EDITORIAL

Comments on: Is There Truly a Clinical Difference in Intraocular Lenses Available Today?

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Although we recently celebrated the fiftieth anniversary of Sir Harold Ridley's first intraocular lens (IOL) implant, there is still no consensus as to which IOL material is superior. There have been continual improvements in viscoelastics, ocular anesthesia, the cataract incision, and phaco techniques and technology; yet, long after the patient's eye has healed and recovered, what remains is the IOL. Of all the surgical choices our patients entrust us to make, this is still the most basic and important.

In practice, this decision is often based upon anecdotal experience—both our own and that of other respected surgeons. Many IOL manufacturers use testimonials in their marketing materials. However, such observations should never supplant the need for well designed prospective clinical studies. Attempting to compare the posterior capsule opacification (PCO) rate among different IOL materials illustrates the pitfalls of an anecdotal approach.

It is common to hear speakers or authors discuss their "YAG rate" with a particular IOL model. However, as a measure of PCO frequency, the capsulotomy rate may be inaccurate for many reasons. PCO development is influenced by many surgical factors besides the IOL. These may include the thoroughness of cortical cleanup, in-the-bag placement of the IOL, the capsulorhexis diameter relative to the optic, anterior or posterior capsule polishing, and postoperative medication. Relevant patient variables may include age, degree of inflammation, and coexisting conditions, such as diabetes. Only a prospective, randomized study can control for these important covariables—particularly because we change our surgical technique over time.

A YAG rate is meaningless without knowing the follow-up period and follow-up percentage.

Since PCO is of delayed onset, a minimum of several years follow-up would be necessary for a valid measure of incidence. Additionally, one can not assume that all patients with a secondary membrane will schedule a follow-up examination.[1] Depending on their lifestyle and expectations, some patients may not be bothered enough by clinically significant PCO. Others may not choose or be able to access the original surgeon. Reasons for this might include insurance changes, follow-up by a different eye care provider, and relocation or death of the patient.

Once a secondary membrane is diagnosed, the indications for elective capsulotomy vary based upon subjective criteria, including individual needs, risk factors, and visual potential. For this reason, an objective means of recording and quantifying PCO, such as a digital image,[2,3,4] is much more accurate than using the capsulotomy rate to determine the incidence of secondary membrane.

Finally, because of differences in optic designs and material formulations, it may be incorrect to extrapolate findings from one IOL model to another made of the same type of material. For example, it may be difficult to differentiate between the IOL design or the material as the reason for a decreased PCO rate. A truncated, square optic edge has clearly been shown to block posterior migration of lens epithelial cells. This has been demonstrated in vitro,[5] in rabbits,[6] in randomized clinical trials,[3,4] and in post-mortem studies[7]. What is less clear is whether the Acrysof (Alcon) IOL's acrylic material provides a PCO advantage above and beyond its squared edge, since these two variables have not been investigated separately in a clinical study.

Mechanical design differences notwithstanding, Dr. Olson discusses clinical differences in biocompatibility and PCO rates among lenses made from first- and second-generation silicone. That different silicone materials can behave so dissimilarly should caution us against categorizing all hydrophobic acrylic or all hydrogel materials together in the future. Additional studies will be needed to clarify how, and to what extent, specific materials provide PCO benefits apart from the lens design itself.

Dr. Olson reviews several important comparative IOL studies that have been reported within the last year. Collectively, they give us long awaited, unbiased information about biocompatibility, incision size, and PCO differences. Although they confirm that the growing preference for foldable IOL's is appropriate, they challenge any notion that there is one clear-cut IOL material of choice. As newer lens materials and designs continue to evolve, these recent studies remind us to rely upon an evidence-based approach in evaluating our IOL choices.

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