

REFRACTIVE SURGERY

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When two refractive surgeries are better than one

Combining complementary procedures results in successful outcomes for growing number of patients.

by Rochelle Nataloni

Patients who were formerly considered poor candidates for refractive surgery are increasingly becoming eligible for surgical correction because a complementary combination of procedures can be employed. Roger F. Steinert, MD, of Ophthalmic Consultants of Boston, said refractive combinations make sense when "the two procedures address different refractive problems, different aspects of the total problem or when the first procedure has altered the eye in such a way as to narrow down options for further enhancement."

Enhancement combos



---Peter S. Hersh, MD

Examples of refractive procedures in combination with enhancements that result in successful outcomes are laser in situ keratomileusis (LASIK) after radial keratotomy (RK); LASIK after photorefractive keratectomy (PRK); RK after PRK; astigmatic keratotomy (AK) and limbal relaxing incisions (LRI) after RK; PRK and (rarely) LASIK; Intacs corneal ring segments (KeraVision Inc., Fremont, U.S.A.) after LASIK or PRK; and hyperopic laser thermal keratoplasty (H-LTK) after RK, PRK or LASIK.

LASIK also can be used effectively to fine-tune the outcomes of cataract surgery, according to David R. Hard-ten, MD, of Minnesota Eye Associates, and Peter S. Hersh, MD, of the Cornea & Laser Institute in Teaneck, U.S.A.

"LASIK works very well in patients with refractive errors after IOL placement," Dr. Hersh told *Ocular Surgery News*, "and is a good alternative to lens replacement."

A collagen shrinkage procedure termed conductive keratoplasty (CK) has potential as an enhancement following undercorrected LASIK, according to European data, and anecdotal reports suggest that H-LTK after LASIK actually gets a bigger response than primary LTK, though no source was able to support that with data.

Combinations employed in the past that have turned out to be unsuccessful include PRK after LASIK; automated lamellar keratoplasty after RK; PRK after RK; and, according to several surgeons interviewed for this article, RK after LASIK. Canadian refractive surgeon Louis E. Probst, MD, said, "RK and LASIK should not be combined because the multiple corneal incisions will attenuate the cornea leading to refractive instability."

But Karl G. Stonecipher, MD, disagrees. He said that when a patient's corneal thickness does not allow additional laser enhancement, he recommends a two- or four-incision RK.

"Combining procedures has definite risks and rewards," Dr. Stonecipher said. "That's why I would admonish surgeons to do less instead of more and not push the limits of whatever combinations they try. For example, if I combine a LASIK and an RK, I won't do more than a four-incision RK," he said.

Dr. Probst said that PRK after any previous corneal procedure should be avoided, as there is a 20% to 30% risk of significant haze. The only exception to this is superficial corneal scarring from previous RK, PRK or complicated LASIK.

"In these cases, a phototherapeutic keratectomy/PRK approach with intra-ablative mitomycin has been shown to be effective," he said.

Primary treatment combos



---Vance M. Thompson, MD

The combination of phakic IOLs and LASIK is an excellent example of a successful primary treatment combination, according to Dr. Probst.

"This combination capitalizes on the strengths of the two procedures. The power of the phakic IOL allows the full correction of virtually any spherical refractive error, and the accuracy of LASIK allows the correction of the remaining astigmatism and any residual spherical error. By using both procedures, patients with extreme refractive errors such as -16.0 -4.0×90 can be corrected to very close to plano." A similar approach can be used with clear lens extraction and LASIK, Dr. Probst said.

For a bioptics-type of procedure with the ICL (STAAR Surgical Co., Monrovia, U.S.A.), LASIK can be performed 1 month after ICL insertion, if the refraction is stable. Because the ICL is in the posterior chamber, there is no risk of endothelium-ICL touch during the keratectomy, Dr. Probst said.

“However, if an anterior chamber phakic IOL is used, such as the Artisan Iris-claw phakic IOL (Ophtec BV, Groningen, Netherlands), the keratectomy should be done first without any refractive laser correction. The flap is replaced and then the phakic IOL is placed. The refractive correction can then be done in 1 month with refractive stability by lifting the flap,” he said.

This modification of the bioptics concept was first described by Jose Guell, MD, according to Dr. Probst.

“When LASIK is performed after lens insertion, it is important to ensure that the clear corneal incision is self sealing and healing well so that it does not rupture during the keratectomy,” he said.

Vance M. Thompson, MD, of Sioux Falls, U.S.A., has been combining LASIK with Intacs in undercorrected patients for 1 year with excellent results, he said.

“If someone is -2.50 D after LASIK, and there's not enough cornea left and you think you are going to go below the 250 µm barrier, Intacs can be a great way to enhance them,” he said.

He will not, however, use the combination as a planned option.

“I like to make sure they have 280 µm of posterior untouched cornea before I start their first LASIK so that they have 30 µm remaining in case they need an enhancement,” he said. But in cases where patients come to him having been told that they have had an aggressive LASIK and that Intacs is their only option, he is glad to oblige.

The formula for refractive surgery combinations seems to be to perform LASIK and then decide on the next step based on the residual vision deficit. But Dr. Thompson suggested that there might be a better way.

“I prefer LASIK being additive to something like a phakic IOL,” he said. The beauty of implanting a phakic IOL and then fine-tuning with a low-level LASIK, according to Dr. Thompson, is that the image quality is so powerful.

“I think this is better than [pushing the limits of] LASIK and then trying to figure out how you're going to get more out of it,” he said.

Rather than having a patient who requires additional correction following LASIK, risking corneal instability, he recommended that those who are nearing the 250 µm limit in corneal thickness either continue with their contact lenses or glasses, or wait for a phakic IOL.

Long-term outcomes on these refractive surgery combinations are scarce because more often than not the outcomes are evaluated as separate procedures.

As far as a long-term perspective goes, Dr. Hersh said, “It remains to be seen how these procedures are going to react with one another optically.”

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