

Femtosecond Lasers in Cataract Surgery: Survey of First Users

Data on the first lasers installed in the United States showed that their use with conventional IOLs may be the big surprise.

BY CONNI BERGMANN KOURY, EXECUTIVE EDITOR

A survey of 63 surgeons (30 centers) using a femtosecond laser in the United States to perform cataract surgery was recently conducted to provide information to the ophthalmic community on how this technology is being incorporated into practice.

In an interview with *Cataract & Refractive Surgery Today*, Shareef Mahdavi of SM2 Strategic said that, absent any real data, surgeons have been drawing their own conclusions as to whether or not laser cataract surgery is a “real” market and if patients themselves will pay for the technology. According to Mr. Mahdavi, “There is a lot of confusion because the Centers for Medicare & Medicaid Services has yet to come out with a definitive ruling regarding reimbursement for the surgery, although the professional specialty societies have issued their own statements.”

“Regulations aside, when we look at the precedent that was set in the laser refractive surgery space with LASIK, we see that introducing a laser to replace what was previously performed manually by a blade has a positive effect on the market,” he continued. “The laser improved the safety of LASIK and also helped the market for the procedure recover. The question at hand is whether those same patterns we saw with laser vision

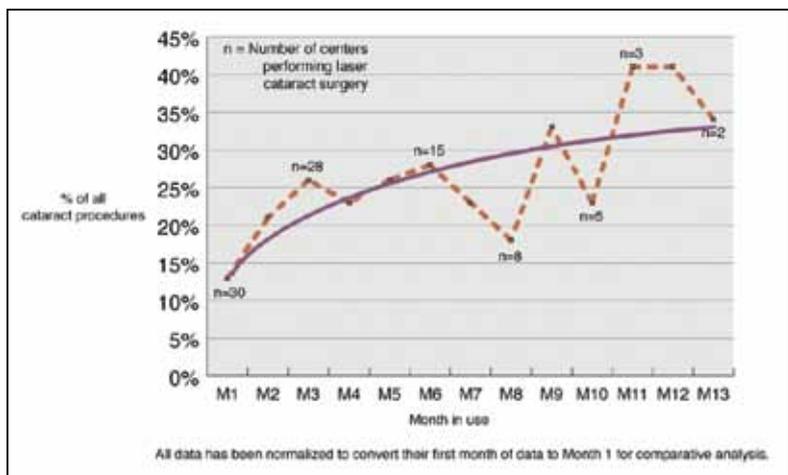


Figure 1. Market penetration of laser cataract surgery.

correction might be emerging in laser cataract surgery.”

SM2 invited all manufacturers that had installed lasers as of the end of 2011 to provide the names of surgeons using the technology to participate in a survey on usage patterns in the first year of laser cataract surgery in the United States. At the time, the installed base of users was composed solely of the LenSx Laser (Alcon Laboratories, Inc.). The survey was masked and is planned to be a yearly assessment of the use of femtosecond lasers. The only other survey of its kind was performed the previous year, also by SM2, and it asked surgeons (N = 53) planning to adopt the femtosecond laser about their expectations.¹

| To Own a Laser | | To Access a Laser | |
|--|-----------|--|---------------|
| Item | Cost | Item | Cost |
| Equipment + Service, 5 Years | \$700,000 | Average Fee Increase | |
| Per Case Revenue | \$945 | Conventional: \$1,304 | \$945 |
| Per Case Cost (disposable) | \$425 | Toric: \$682 | |
| Per Case Margin | \$520 | Presbyopic: \$652 | |
| Total Laser Cases to Breakeven | 1,364 | Cost to access: | |
| Laser Cases Per Year, over 5 years | 273 | Per Case Disposable: | \$425 |
| Annual Cataract Volume Threshold (at 30% having laser) | 910 | Difference (range): | \$227 - \$879 |
| | | Any access cost below the above number results in margin for the user. | |

Figure 2. The breakeven analysis.

TRENDS AND BREAKEVEN ANALYSIS

Mr. Mahdavi and colleagues analyzed the data regarding the laser cataract procedure's penetration (Figure 1). "We were able to normalize the data to look at a trend," he said. "After 1 month of having the laser, about 13% of cases were being performed with the technology. At 3 months, that number was 28%, so the penetration really increased quickly. By next year, [these] data will be more robust, as many more centers will have access to the laser. I believe 30% penetration of the laser in practice is a reasonable expectation, and it is important information to know, because previously, surgeons did not know what to expect."

For planning purposes, Mr. Mahdavi wanted to be able to determine what the breakeven analysis would be for the laser based on its actual usage (Figure 2). "If two or three surgeons own a laser and, in 1 year, they do 900 cases, we can predict that 30% of the patients would opt for the laser or about 270 cases," he said. "Following this model for 5 years, the surgeons would make their money back. Now, more likely, three or four surgeons will be sharing the laser and performing about 2,000 surgeries a year and converting approximately 700 of them to the laser. In this scenario, the laser would be paid off in 2 years."

REFRACTIVE PACKAGE FEE SCHEDULES: TYPE OF IOL

In the current survey, respondents were asked about their fees according to the type of IOL that was implanted (Figure 3). "With the laser, the package fee for a conventional IOL increased by \$1,300, \$682 for a toric lens, and \$652 for a [presbyopia-correcting] implant," Mr. Mahdavi said. "These numbers stand to reason, because before the laser, most surgeons were not charging a refractive package for the conventional IOL, as only seven of the 30 centers we surveyed were charging for limbal relaxing incisions."

The data revealed that, even when using the laser in conjunction with a conventional IOL, surgeons can make money and pay off the cost of the laser. The upcharge in

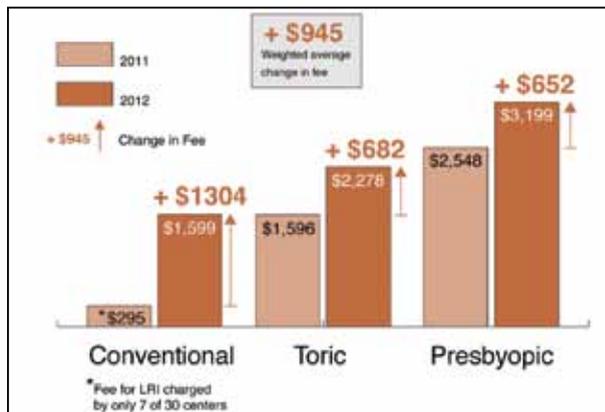


Figure 3. Refractive package fee schedules.

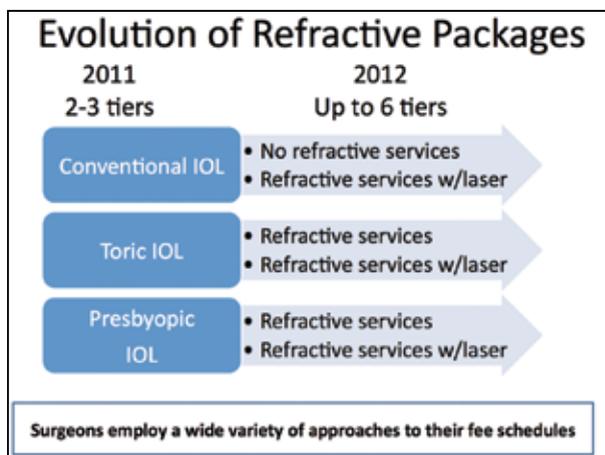


Figure 4. The evolution of refractive packages.

terms of using the laser in conjunction with a premium IOL was between \$600 and \$700. This less dramatic increase is explained by the fact that these services were already costing patients between \$1,200 and \$2,500.

To justify an additional fee for a separate, noncovered refractive package, surgeons performed extra testing. This included noncovered diagnostics such as

- intraoperative aberrometry
- noncontact biometry
- corneal topography
- wavefront analysis
- corneal pachymetry
- optical coherence tomography
- autorefraction
- manual keratometry
- endothelial cell count

The additional services surgeons might provide included the use of a laser for arcuate incisions, a contact lens trial (dilated and undilated), hard contact lens over-refraction, and surgical planning and counseling.

"In terms of fee schedules," Mr. Mahdavi explained, "the

| | Forecast Spring 2011 | Actual Spring 2012 |
|--|-------------------------|-----------------------|
| Key Demographics | | |
| # of Surgeons in Survey | 53 | 55 |
| Actual Femto Users | 0 | 55 |
| 2011 Cataract Procedures | 50,100 | 47,728 |
| Average per Surgeon | 945 | 868 |
| Conversion Rate to Premium IOL | 26% | 23% |
| Fee increase | Up to \$1,000 per eye | \$945 average |
| % of Current Premium Patients that have laser | 43% | 57% |
| % of Additional Conversion to Premium because of laser | 11% | Too early to measure |
| % of Conventional IOL patients with cylinder who would choose laser (assume %50 incidence) | 22% | 26% |
| Overall % of Patients that have laser with cataract surgery | 26% | 23% |

Figure 5. How good are surgeons at predicting the use of the laser for cataract surgery?

respondents went from having two or three tiers prelaser, depending on if they performed additional services in conjunction with the monofocal IOL, to some having up to six tiers (Figure 4). Three centers in our survey use five tiers, and the majority (n = 21) use three tiers, which means, basically, the laser is included at each of the three tiers.”

One center in the survey increased its fee from \$4,900 to \$5,800. “This center has one tier, and it does not accept Medicare or any other insurance,” Mr. Mahdavi said. “The surgeons choose the best lens for the patient and use all the technology that is needed, including the laser. This approach is very simple for patients to understand and is indeed attractive to both surgeon and patient.”

HOW GOOD ARE SURGEONS AT PREDICTING THE USE OF THE LASER?

In the survey conducted prior to the commercial availability of the laser in cataract surgery, surgeons predicted that 26% of their patients would have the laser, compared to 23% in the current survey (Figure 5). “It is kind of shocking how accurate these surgeons’ predictions were when not a single one of them had access to the laser for cataract surgery,” Mr. Mahdavi said.¹

In 2011, surgeons were told to assume that, for the use of the laser, they could charge up to \$1,000 per eye, and the actual results in 2012 revealed that respondents were charging an average of \$945 more once the laser was in place for refractive services associated with cataract sur-

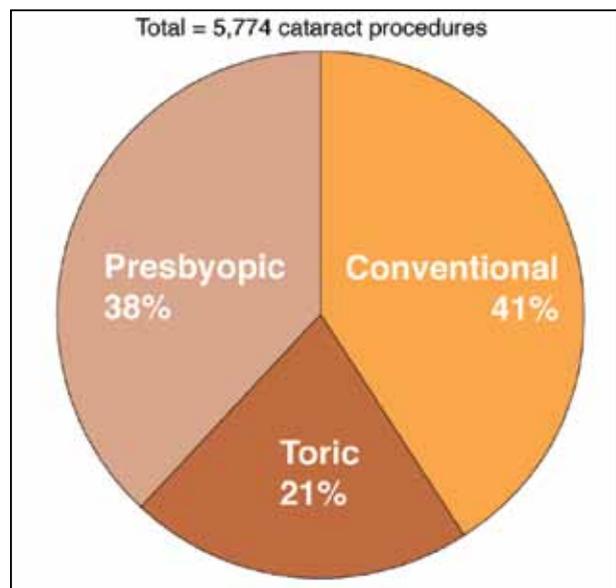


Figure 6. The mix of laser cataract procedures by lens type.

gery. When the respondents were asked to predict the percentage of their premium IOL patients who would opt for the laser, the surgeons said 43%; this number turned out to be 57% in the 2012 data.

It is too soon to measure what percentage of patients was converted to a premium procedure because of the laser, although in 2011, the predic-

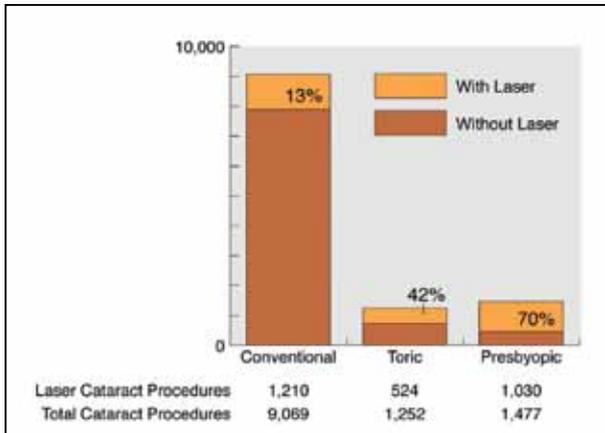


Figure 7. Percentage of all cataract procedures using the laser (by IOL type).

tion was 11%. Assuming a 50% incidence of cylinder among conventional IOL patients, respondents were asked how many of these individuals would choose the laser. In 2011, surgeons predicted 22%; the total was actually 26%.

The sample of surgeons in both surveys was well-matched in terms of size, cataract procedural volume, and conversion rate to premium IOLs.

LESSONS LEARNED

“The big surprise for us in this survey was that the laser is not necessarily about building the market for premium IOLs,” Mr. Mahdavi said. “This is about expanding the definition of premium cataract surgery now to include the laser, regardless of the lens used. The conventional IOL is the key driver of revenue from the laser and accounts for 41% of the laser procedures (Figure 6). Interestingly, Richard Lindstrom, MD, thought this would happen, but many doctors believed that patients ‘at the base of the pyramid’ were not going to pay for additional services. What this really proves is that a small slice of a large pie, or 13% of a ‘conventional’ pie, is actually more per volume than a large slice of a small pie, or 70% of premium lenses (Figure 7).” ■

Shareef Mahdavi is president of SM2 Strategic and section editor for *Cataract & Refractive Practice Today's* “Premium Practice Today” feature. He wishes to acknowledge Michael Lachman as the study's coauthor for the data presented in this article. Mr. Mahdavi may be reached at (925) 425-9900; shareef@sm2strategic.com.



1. Mahdavi S. Laser cataract surgery: the next new thing in ophthalmology. *Cataract & Refractive Surgery Today*. March 2011;13(3):83-87.