



CAN TECHNIQUE AND DESIGN STOP THE EPIDEMIC OF IOL DISLOCATION?

Reading the articles on various methods of dismantling and removing the crystalline lens that are featured in this issue of *CRST Europe* got me thinking, as usual, laterally. There are many ways to “skin a cat,” as the saying goes, but does the surgical approach used to perform cataract surgery have a long-term impact? How does what we do to the eye during cataract removal affect lens dislocation in the future?

I am hearing from retina colleagues that they are increasingly busy retrieving posteriorly dislocated IOLs. This is interesting and tallies with the exceptional level of interest in and development of techniques for the sutureless scleral fixation of IOLs.

Only a smattering of cases and case series describing such techniques were reported in the literature in the 1980s and 1990s. In the past 2 decades, the number of late (> 3 months following surgery) in-the-bag IOL dislocations has increased.^{1,2} The rate of occurrence is reported to be between 0.2% and 3%. Even at a rate of 0.2%, this complication cannot be considered rare given the increasing volume of cataract surgeries being performed. Although 50% of all cases of late in-the-bag IOL dislocation can be attributed to pseudoexfoliation syndrome, collagen disorders, retinitis pigmentosa, previous vitrectomy, trauma, diabetes mellitus, and a host of other predisposing conditions, many—and increasingly so—occur spontaneously.

Capsular contraction is another major cause of zonular dehiscence, and the use of a capsular tension ring during cataract surgery does not always arrest the process. Meticulous removal of anterior capsular cortical remnants is thought to reduce capsular contraction but, in my experience, does not solve the problem.

With an increasing number of patients in their 50s (and younger with some surgeons) undergoing lens replacement surgery, could the rate of late in-the-bag IOL dislocation increase further? Can the IOLs available today reliably withstand 3 or 4 decades in the eye without dislocating? These are sobering questions. If the complication rate continues to increase over time, what can we do about it?

In an editorial for the *Journal of Cataract and Refractive Surgery*, Sathish Srinivasan, FRCSEd, FRCOphth, FACS, called the situation a “ticking time bomb.”³ Perhaps we need to evaluate the impact that cataract surgery—not just the removal of the nucleus but the cortex as well—has on the zonules. Quantifying zonular trauma

is challenging. The Miyake-Apple technique for posterior photography and video analysis of postmortem eyes and recording posterior intraoperative video of each technique will allow quantification.

What factors should we consider now to avoid future trouble? Technique, as mentioned previously, may be an influential factor. IOL design must also have an impact. Choi et al found that IOLs with a four-plate haptic design showed greater anterior capsular stability and less contracture than those with a two-loop plate haptic or two-plate haptic design.⁴ I suspected that the weight of an IOL would have an adverse effect, but it turns out that IOLs vary in weight from 16 to 34 mg, which is a fraction of the weight of the average crystalline lens (between 150 and 250 mg).^{5,6}

In my view, efforts must be made by those of us working with lens manufacturers to address the issue and develop lens designs and implantation methods that reduce capsular contraction (which will also ensure refractive stability long term). Addressing lens epithelial cells is another avenue of interest, as this will stop metaplasia to myofibroblasts responsible for contracture. Or perhaps simply making radial incisions in the anterior capsule might be a technique change that could alter the course altogether.

I have raised several questions, and I expect some readers will dismiss them. It is my hope that others will scratch their heads and explore the concepts I have raised further. So, I hand this over to you to consider as our wonderful specialty continues to evolve. ■

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