

Laser vision correction: Driving growth for the future



Survey identifies areas to target in refractive surgery practices

Eighty-five percent of surgeons do not require refractive outcomes exceeding 20/20 or use standardized methods to assess successful laser vision correction (LVC), according to the 2014 ASCRS Clinical Survey (Figure 1).

Stephen S. Lane, MD, medical director, Associated Eye Care, and adjunct clinical professor,

University of Minnesota, and **Eric D. Donnenfeld, MD**, Ophthalmic Consultants of Long Island and Connecticut; clinical professor of ophthalmology, New York University; and trustee, Dartmouth Medical School, co-moderated a panel on LVC during the 2015 ASCRS•ASOA Symposium & Congress.

Assessing 267 data points from 134 questions, the survey gathered results from more than 1,500 members.

"LVC of 2015 is nothing like the LVC that we performed in 2000," Dr. Donnenfeld said. "We are so much better, so much more accurate, and so much safer than we've ever been before that there is an unmet need and a pent-up demand for LVC like we have not seen in a long time."

LVC is largely driven by patient referrals, he said, so surgeons need to encourage satisfied patients to talk about their results on social media (Figure 2).

In this supplement, distinguished surgeons share their recommendations for evaluating refractive surgery outcomes and driving practice growth.

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“... There is an unmet need and a pent-up demand for LVC like we have not seen in a long time.”

—Eric Donnenfeld, MD

We don't have a standardized way of assessing outcomes	21.1%
Uncorrected visual acuity—we look at the % of patients with 20/20 or better UCVA	63.6%
Uncorrected visual acuity—we look at the % of patients with 20/16 or better UCVA	15.3%
Ratio of patients with postop UCVA > preop BCVA	15.0%
Patient satisfaction ratings	51.7%
Visual quality contrast sensitivity testing	10.4%

Figure 1. When asked how they assess LVC outcomes, approximately 85% of survey respondents do not require anything beyond 20/20 UCVA or do not have a standardized method to assess successful outcomes.

What % of your LVC practice is driven by:

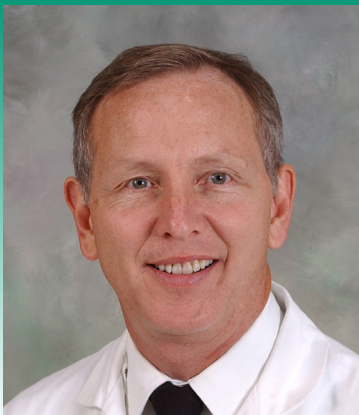
	U.S.	Non-U.S.	Overall
Patient-to-patient referrals	54.4%	58.8%	56.8%
Internet, email, or social networking marketing	11.7%	14.6%	13.3%
Print, radio, or television marketing	8.2%	6.7%	7.6%
Optometric referrals	15.7%	8.7%	11.9%
Other	10.1%	11.22%	10.4%

- Avg. % growth in LVC past 12 months
Overall: 5%
U.S.: 0%

- Avg. % growth in LVC next 12 months
Overall: 11%
U.S.: 8%

LVC practices largely driven by patient-to-patient referrals, with limited current growth rates

Figure 2. Factors driving LVC practice growth



Reviewing LASIK outcomes

by Steven C. Schallhorn, MD

symptoms when they were asked at 3 months.

Based on the Ocular Surface Disease Index questionnaire administered during PROWL 1, fewer patients had symptoms 6 months after surgery compared with before surgery.

Five years post-LASIK

In a 5-year European study evaluating more than 3,300 patients yearly after LASIK, approximately 94% wore no glasses for distance vision 5 years after LASIK (analysis by Dr. Schallhorn and Biostatistics Department, Optical Express, not yet published).

In this study, when patients who had LASIK 5 years previously were asked if they noticed glare within the past 4 weeks, almost 81% reported that they did not notice glare at all (Figure 1). Approximately 17% noticed some glare without glasses or contact lenses, and 2% reported glare even with glasses or contact lenses.

Of the 477 patients who noticed glare, 78% reported that they only see it sometimes.

When they were asked how bothersome the glare is, approximately 19% responded that it was not bothersome at all and approximately 64% said it was a little bothersome. Less than 1% of the total population had great difficulty with usual activities.

Patients can have visual symptoms, but they are rare 5 years after surgery.

LASIK versus soft contact lenses

We matched a sample of patients who underwent LASIK 1 year prior and habitual soft contact lens wearers for age and refraction (myopia, prep for LASIK) (analysis by Dr. Schallhorn and Biostatistics Department, Optical Express, not yet

Studies report important data regarding patient satisfaction after LASIK

Research analyzing patient-reported outcomes is providing valuable data about patients' quality of life and quality of vision after LASIK.

PROWL

The PROWL (Patient-Reported Outcomes With LASIK) 1 (6 months, 262 military subjects) and PROWL 2 (3 months, 312 non-military subjects) studies examined patients' responses to LASIK (without enhancements).^{1,2} Participants responded to an online questionnaire referencing photos demonstrating examples of symptoms such as halos and starbursts.

As presented at the 2014 American Academy of Ophthalmology annual meeting by the principle investigators, the prevalence of ocular symptoms (ghosting, glare, halos, and starbursts) after LASIK decreased in every category. When participants were asked about bothersome symptoms, the prevalence decreased in every category. Some patients who did not have symptoms preoperatively had them postoperatively, but on average symptoms decreased.

When patients were asked about their ability to perform usual activities based on their visual symptoms, difficulty decreased in each category after LASIK. However, up to 1% experienced substantial difficulty or could not perform usual activities because of visual

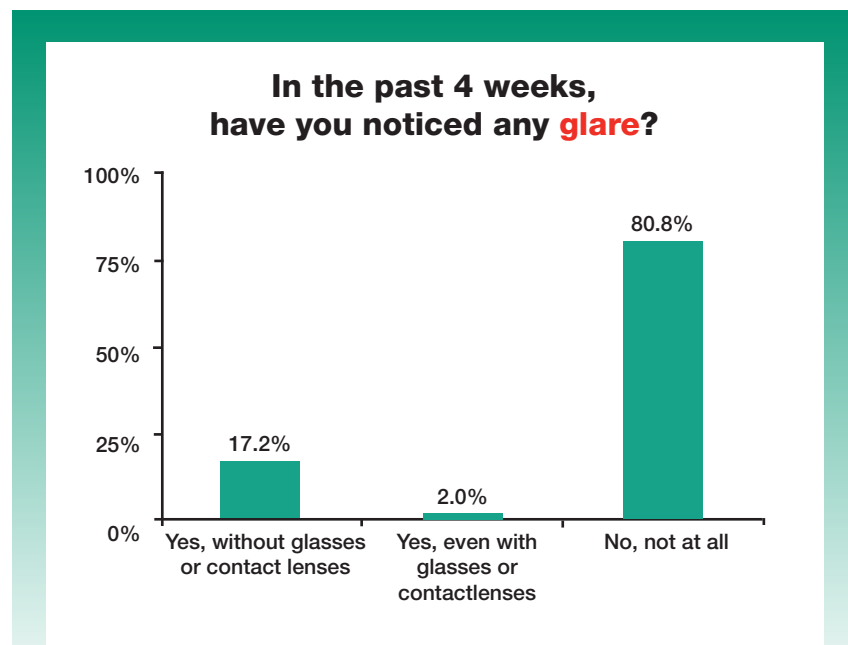


Figure 1. Patients were asked if they noticed any glare within the previous 4 weeks.

published). The binocular distance vision was better in those who had LASIK versus the habitual vision of those wearing soft contacts. One reason for the difference is that soft contact lens wearers with lower amounts of astigmatism (1.0 D and below) generally do not wear toric contact lenses. This small amount of astigmatism can slightly impair unaided vision, especially at the 20/16 level, whereas lower amounts of astigmatism are routinely corrected with LASIK.

Contact lens wearers also had more discomfort compared with LASIK patients.

Conclusion

The PROWL study demonstrated a significant decrease in quality of vision symptoms. However, up to 1% could have significant difficulty without correction after surgery.

Five-year outcomes of LASIK showed that 94% do not use distance visual correction. Similar

to the PROWL study, less than 1% have significant difficulty with their quality of vision after surgery without correction.

Finally, we found that in a sample of LASIK and contact lens wearers matched for age and refraction, LASIK resulted in better unaided distance vision and less ocular discomfort compared with patients who wear soft contact lenses.

References

1. www.fda.gov/downloads/MedicalDevices/ProductsandMedicalProcedures/SurgeryandLifeSupport/LASIK/UCM419443.pdf
2. www.fda.gov/downloads/MedicalDevices/ProductsandMedicalProcedures/SurgeryandLifeSupport/LASIK/UCM421192.pdf

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Evolving diagnostics will help surgeons achieve a new level of outcomes

New technology is on the horizon, implementing advanced diagnostics that will continue to improve the excellent outcomes we achieve with laser vision correction (LVC).

In November 2013, topography-guided ablations were approved. We hope to see commercial launch soon, as well as the approval of advanced wavefront-guided technologies.

Higher standard

The gold standard of 20/20 uncorrected visual acuity (UCVA) is no longer acceptable when patients expect high-quality vision. Patient satisfaction is highly correlated with UCVA, and quality of vision and quality of life surveys are increasingly important in assessment.¹

Patient satisfaction is also negatively correlated with visual disturbances, which usually result from residual sphere and cylinder.

Furthermore, even patients with 20/15 or better vision will be unhappy if they have chronic irritation and dryness. We must aggressively treat dry eye and ocular discomfort.

Satisfaction levels

According to research by Steven Schallhorn, MD, and his colleagues, patients are pleased with 20/20 vision, but satisfaction increases dramatically as vision improves to 20/16, 20/12.5, and 20/10 (analysis by Dr. Schallhorn and Biostatistics Department, Optical Express, not yet published).

In the United States, we hope to soon have access to topography-

New laser vision technology on the way

by Edward E. Manche, MD

guided ablation, combining manifest refraction and corneal topography. Designed to treat corneal aberrations only, it can be used for primary and therapeutic treatments (an off-label use).

The advantages of topography-guided ablations are familiarity and consistency of capture. We can center the refractive treatment wherever we prefer, and we can use topography-guided ablations when corneal aberrations are too high for accurate wavefront capture or when we cannot or do not want to perform wavefront-guided treatments.

The U.S. Food and Drug Administration clinical trial for topography-guided ablation showed excellent outcomes. Approximately 93% of eyes had 20/20 or better UCVA and nearly 70% had 20/16 or better (WaveLight Allegretto Wave Eye-Q, Alcon, Fort Worth, Texas).² Patient satisfaction was approximately 98%.

Advanced wavefront-guided ablation treats aberrations of the entire eye, not just corneal aberrations, and its diagnostic capabilities take into account the entire optical system. We hope to see approval at the end of this year.

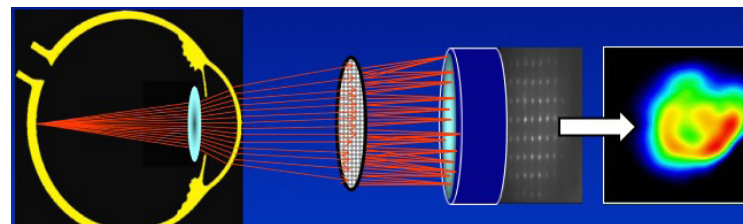
The latest wavefront-guided technology offers a higher-resolution aberrometer. It provides increased dynamic range, more precise torsional alignment, and corneal curvature compensation (Figure 1).

In a study of nearly 9,000 eyes with low to moderate myopia, 95% of patients had 20/20 or better vision and 84% had 20/16 or better (analysis by Dr. Schallhorn and Biostatistics Department, Optical Express, not yet published). Approximately 97% were satisfied with their vision (Figure 2; courtesy of Dr. Schallhorn).

Conclusion

The future of LVC is topography-guided ablation and advanced wavefront-guided ablation. They will allow us an unprecedented level of customization, enabling us to combine treatments.

The future is beyond 20/20. Higher-resolution diagnostics—both topography-guided and advanced



- Improved ablation profile based on whole eye optical aberrations
- Higher quality aberrometer
- Increased dynamic range
- More precise torsional alignment
- Corneal curvature compensation

Figure 1. Advantages of latest wavefront-guided ablation

Thinking about your vision during the last week, how satisfied are you with your vision (without the use of glasses or contact lenses)?

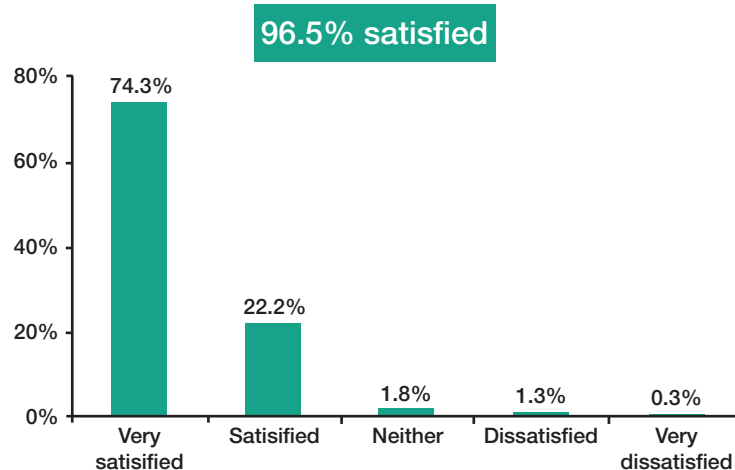


Figure 2. Responses when patients were asked: "Thinking about your vision during the last week, how satisfied are you with your vision (without the use of glasses or contact lenses)?" Courtesy of Steven Schallhorn, MD, Optical Express

wavefront-guided—deliver higher-quality vision. We need to adapt our technology and measurement standards to achieve these results.

Reference

1. Lazon de la Jara P, Erickson D, Erickson P, Stapleton F. Visual and non-visual factors associated with patient satisfaction and quality of life in LASIK. *Eye (Lond)*. 2011; 25:1194-1201.

2. Allegretto Wave Eye-Q Scanning Spot LASIK Laser System Patient Information Booklet, pgs. 40, 47. www.accessdata.fda.gov/cdrh_docs/pdf2/p020050s012c.pdf.

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Growing your refractive practice



Surgeons need to examine how they communicate with patients at both ends of the age spectrum

To grow a refractive surgery practice, surgeons need to consider how Millennials will affect them and improve their patient education strategies, according to presentations during the 2015 ASCRS•ASOA Symposium & Congress.

Targeting Millennials

Millennials account for a huge bubble in the population, outnumbering Baby Boomers by 11 million, said Steven J. Dell, MD, Dell Laser Consultants, Austin, Texas.

Although it will be some time before this group accounts for a significant portion of the laser vision correction (LVC) population, surgeons need to remember that a mind shift is required when speaking to these patients, Dr. Dell said. For example, surgeons should be very direct about risk. “Millennials demand transparency,” he said (Figure 1).

Furthermore, these patients should not need to wait. Some practices allow patients to make appointments online and offer evening and Saturday appointments for consults.

Dr. Dell also recommends minimizing postoperative visits, if appropriate. “If someone is 20/15 on the first day postop, how many times do you need to see that patient?” he said.

Social media is an important component of marketing efforts for this population. His practice performed a social media-based campaign in 2014 to market LVC in conjunction with one of the laser manufacturers as a test pilot in Austin, Texas, and three other markets, he said. This 7.5-month campaign, which consisted of online banner ads, paid search listings, Facebook, and Pandora, resulted in a 24% increase in LVC volume over the same period in 2013 (Figure 2).

“Our results are great. We love doing the surgery, but we actually forget to bring them back and talk to them about the future of their eyes.”

—Daniel S. Durrie, MD

Millennials

- Demand transparency
 - Don't minimize risks
 - They will research online anyway
- Don't make them wait
 - Online appointments
 - Evening, Saturday availability
 - Minimize postop visits
 - 1 day, 1 month

Figure 1. Characteristics of Millennials

- 24% increase in LVC volume over 2013 period
- No change in price structure or any other significant variables
- Cost per acquisition: \$80 per eye

Figure 2. Results of a 7.5-month marketing campaign relying on banner ads, paid search listings, Facebook, and Pandora

Source: Steven J. Dell, MD

Educating patients

Daniel S. Durrie, MD, clinical professor of ophthalmology, University of Kansas, Overland Park, explained that inadequate patient education is one factor inhibiting the growth of the corneal refractive surgery market.

Although 9 million people have had successful LASIK in the U.S., Dr. Durrie said, satisfied patients are not referring their friends and family.

“Our results are great,” he said. “We love doing the surgery, but we actually forget to bring them back and talk to them about the future of their eyes.”

Therefore, they have a number of misconceptions. For example, many believe LASIK wears off. “I hear it all the time,” Dr. Durrie said. “People say, ‘My dad had LASIK and he's back in glasses.’”

The average age of patients having LASIK was 38 years. “Of those 9 million people who have had successful LASIK surgery in the U.S., 7.5 million of them are back in reading glasses,” he said.

To close this educational gap, Dr. Durrie recommended bringing LVC patients back for an examination, discussing presbyopia and dysfunctional lens syndrome. This also may increase word-of-mouth referrals.

“We have seminars now for the dysfunctional lens syndrome,” he said. “We're getting 20 to 25 people coming every time we do a seminar because they want to get rid of their reading glasses and their bifocals. Also, it's an excellent way to grow your practice and help people along the way.”

Dr. Durrie encourages refractive surgeons to check on their former patients. “Do something simple that can actually grow your practice,” he said. “See your old patients, bring them back, and talk to them. They would love to see you.”

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