



Bay Area optometrists observing Wavefront Scan



Wavefront-guided LASIK in the operating room

Wavefront Workshops at Pacific Vision Institute

Wavefront-guided laser vision correction is a multistep procedure more involved than the conventional laser vision correction. To help primary eye care providers incorporate the procedure into their patient education process, the Pacific Vision Institute conducted 12 workshops over the past several months. The workshops were limited to less than 7 participants each allowing for hands-on experience with wavefront mapping and direct observation of the wavefront-guided LASIK in the operating room. Patient selection criteria were discussed, including refraction, pachymetry, pupillometry, topography, ocular surface stability, etc. An actual patient was then followed through the process – starting with the laser and wavefront centration photos, limbal marking to facilitate registration, wavefront mapping, information transfer to the laser, and the LASIK procedure itself. During the procedure, the principles of precise map:cornea registration were demonstrated, including eye tracking to provide space-stabilized image and laser reticle alignment with the corneal

News At PVI

- Save this date: **3rd Annual San Francisco Cornea Symposium**, April 3rd, 2004. Four Seasons Hotel, San Francisco, CA.
- Dr. Faktorovich guest lectures at the San Mateo Optometric Society. The lecture was titled "Systemic Medications in the Eye Care Practice."
- PVI becomes one of only a few centers in San Francisco to use Intralase Femtosecond laser.
- Optometrists/Family/Staff who recently had LASIK at PVI with Dr. Faktorovich: Dr. Jennifer Quirante (Pacifica), Dr. Manny Nguyen (South San Francisco), Valerie Montes (Dr. Randall Chung, Danville), Andrew Blankmeyer (Dr. Robert Monetta, San Francisco), Darrell Loui (Dr. Kyna Wong and Dr. Bernard Feldman Taraval Eye Care, San Francisco), Nell Pinchak (Drs. Albert Lee and Lawrence Tom, Urban Eyes Optometry San Francisco), Jonie Martinez (Taraval Eye Care, San Francisco)
- PVI Top 5 dinners held on September 21st at Masa's and December 5th at the 5th Floor Restaurant. The next PVI Top 5 dinner will be held on **March 8th** at Gary Danko's.

limbal marks to insure registration. At the conclusion of the procedure, laser-generated operative report was explained, including ablation zone depth and width, procedure duration, and the amount of laser energy applied to the cornea. Postoperative wavefront results were reviewed. The doctors had their own wavefront maps performed and the higher order aberration analyzed. At the conclusion of each workshop, the participants reported increased understanding of wavefront-guided LASIK. The experience proved useful in clinical practice, facilitating patient-education process. ■

Clinical News & Views

Results of Wavefront LASIK at PVI

Primary procedure

The 3-months postoperative results of 72 eyes from 37 patients who underwent wavefront-guided LASIK with LADARWave and LADARVision was analyzed. The results were compared retrospectively to the 3-month postoperative data of the age- and preoperative refraction-matched cohort of patients who underwent Conventional LASIK. Root Mean Square (RMS) values of higher order aberrations were analyzed across a 6.0 mm pupil.

	Wavefront LASIK*	Conventional LASIK*
Age	34.3+/- 5.7 (21 to 48)	33.1+/- 5.2 (23 to 46)
Preop SE** (D)	-3.64 +/- 1.21 (-0.50 to 6.0)	-3.52 +/- 1.53 (-0.50 to -6.0)
Preop Astigmatism (D)	0.52 +/- 0.28 (0 to 1.0)	0.46 +/- 0.31 (0 to 1.0)
Postop SE (D)	-0.05 +/- 0.16 (0.25 to -0.63)	-0.08 +/- 0.29 (0.38 to -0.75)
Postop Astigmatism (D)	0.04 +/- 0.11 (0 to 0.50)	0.03 +/- 0.15 (0 to 0.50)
Postop UCVA (% 20/20 or better)	99%	97%
Postop Total HOA*** (microns)	0.33 +/- 0.13 (0.12 to 0.58)	0.45 +/- 0.17 (0.17 to 0.75)
Postop Spherical Aberration (microns)	0.17 +/- 0.10 (0.01 to 0.37)	0.39 +/- 0.15 (0.15 to 0.82)
Postop Coma (microns)	0.19 +/- 0.11 (0.03 to 0.41)	0.17 +/- 0.13 (0.02 to 0.45)

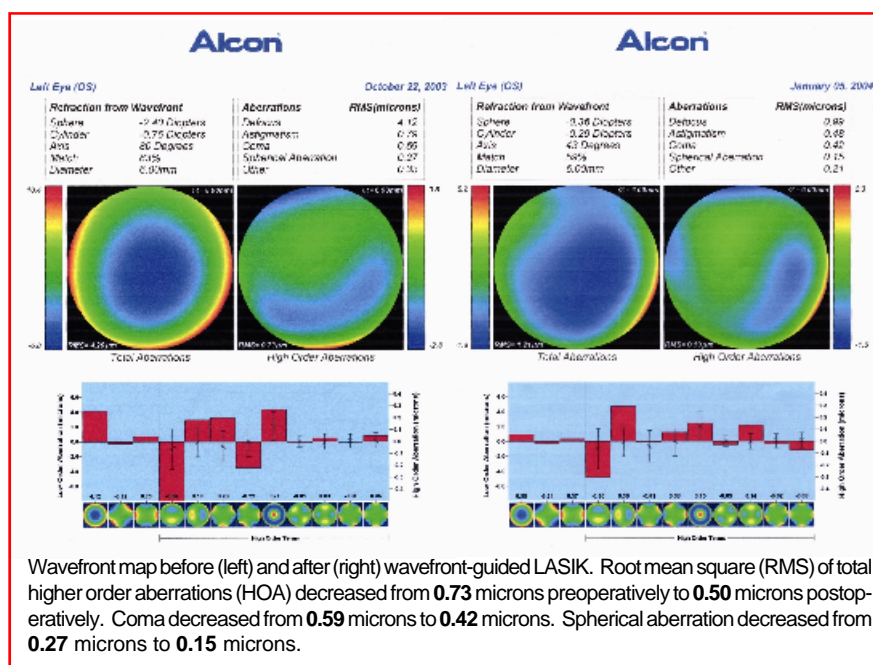
*Mean +/- SD (range) **SE=spherical equivalent ***HOA=higher order aberrations,

More patients achieved 20/20 or better uncorrected vision after wavefront LASIK than after conventional LASIK. Mean total HOA was significantly less after wavefront LASIK vs. conventional. Mean spherical aberration was also significantly less after wavefront LASIK vs. conventional. Mean coma was similar.

In addition to the technology geared to maximize the outcomes, other factors contributed to the outstanding results. Strict patient selection criteria was followed, including refraction within the FDA-approved range, the difference between phoropter SE and wavefront SE of no more than 0.25D, the difference between phoropter and wavefront astigmatism of no more than 0.50D and the difference in astigmatism axis of no more than 15 degrees. Additionally, tear film stability was achieved prior to the wavefront measurements and meticulous registration was maintained to insure precise map:cornea alignment

In appropriate candidates, wavefront-guided LASIK is a better option than conventional LASIK.

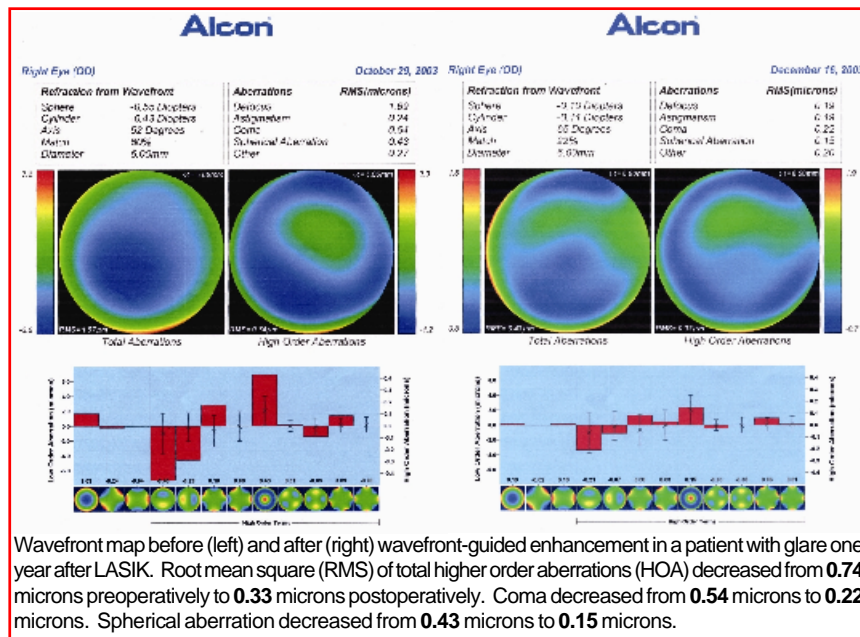
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Clinical News & Views

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Secondary procedure: treatment of symptomatic glare after previous refractive surgery



Five eyes of 3 patients underwent wavefront-guided treatment of symptomatic glare. All patients had primary LASIK performed more than a year ago to correct moderate myopic astigmatism. Preoperative uncorrected visual acuity ranged from 20/20 to 20/30. Spherical aberration was the most significant higher order aberration in these patients. Postoperatively, uncorrected vision improved, ranging from 20/15 to 20/20. Total higher order aberrations decreased in all eyes. Mean decrease was 36%, ranging from 21% to 56% decrease.

Spherical aberration decreased in all eyes as well. Mean decrease was 61%, ranging from 44% to 75% decrease. Glare and night-time vision improved significantly in all patients, even under adverse weather conditions, such as driving from Lake Tahoe in the snow. ■

Customized Dry Eye Treatment

The first step to targeted treatment of patients with dry eyes is identifying underlying etiology: is it evaporative, deficiency, or both. Other conditions that can result in symptoms similar to dry eyes need to be ruled out.

Epithelial basement membrane dystrophy, for example, will need to be treated with hypertonics, rather than tear film stabilizers or supplements. Superior limbal keratitis will need a thyroid function test work up. Environmental factors need to be addressed, including systemic medications, low environmental humidity, air conditioning and heaters.

Restasis for treatment of tear deficiency dry eye works exceptionally well. Although some of our patients experience relief as soon as 2-3 weeks after treatment initiation, it generally takes 4-6 weeks

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TYPE OF DRY EYE	TREATMENT
Evaporative (Blepharitis/Meibomian Gland Dysfunction)	Lid hygiene + Erythromycin or Blephamide Ointment Flax seed oil caplets 2 at HS or TheraTears Nutrition (mild dry eyes) Doxycycline 100 mg po bid x 1-2 months (moderate-severe dry eyes)
Tear Deficiency	Tear supplements Punctal Occlusion with Silicone Punctal Plugs Lotemax or FML qid Restasis bid
Both	Treat evaporative component first for 2-4 weeks, then treat tear deficiency while continuing treatment of evaporative problem

Clinical News & Views

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for patients to notice a difference.

We use mild steroids rather than NSAIDs in treating patients with dry eyes. A recent article in American Journal of Ophthalmology supports our conclusion, finding that FML is more efficacious than NSAIDs in patients with keratoconjunctivitis sicca (Avunduk AM et al The comparison of efficacies of topical corticosteroids and nonsteroidal anti-inflammatory drops on dry eye patients: a clinical and immunocytochemical study. AJO 2003;136:593-602).

Punctal occlusion remains the mainstay of tear deficiency dry eye therapy. If patient has both tear deficiency and evaporative dry eye, we treat evaporative problem first for one to two months and then perform punctal occlusion. ■

Refractive Surgery Correction Ranges Summary

CONDITION	PROCEDURE
● Myopia (Plano to -12.00D)	LASIK ^{1,2}
● Myopia (-12.00D to -20.00D)	STAAR ICL ³
● Hyperopia (Plano to +6.00D)	LASIK ^{1,2}
● Hyperopia (> +6.00D)	Refractive Lensectomy
● Astigmatism (Up to 5.00D)	LASIK ⁴
● Previous RK	LASIK
● Previous PRK	LASIK or PRK
● EBMD (epithelial basement membrane dystrophy)	PRK
● Keratoconus	Intacs

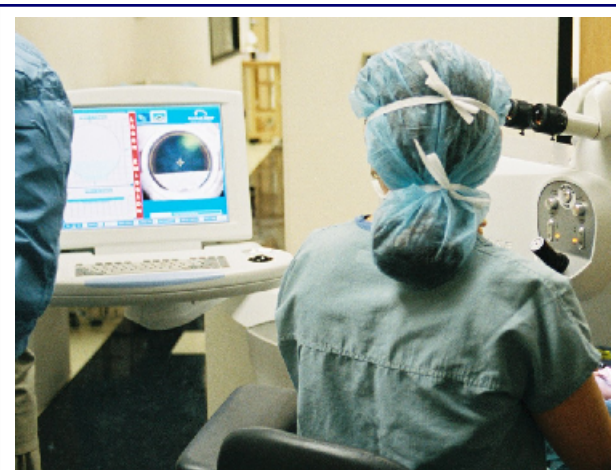
¹Wavefront or conventional LASIK with either LADAR, VISX, or Bausch & Lomb laser depending on the refraction, pupil size, and corneal thickness

²If cornea is not thick enough for standard flap, thin flap LASIK is performed with Intralase femtosecond laser. If cornea is not thick enough for thin flap LASIK, LASEK or PRK is performed for myopia < -9.00 D and STAAR ICL is performed for myopia > -9.00

³FDA Ophthalmic Devices Panel recommended approval in November 2003. FDA approval is expected in 2004.

⁴LASIK for astigmatism can be combined with STAAR ICL for high myopia in a procedure called BIOPTICS

Thin-Flap LASIK with Intralase Femtosecond Laser



Intralase is a femtosecond-pulsed YAG laser that delivers energy to a precise intracorneal location thereby creating an intrastromal plane at a specified corneal depth, i.e. the corneal flap. The pulse placement is precise (+/- 5 microns) and there is no effect on the surrounding tissue. As a result, the corneal flap thickness is predictable and uniform. Mechanical microkeratomes typically have greater standard deviation and range of flap thickness than Intralase. In thicker corneas, with tissue to spare, this is not an issue. If a preset corneal flap thickness of 160 microns results in the actual flap of 100 microns or 200 microns, it will probably still be within the safe range. However, in thinner corneas, where a thinner corneal flap is planned, such as 100 microns, for example, the resulting flap may be either too thin (creating a button hole flap) or too thick (leaving less than 250 microns of stromal bed after treatment). Therefore, creating a thin flap with Intralase is safer than with a mechanical microkeratome.

At Pacific Vision Institute, we have been treating patients with thinner corneas using the Intralase laser. The flap thickness is uniform and predictable, allowing for safe LASIK correction of the refractive error. ■

Counselor's Corner

Patient profiles

Just as each laser vision correction procedure must be customized on an individual basis, every patient's LASIK experience is also unique. The patients interviewed below represent a small fraction of our patients, each with a unique story to tell, but also with some common concerns that many patients have prior to their laser vision correction.

Evelyn Cisneros, Former Prima Ballerina, San Francisco Ballet.



Age 42, Prescription prior to LASIK: Right Eye -5.25-0.50x045
Left Eye -6.00

Why did you decide to do laser vision correction?

I have had to rely on glasses since the 4th grade. Up until I received my glasses, I didn't even realize that the trees had leaves! Once I was fitted for glasses, everything was amazingly clear. It has been a life dream for me to be able to see without having to rely on glasses and contact lenses. With my husband's support and my optometrist, Dr. Hum's, recommendation, I was finally ready to pursue this life dream.

Why did you choose Dr. Ella Faktorovich to perform your LASIK procedure?

Dr. Faktorovich came very highly recommended to me by Dr. Kathleen Hum. I felt extremely confident in Dr. Hum's recommendation.

What concerns did you have prior to your LASIK procedure?

My main concern would be that it wouldn't work for me or that something would go wrong during the procedure. After being evaluated by Dr. Hum and Dr. Faktorovich, I felt more secure in proceeding with my surgery - however, I was still naturally concerned about the final outcome.

How is your vision, now that you have had the LASIK procedure?

Amazing! Perfect! I can now wake up in the middle of the night, and in the morning, and be able to find my son, to see the alarm

clock, and to go camping and feel safe in a tent at night.

What activities have been enhanced by having the LASIK procedure?

I teach New York City ballet workout class 2 times a week at the San Francisco Bay Club, and it is wonderful not to have to worry about contacts or glasses. It is also very fulfilling to be able to now go swimming with my son and actually be able to see him clearly. I enjoy mountain biking and am thrilled not to have to worry about dust particles affecting my vision in contacts. We also just bought a new tent with a skylight on top and it is beautiful to see the stars at night.

What is one word that describes your LASIK experience?

I have 2 words: Nerve-racking and MIRACULOUS!

Keith Lively, Race Car Driver



Age 53, Prescription prior to LASIK: Right Eye +5.00-4.50x008;
Left Eye +4.00-5.00x165

Why did you decide to do laser vision correction?

Ever since I was a teenager, I wore contacts during the day and glasses in the evening. It was time for a change, and LASIK would allow me more time, more freedom, and actually better "walking around" vision than my toric contact lenses since they rotate in and out of focus no matter how well fitted they are.

Why did you choose Dr. Ella Faktorovich to perform your LASIK procedure?

Dr. Faktorovich came highly recommended by my eye doctor, Dr. Sandra Lee, as well as a friend who worked in the eye care field, and that is why I scheduled a consultation. In discussing my prescription, and after talking about the projected outcomes and risks, Dr. Faktorovich made me feel very confident that she was the right LASIK surgeon for me.

What concerns did you have prior to your LASIK procedure?

Since I am left eye dominant and would be left with very little vision if something should have happened to my left eye, I was concerned that my overall vision would be compromised if I

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Practice Development

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should encounter any problems with the procedure, specifically with my left eye.

How is your vision, now that you have had the LASIK procedure?

My vision is excellent, and the reality is that it is better than my vision with contact lenses because everything is always in focus unlike when I was wearing toric lenses.

What activities have been enhanced by having the LASIK procedure?

It's like getting a piece of my life that I have never had. I've been wearing corrective lenses and glasses since I was seven. I see more than I did with glasses and I see better than I did with contacts, all the while not having to be concerned with lens care or remembering my glasses. I was once very active in athletics, actually going to college on an athletic scholarship, and I really wish I had been able to enjoy the benefits of LASIK then. But, I still have one athletic passion today: car racing. Contact lenses are a real problem in racing because of the air constantly blowing around your eyes. The air makes your contacts dry out and sometimes stick where they shouldn't, not to mention having one blown off my eye once or twice! With toric lenses it was even worse because the air would make them rotate, causing blurred vision at the worst times. So far I have only been in a race car once since I had my procedure, but the benefits were immediately obvious!

What is one word that describes your LASIK experience?
FANTASTIC!! ■

Wavefront Workshop Staff Training

Our staff represents our practice – our knowledge, our philosophy, our style of patient care. Continuing education is not just for us to keep our skills sharp, it is also for our staff to keep up their knowledge so that they can instill confidence in our patients that they have chosen the right practice for their eye care.

In conjunction with the Wavefront Workshops for the PVI affiliated doctors, we are conducting Wavefront Workshops for optometric staff. They meet with the PVI patient education counselors and learn how to respond to patient inquiries both over the telephone and in person. They observe live Wavefront LASIK procedure and meet with Dr. Faktorovich. They have their own Wavefront scans performed so that they can experience consultation process first hand. Over 50 practices in the Bay Area had staff attend the workshops. Some now have a designated LASIK Patient Education Counselor in their practice to help facilitate patient flow.



Amie Ahlers and Scott Edmonds are PVI Professional Services Coordinators.

Pacific Vision Institute – San Mateo

In September 2003, Pacific Vision Institute opened the doors of its San Mateo practice. After operating in the central San Francisco neighborhood of Pacific Heights for six years, the time had come to open a facility to meet the needs of patients and optometrists who live and work in the Peninsula and the South Bay area.

“Although the patients were coming to San Francisco for their procedure, they wanted more convenient location with easy parking to have their consultation and meet the surgeon” explains Dr. Michael Gee of Foster City.

“Now that I can send patients to a clinic that's only 10 minutes away, it's much more convenient,” agrees Dr. Tetsuji Kita of Burlingame and Redwood City.

PVI staff have been working since the summer of 2003 to prepare the San Mateo office for patients and doctors. “I'm really excited because the patients appreciate the convenience of a closer location, easy parking, being able to come in for a consultation at 2 pm and get out in time to pick up their kids from school,” says PVI technician Monica Kipper. “Patients from nearby Oracle, Genentech, and other high tech and biomed companies can drop in on their lunch hour.”

In addition to patients who want laser vision correction, we see patients with complex corneal problems referred by optometrists and ophthalmologists from as far as Monterey. Dr. Faktorovich performs corneal transplantation and other corneal procedures at the Mills-Peninsula Hospital.

PVI San Mateo can be contacted at 650.548.0537. ■

Spotlight on OD

Spotlight on San Francisco Optometrist: Dr. James Wong

Building Success One Day at a Time



Dr. James Wong

The practice of Dr. James Wong is one of the busiest in San Francisco. A mild mannered and unassuming man, Dr. Wong succeeded in building a practice that employs three doctors, ten staff and maintains tremendous patient loyalty, with patients coming from Hong Kong, Singapore, Malaysia, and Europe to follow up with their favorite eye doctor.

How did he do it?

Strong work ethic, superb clinical skill, and, as

Dr. Wong said in his recent interview with *In Focus*, “shaking one hand at a time.”

Strong work ethic is something very familiar to sons and daughters of the Chinese immigrants who came to this country during the Chinese Revolution. Their own fathers overcame the obstacles of strict US immigration policies of the Chinese Exclusion Act of 1882 and came to the US to work and support their wives and children still remaining in China, often for decades, waiting for the opportunity to join their husbands and fathers in the US. Dr. Wong's family was no exception. His grandfather left the county of Taishan in China in early 1900's and settled in San Francisco's China Town, working in the laundry, saving money, sending the money back to his wife and children in China. It wasn't until his children were grown, that

they were able to leave China at the onset of the Revolution and reunite with their father. One of the children was Dr. Wong's mother. She too settled in San Francisco China Town. The mother worked as a seamstress in a shop. She met Dr. Wong's father. He worked as a janitor. They soon had two children of their own – both born at the Chinese Hospital. Dr. Wong's father often told him – “be happy you have work, any kind of work, and work hard.”

Dr. Wong followed the path of many young bright San Franciscans of his generation – Lowell High School then UC Berkeley. At Cal, he decided to become an optometrist. Why? “I remember when I was 7 years old and I went to an eye doctor in China Town, it was the first time that a visit to a doctor was painless and fun. I wanted to do that.”

He graduated from UC Berkeley in 1982, in the midst of recession. Why then, did he sign a lease on a brand new space in Japan Town with nothing in it? “Because I thought that with the recession, there will be no job for me anyway, so I might as well start something on my own.” So, with his fingers crossed, a loan from his parents, another classmate to share the overhead, and a side job with Drs. Feldman and Simsarian, Dr. James Wong went about slowly building his own practice.

He went around to the merchants in the neighbourhood and introduced himself, shaking “one hand at a time.” Pretty soon, the handshakes turned into referrals, the referrals turned into more referrals, and the practice grew to become one of the busiest and most successful in San Francisco.

In addition to a full-time private practice, Dr. Wong works at Kaiser, seeing patients with advanced eye diseases. To take care of them, he makes sure that his clinical skills are up-to-date with the latest diagnostic and therapeutic technology.

How does he do it all? “By following my parents' example - working hard and taking one day at a time.” ■

1826 Buchanan St. Suite 'A', San Francisco, CA 94115, Phone: 415.931.1903

Refractive Advisor



► **Q: My patient had LASIK and notices glare at night. Can Wavefront-guided enhancement help him?**

A: It depends. More data is available on treating patients with spherical aberrations after refractive surgery rather than decentered ablations or uneven ablations, for example. If patient's wavefront map demonstrates high spherical aberration, they will most likely benefit from the wavefront-guided enhancement. Occasionally, the total wavefront RMS value is low in a very symptomatic patient with normal topography and corneal exam. This patient may have higher order aberrations not detectable with current wavefront sensing technology. If we can't detect it, we can't treat it. Such patient may need to wait until further refinements in technology.

Wavefront treatment removes more corneal tissue than conventional tissue. If patient doesn't have enough cornea, wavefront treatment is not recommended.

The most common reason for glare at night, however, still remains - mild refractive error. I always prescribe glasses for this refractive error first to see if the night time symptoms improve with glasses. In most patients, they do. These patients will do well with conventional enhancement of their refractive error.

Q: My patient recently had LASIK. Even though her refraction was within the range for Wavefront-guided LASIK, you recommended Conventional LASIK. Why?

A: Most patients whose refraction falls within the range of Wavefront-guided LASIK can have the procedure. For some patients, however, Conventional LASIK is a better option. Wavefront scan measures the prescription in the ocular optics – the cornea, the lens, and even the vitreous. It doesn't specify how the information is interpreted by the brain. If the wavefront refraction differs from manifest or cycloplegic refraction significantly, this indicates that certain components have been "filtered" out by the central nervous system. If they are suddenly introduced through the Wavefront-guided LASIK, the patient will not be happy with their vision. This is analogous to using autorefraction to prescribe glasses. Patient's preference for cylinder axis, for example, may differ by as much as 30 degrees from the autorefraction axis. You will always choose manifest refraction over autorefraction.

Upcoming Events

3rd Annual San Francisco Cornea Symposium. April 3rd, 2004. Four Seasons Hotel, San Francisco, CA.

***Ongoing:** Wavefront Workshops include hands-on training in wavefront analysis and live PVI Custom Vision LASIK observation. Please contact Amie Ahlers or Scott Edmonds to reserve your time.

***Ongoing:** Optometric Staff Training Seminars include live surgery observation— contact Amie Ahlers or Scott Edmonds for times and dates.

Special Services for PVI affiliated doctors

- Refractive surgery patient management workgroups*
- Punctal occlusion workshops*
- Phone consultations and emergency help by corneal specialist
- TPA Hours
- Optometric office staff training program.
- Patient Seminars at your office.

* CE provided

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Medical Director ---
Contributing Editors---

Ella G. Faktorovich
Amie Ahlers,
Todd McMullen,
Scott Edmonds,
Gina Day, O.D.
Courtney Palek

Contact Information

- Clinical Information Ella G. Faktorovich, MD
Medical Director
415.922.9500 (office)
415.518.7965 (direct)
faktorovich@pacificvision.org
- Schedule Consultation / Procedure / Financing Information Amie Ahlers
Professional Services Coordinator
415.922.9500 (office)
415.218.9271 (direct)
amie@pacificvision.org
- Information on becoming a PVI affiliated doctor Scott Edmonds
Professional Services Coordinator
415.922.9500 (office)
415.359.6853 (direct)
scott@pacificvision.org