

REFRACTIVE

Improve Vision After Prior Surgery

BY LORI BAKER SCHENA, CONTRIBUTING WRITER

In many instances, previous eye surgery—from penetrating keratoplasty and radial keratotomy to cataract and glaucoma surgery—is no longer a contraindication for subsequent refractive surgery.

There once was a time, for example, when corneal transplant surgery was deemed successful if the foreign tissue was not rejected, the wound healed relatively quickly and improved vision could be achieved with rigid contact lenses or glasses. However, advances in refractive surgery and higher patient expectations have raised the bar on postoperative outcomes, with both patients and surgeons interested in achieving better vision without these visual aids.

"Indeed," noted Arun C. Gulani, MD, MS, director of the Gulani Vision Institute in Jacksonville, Fla., "we are no longer pleased with simply changing a manhole cover. With 12 different kinds of corneal transplants available, along with nine laser or refractive modalities from which to choose, there is really no reason in most patients why we cannot bring vision back to 20/20 after penetrating keratoplasty." Dr. Gulani's view is echoed by other refractive surgeons dedicated to improving vision in patients who have undergone a wide variety of previous surgical procedures.

Handling Surgeries Confidently

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The keys to success in performing refractive surgery after previous procedures, according to Dr. Gulani, are perspective, experience and confidence. "It is very important that we know the evolution of refractive surgery," he said. "We must be aware of where we are coming from and where we are going to understand results, shortcomings and expectations of individual procedures. Additionally, refractive surgeons must be capable of providing the full spectrum of refractive surgery techniques so they can handle any situation confidently."

Prior Corneal Transplants

According to Steven E. Wilson, MD, director of corneal research at the Cleveland Clinic, corneal transplants can result in unpredictable refractive errors, including hyperopia and myopia, and certain patients experience significant astigmatism. These problems, especially in older patients who cannot successfully wear contact lenses, can be addressed with refractive surgery.

LASIK. "In my opinion, LASIK is the way to go in these patients," Dr. Wilson said. "I have done 30 of them myself and have found the results to be excellent."

Dr. Wilson waits a year after corneal transplant surgery to perform LASIK. The sutures must have been removed and topographic and refractive stability

It Takes Two



Radial keratotomy and phakic implant.

achieved. "You need to pretreat the patients against transplant rejection with topical steroids," he said, "because any surgical procedure can set off a transplant rejection."

Immediate ablation and LASIK.

When LASIK was first being implemented following penetrating keratoplasty, many thought that it would be wiser to divide the technique into two stages: cutting the flap, then waiting a week or more before performing the ablation. Surgeons were concerned that making the flap could change the biomechanical architecture and lead to shifts in vision. "However, I have done it both ways [delayed ablation and immediate ablation] and do not see much of a difference," Dr. Wilson said. "There really is no need to wait."

Peter S. Hersh, MD, professor of ophthalmology and director of cornea and refractive surgery at the University of Medicine & Dentistry of New Jersey, also has been successful in performing an immediate ablation. Yet over the past

few years, he has changed his technique with patients who have undergone corneal transplants, shifting exclusively to surface ablation nonflap procedures. "I have found that in my hands, LASIK under the flap was somewhat unpredictable and we tended to undercorrect the cylinder," he explained. "I suspected that the flap itself had an impact on the underlying ablation."

PRK. To avoid any flap problems and influences, Dr. Hersh, who is also director of the Cornea and Laser Eye Institute-Hersh Vision Group in Teaneck, N.J., now performs surface ablation followed by PRK, with "great success even with high astigmatic correction." His technique involves using alcohol for at least 30 seconds so the epithelium is very loose. He then discards the epithelium and performs a typical PRK procedure. "In these cases, because there have been reported problems with postoperative haze, I will use 0.02 percent mitomycin C applied for 30 seconds and irrigated with 30 cc of solution afterward."

Prior Radial Keratotomy

"Surface ablation and photorefractive keratectomy with mitomycin C is becoming increasingly common for patients who have undergone previous radial keratotomy," said Ernest W. Kornmehl, MD, medical director of Kornmehl Eye Associates in Brookline, Mass. "I have seen RK patients experience excellent results from LASIK, as long as they do not have epithelial plugs in the incisions preoperatively. With PRK, you don't have to worry about epithelial ingrowth but need to use mitomycin C because of the risk of corneal haze."

Limiting LASIK. Dr. Wilson has not embraced surface ablation for these patients because of the increased risk of haze. "When considering LASIK in these RK patients, not only do the multiple RK incisions pose challenges," said Dr. Wilson, "but the shape of the cornea is also a problem as the cornea tends to be flat in RK, making it difficult even to cut a flap with the microkeratome." For this reason, Dr. Wilson limits his RK candidates to those who have 4 D of hyperopia and no less than a mean curvature of 41 D. Additionally, he will perform

LASIK only on patients who have eight RK incisions or fewer.

Avoiding CK. Among the refractive procedures that should be avoided when correcting RK patients is conductive keratoplasty, warned Dr. Gulani. "CK will open up the RK wounds, and patients can end up with irregular astigmatism. This is why it is so important to become familiar with the past experience of different refractive procedures."

Prior Cataract Surgery

Cataract surgery patients also may benefit from subsequent refractive surgery. "These are patients in whom, for whatever reason, the implant did not work out right and they have one eye plano and the other -3 D," Dr. Wilson said. "Correcting the anisometropia requires a contact lens, which is not necessarily comfortable." He said these patients are excellent candidates for refractive surgery as long as they are six months out, with no sutures or astigmatism. One challenge with LASIK is that some lasers cannot track pseudophakic patients, so the appropriate laser must be used (such as the Visx S4).

Prior Glaucoma Surgery

Dr. Hersh uses surface ablation for patients who have undergone glaucoma surgery, are anisometropic and cannot wear contacts. However, he shies away from patients who have glaucoma with optic nerve damage because of potential concern regarding suction and the possibility of raising IOP. Dr. Gulani also prefers laser surface ablation following glaucoma surgery if the patient does not have any underlying pathology that would prevent a safe procedure.

Prior Conductive Keratoplasty LASIK in two stages. A decade ago, RK resulted in a host of problems, which now are being addressed. Similarly, conductive keratoplasty—a relatively new procedure—poses its own set of challenges. Dr. Hersh discovered that some hyperopic CK patients were being overcorrected, resulting in myopia. He found performing the two-stage approach to LASIK—in which he made the flap, then waited three weeks to perform a

LASIK procedure—was effective in these patients.¹

He reported that previous CK did not affect the initial flap creation, the ability to lift the flap manually three weeks after its initial preparation or the refraction, topography or refractive stability after the flap was created. "LASIK is a good procedure for patients overcorrected with CK," Dr. Hersh pointed out. "We haven't felt the need to go to surface ablation at this point."

Reaching for Perfection

Dr. Kornmehl noted that refractive surgery plays an important therapeutic role in improving the lives of patients who have undergone previous surgery with resultant ophthalmic problems. Dr. Wilson added, however, that appropriate candidate selection is key when treating these patients.

A full armamentarium of refractive surgical techniques also can address the increasing demand for better vision in these patients. "You can't admire a perfectly placed corneal graft that is causing the patient to go blind from high astigmatism," said Dr. Gulani. "We now tell patients that we will do their corneal transplants in two stages: the first stage involves performing the transplant and the second stage focuses on changing the shape of the graft to help them see. Our goal is to get patients up to 20/20, and refractive techniques are allowing us to accomplish this."

1 J Cataract Refract Surg 2004;30(3):702-705.

Drs. Kornmehl and Wilson have no financial interests. Dr. Gulani is a consultant for Bausch & Lomb. Dr. Hersh is on the clinical advisory board of Alcon and the medical advisory board of Refractive.

Mystery Writers Wanted

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