation of subepithelial corneal opacity associated with some decrease in vision. A diagnosis of possible Lisch Corneal Dystrophy was made based on slit lamp appearance. It appeared to have originated from the limbus. Patient was referred to ocular oncologist for a biopsy and to rule out a neoplastic process. Once ruled out, patient's refractive error can be treated with PRK with Mitomycin C (Wessel M, et al. Treatment of lisch corneal dystrophy with photorefractive keratectomy with Mitomycin C. Cornea 2011 Apr;30(4):481-5)

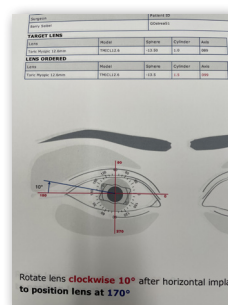
**Patient 3** - A highly motivated patient with moderate myopic astigmatism was referred for refractive surgery. Her prescription and corneal maps were good for LASIK. However, she was a severe keloid former. A small incision surgery on her neck resulted in the extensive keloid scar shown. Typically, keloids are contraindication for PRK but not for LASIK. But in this patient, the keloid formation was so extensive, that LASIK may also be a relative contra-indication.

## Pearls for Co-managing Implantable Collamer Lens (ICL) Patient

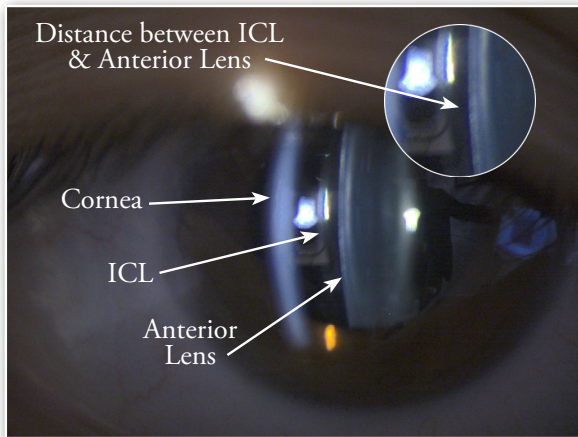
### ICL FACTS

- Over 1 million procedures performed globally
- FDA-approved for patients ages 21-45 y.o.
- Myopia -3.0 to -20.00
- Astigmatism 1D to 4D
- Anterior chamber depth >3.0mm

According to the American Refractive Surgery Council, between 15-20% of people who consider LASIK are ineligible for either LASIK or PRK due to thin or irregular corneas, myopia exceeding approved range Pearls for Co-managing Laser Vision Correction Patient, and other ocular conditions. At Pacific Vision Institute, we found this statistic accurately reflecting our own experience in screening refractive surgery candidates. For many of these patients, ICL is an excellent choice.



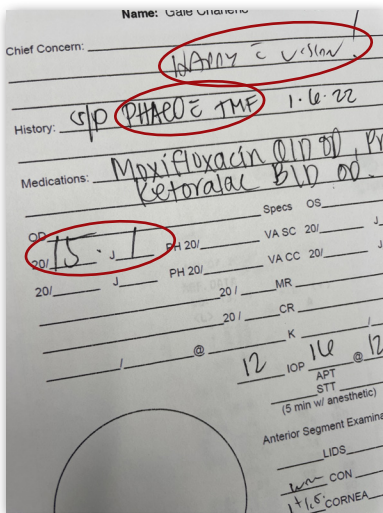
# Clinical News & Views



## ICL POSTOP CARE TIPS FOR CO-MANAGING OD

- Patient is seen at the co-managing doctor's office at 3, 6, and 12 months postop, then annually
- Distance between ICL and anterior lens capsule, called vault, is monitored at every visit. It needs to be between 0.75 and 1.5 x central corneal thickness
- OP is checked at every visit
- Dilated exam is performed annually to look at crystalline lens
- Patients with narrow vault, increased IOP, and/or lenticular opacity need to be referred back to PVI surgeon for evaluation
- Visually significant residual refractive error may be treated with laser vision correction. At Pacific Vision Institute, patient's ICL procedure fee includes laser vision correction enhancements free of charge.
- Patients with ICL are typically more tolerant of mild residual refractive error than laser vision correction patients

## Pearls for Co-managing Refractive Lens Exchange (RLE) Patient



### RLE FACTS

- Excellent option for patients in multifocal contact lenses who are interested in refractive surgery
- Best for patients who are 50+ years old
- Requires thorough assessment of patient's visual needs and ocular health during consultative evaluation to match the right IOL with the right patient
- Can treat myopia, hyperopia, and astigmatism
- Excellent vision can be achieved with careful patient selection, IOL choice, and meticulous surgery

### RLE POSTOP CARE TIPS FOR CO-MANAGING OD

- Postoperative care is similar to cataract surgery
- Patient is seen at 1, 3, 6, and 12 months postop, then annually
- Monitor for posterior capsular opacity and refer back to surgeon after 3 month postop visit for YAG laser capsulotomy
- Visually significant residual refractive error may be treated with laser vision correction. At Pacific Vision Institute, patient's RLE procedure fee includes laser vision correction enhancements free of charge.

## Do's and Don'ts for Co-managing Cataract Patient

### Do's

- Do document patient's subjective symptoms, including any limitation in activities, worsening of vision, and/or dysphotopsia. Such documentation is important, especially if Snellen visual acuity is not dramatically reduced.
- Do test visual acuity with glare
- Do assess your patient's level of interest in reducing dependence on glasses
- Do discuss different categories of intra-ocular lenses (monofocal, EDOF, multifocal, accommodating, toric and what kind of vision patients can typically achieve with each
- Do obtain surgical outcomes data from the co-managing surgeon

### Don'ts

- Don't wait until cataract is "bad enough". Patients today expect to function very well into their 80's and 90's. Clear vision is essential for patients to enjoy activities and reduce incidence of falls. Additionally, surgery on mature cataracts is more complex with higher risk of complications
- Don't feel compelled to recommend a specific brand of IOL.



# Clinical News & Views

## The first presbyopia-correcting eye drop, Vuity, is approved. Now what?



In a recent opinion piece in Ocular Surgery News, Dr. John Hovanesian (who was an invited guest faculty to the PVI Annual CE Symposium), makes four predictions about presbyopia drops.

First, he says patients may be more interested than doctors are. Although, he says, wise practitioners may embrace the topical therapy in addition to optical and surgical options and become recognized as a “presbyopia center of excellence” known for all modalities of treatment.

Second, Dr. Hovanesian predicts patients will not tolerate unpleasant side effects. These patients typically want to simplify their life by not wearing glasses and, if they experience any symptoms distracting them from enjoying life, such as headache or loss of distance vision, they will not tolerate them.

Third, the duration of the effect will be highly important. Vuity, for example, lasts up to 6 hours after installation. Others, still in trials, may last longer or shorter.

There is probably room for agents with varying duration of action. For example, some patients may want to go out to dinner but wouldn't want their vision impaired while driving home.

And, finally, Dr. Hovanesian predicts that formulation will be as important as pharmacology. Similar to Cyclosporine formulations, the same active ingredient for presbyopia mixed in different formulations may have better or worse tolerability and duration action.

### Drops may benefit both phakic and pseudophakic patients

According to Dr. Cathleen McCabe writing in Ocular Surgery News, there is definitely excitement about what these drops could mean for middle-aged presbyopes with healthy eyes and normal corneas. But, she also emphasizes at least three key subsets of other types of patients that could also benefit from pupil-modulating drops. The first subset are patients with complex corneas. Small pupillary aperture induced by presbyopia-correcting eye drops has the potential to both to reduce spectacle dependence and to improve distance image quality by reducing aberrations. Post-RK patients, those with keratoconus, irregularities due to corneal dystrophies (i.e. Fuchs' corneal dystrophy, epithelial basement membrane dystrophy) and corneal scars may do better with a smaller pupil. The second subset are pseudophakic patients whose spectacle independence goals are not met. Perhaps these patients had a low add multifocal or an extended depth of focus (EDOF) IOL that was not designed to provide near vision. These patients can be offered a non-invasive way to enhance their near vision. And the third subset of patients who can benefit from presbyopia-correcting eye drops are bifocal wearers who opted for a monofocal IOL. “While they may still need spectacles for distance, we can increase their safety and improve depth of field by getting them out of the bifocal,” Dr. McCabe says.

### Pupil-modulating presbyopia drops and applicability to pseudophakes

	Company	Drop	Clinical trials	Age range & lens status	Active ingredient(s)
Dual agent	Ocuphire Pharma	Nyxlol + pilo	Phase 2 NCT04675151	40 to 64 years, phakic and pseudophakic	Pilocarpine 0.4%, phentolamine 0.75% (two separate drops, not in fixed combination)
	Virus Therapeutics	VTI-001 Brimochol, brimochol F	Phase 2 NCT04774237	45 to 80 years, phakic and pseudophakic	Carbachol, brimobinine tartate (fixed combination)
Single Agent	Allergan/ AbbVie	Vuity (formerly known as AGN-190584)	FDA approved GEMINI 1 and 2 trials NCT-03857542 NCT-03804268	40 to 55 years, phakic	Pilocarpine 1.25%
	Eyenovia/Bausch+Lomb	Microline Optrejet	Phase 3 VISION 1 trial NCT04657172	40 to 60 years, phakic	Pilocarpine 1% or 2%
	Lenz Therapeutics (formerly Presbyopia Therapeutics)	PRX-100	Phase 2 NCT02554396	45 to 59 years, phakic	Aceclidine
	OraSis Pharmaceuticals	CSF-1, PresbiDrops	Phase 3 NEAR-1 and NEAR-2 trials NCT04599933 NCT04599972	45 to 64 years, lens status not specified	Pilocarpine



# News @ PVI

This year, Pacific Vision Institute celebrates a twenty-four year anniversary of establishing PVI optometric co-management network. Since its inception, Pacific Vision Institute has advocated for collaborative co-management with optometric community. We believe that it is the best interest of the patient to combine both surgical and non-surgical subspecialties of eye care in their LASIK, PRK, Lens, Cataract, and Cross-linking surgery.

As we add surgical services and surgeons, we are proud to integrate the successful actions of co-managing LASIK patients to that of co-managing other ocular surgeries. Built on foundation of mutual trust, shared learning, and continuous communication, our co-management with the Bay Area optometric community is a successful way to optimize patient care. We also take the opportunity to refer non-surgical patients to our optometric colleagues. From comprehensive eye exams, to optical services, to scleral lens fitting, and non-surgical myopia management, we share in your passion for providing the best service and the best outcomes available.



Dr. Faktorovich has been chosen as the Vision Surgery expert for **HauteBeauty** network. Haute Beauty is an exclusive, invitation-only network of select doctors and experts who are asked to share their opinions about common health and beauty topics with consumers and prospective patients

Haute Beauty  
BY HAUTE LIVING



Dr. Faktorovich interviewed by **ABC Channel 7 News** about the newly approved presbyopia-correcting eye drop <https://abc7news.com/vuity-eye-drops-stock-eye-drops-where-to-buy/11322524/> She discussed the results of the clinical trials, mode of action, onset of action and duration. She also addressed what this approval means to future developments in eye care.



Dr. Faktorovich is selected to the America's Best Physicians for the 10th year in a row. Selection is based on a recommendation by healthcare colleagues nationally. Dr. Faktorovich is honored with Medical Excellence Award, presented to physicians who are leading their field based on reviews, recommendations, research, education, and patient care.



**International Intra-Ocular Implant Club**  
Integrity • Innovation • Leadership • Perseverance

Dr. Seibel has been re-elected to an International Intraocular Implant Club - an exclusive, invitation-only group of master surgeons around the globe who made significant contributions to the field of intraocular lens surgery. This prestigious society accepts only 250 members worldwide. It was started in 1966 by Harold Ridley - who invented the intraocular lens. Dr. Seibel is the only cataract and lens surgeon in Northern California to have the honor of being selected to this exclusive group of leaders in lens implant surgery

Dr. Seibel has been elected to Best Cataract Surgeons in America, an organization rated by the American College of Elective Surgery. Dr. Seibel is the only surgeon in the Bay Area to have received this honor. Selection into this highly prestigious group is based on: education and training, experience, peer reviews, patient feedback, technology and equipment, and quality of overall practice.



Dr. Seibel has been chosen by Bausch & Lomb to advance the science of phacoemulsification technology and educate physicians on Stellaris Elite. His education videos can be found at <http://v3.eyetube.net/collections/bausch-surgical/how-dr-siebel-achieves-dual-linear-flow-control/>



Dr. Faktorovich did PRK on her son-in-law, Eugene Goldin. Eugene works at a tech start up. Dr. Faktorovich's daughter, Larisa, and Eugene married in October last year. Larisa is pursuing a career as a Nurse Anesthetist. They live in the Bay Area with their pitbul mix, Coco. Eugene stayed with Dr. Faktorovich for more than a week after his PRK, allowing her to observe first-hand what patients are really like after surgery, mostly non-compliant with "using artificial tears frequency and reducing screen time" concepts.



# Counselor's Corner



## Q: What is the recovery after PRK like?

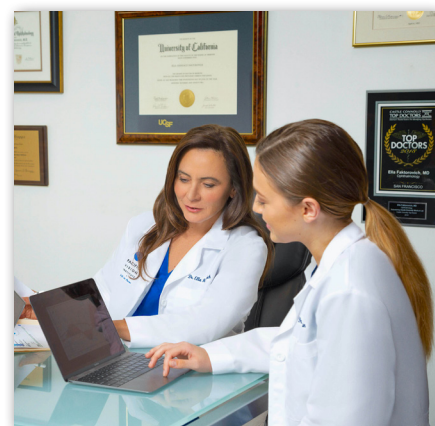
**A:** During the first several days after your procedure, you may experience eye irritation, tearing, and some burning sensation that should be relieved with medication, such as ibuprofen, for example. At PVI, our protocol includes starting Ibuprofen 600 mg 4 times a day on the evening after your procedure and continuing with that regimen for the subsequent three days, regardless whether you have pain or not. Patients are also given prescription for acetaminaphen/hydrocodone for breakthrough pain. If patients can not tolerate that, we have found tramadol to be effective and better tolerated by patients prone to nausea with hydrocodone. If patients can not tolerate opiates, lorazepam 2-3 mg po can work to help patients sleep. Vision is typically ok during the first several days, then gets blurry on postoperative day 2-3 as the resolving epithelial defect heals and epithelium begins to accumulate in the center of the pupil. Preservative-free artificial tears should be administered hourly while awake. Screen time should be minimized during this time. The vision is particularly blurry the first week after the procedure, although

most patients continue to work and drive during this time. Many patients make font bigger, contrast greater to help them see device screen. Hourly artificial tears, closing eyes briefly, frequent breaks from electronic devices are encouraged. Bandage contact lens is removed about a week after the procedure. Vision may get blurrier after that and then very gradually improves. Improvement in vision is gradual, with some fluctuation. At one month after PRK, vision is typically a line or two away from 20/20. Vision continues to improve over the subsequent months. At three months postop, visual acuity is typically 20/20 or better. Vision can continue to improve over the subsequent months as well. During recovery, it is not uncommon to detect some refractive error. This, typically, is due to epithelial remodeling. The most common refractive error is mild with-the-rule astigmatism.

# Refractive Surgery Advisor

## Q: What is the medication protocol after LASIK and for how long?

**A:** The patient is prescribed a topical antibiotic, a topical steroid, and a preservative-free lubricating drop to be used after their LASIK procedure. The topical antibiotic is typically a 4th Generation cephalosporin, such as Moxifloxacin 0.5% (Vigamox) or Gatifloxacin 0.3% (Zymaxid). The steroid is Prednisolone Acetate 1% (Pred Forte). Patients need to use the antibiotic and steroid drops 4 times a day for 1 week following LASIK. They also need to use preservative free lubricating drops such as Refresh Plus, for example, every 1-2 hours for the first several weeks to one month after LASIK. Frequent computer breaks are also recommended during the first several weeks after LASIK, with patients closing their eyes for a minute or so every few hours. Q: What is the medication protocol after PRK and for how long? A: For the first week after PRK, the medication regimen is the same as after LASIK. Once the bandage contact lens is removed, FML QID is initiated and continued for a month, followed by BID for a month. IOP needs to be checked periodically to make sure patient is not a steroid responder.



## OPTOMETRIC CE EVENTS



- 18th Annual San Francisco Cornea, Cataract, and Refractive Surgery Symposium (8 CE hours)
- Hands-on IOL/ICL workshops - live patient surgery, exam, didactic, and wet lab IOL/ICL

## Contact Information

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