

Small Incisions, Big Controversy

The cover series of this edition of *Cataract & Refractive Surgery Today* examines issues related to incisional architecture. With femtosecond lasers and sophisticated diamond and metal blade designs, surgeons have more options for creating incisions than ever before. Controversy over the best approach to any given incision is also at an all-time high. Although each current approach has its advocates, ultimately, all of them work well.

Examining the primary corneal incision in IOL surgery yields a surprising array of preferences. Some surgeons still suture all of their incisions, but most do not. Some tout the superiority of femtosecond laser incisions, whereas others insist on the superiority of today's diamond and metal blades. Kerry Solomon, MD, and William Wiley, MD, debate the topic in this issue of *CRST*, despite the fact that both are enthusiastic users of femtosecond lasers. Although an overwhelming majority of surgical wounds are watertight the next day, very few surgeons evaluate their IOL surgery cases during the first few postoperative hours when many eyes may experience a period of hypotony. Transiently low IOP can result in poor function of the clear corneal valve incisional architecture, with a potential contamination of the anterior chamber or shift in the IOL's position. Many sutureless incisions also resist leakage poorly when any external pressure is applied to the eye. Cynthia Matossian, MD, and John Hovanesian, MD, examine this phenomenon and discuss possible sutureless solutions with wound sealants, including a hydrogel approved by the FDA. They argue convincingly that this technology may have a role in select cases.

Ophthalmologists' ability to manage astigmatism at the time of cataract surgery has historically involved corneal incisions, originally with metal blades and eventually with diamond keratomes. The introduction of toric IOLs provided another option. I believe that these lenses have gained so much traction in the marketplace because the concept behind them is so easily explained to the patient and because the technology works extremely well. The advent of lasers has complicated this decision tree. Louis "Skip" Nichamin, MD, provides an excellent overview of why his approach to corneal relaxing incisions with a diamond

blade remains so popular. Nicholas Batra, MD, discusses how all of the various modalities for astigmatic correction fit into his surgical plan and how intraoperative aberrometry sometimes alters this approach. Jan Venter, MD, provides an interesting perspective on using intrastromal laser incisions for astigmatic treatment, something unimaginable before the technology's availability.

In a highly interesting article, Brendan Vote, FRANZCO, and Shaun Ewe, MBBS, of Australia compare the strength and morphology of the laser capsulotomy incision to that of the manual capsulorhexis. The issue is critical and controversial, because most surgeons would argue that the capsulotomy's integrity is the lynchpin of successful IOL surgery. The perfectly round capsulotomies achievable with a laser are one of the main reasons surgeons have been receptive to this technology. Because

of the intralenticular gas produced by laser ablations, however, small defects in the edge of the capsulotomy can be hazardous: the expansile forces within the lens can extend a small defect in the capsulotomy and compromise the entire capsule. Dr. Vote and colleagues measured data from three different laser platforms and four different surgeons. The investigators examined anterior capsular tear rates and performed electron microscopy on specimens of the capsulotomy fragments. Their data represent an interesting correlation of incisional structure and function.

Some have argued that IOL surgery is "good enough" and that further gains will be minimally incremental. There is some truth to this argument. The results achieved with IOL surgery today rival anything in medicine in terms of safety and efficacy. As far as improving outcomes, the low-hanging fruit is mostly gone. On the other hand, technology will continue to redefine and elevate surgeons' benchmarks for success, always pushing results to new levels. I hope you enjoy this issue of *CRST*. ■



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