

A +46 D IOL under topical Anesthesia: A bravado of an impetuous cataract surgeon

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While enjoying a cup of tea with a group of experienced surgeons at a recent conference, I could not help to ponder when they all exchanged views on the highest Intra ocular lens (IOL) power they have implanted.

It was apparent that despite significant surgical experience most surgeons did not take special precautions on approaching small eyes requiring cataract surgery. Performing cataract surgery on a small eye is particularly challenging, not only because of unpredictable postoperative refractive error but because of higher risk of intraoperative and postoperative complications.

Choice of an IOL power is perhaps the least of concerns for an experienced cataract surgeon when performing phacoemulsification in a small eye. Alaxender Day et al discussed interesting outcomes of phacoemulsification in small eyes showing that the risk of complications rise by 4.5 times if axial length is less than 20.5 mm and rises to 21 times with eyes smaller than 19 mm axial length.¹ In 2022, a study investigating relationship between intraoperative complications of cataract surgery and axial length was conducted by the Royal College of Ophthalmologists. This study reported that the rate of any intraoperative complications was higher for small eyes as compared to the medium and long eyes.² Interestingly the risk of posterior capsular rupture was not higher but it was the risk of iris trauma, endothelial damage, zonular damage, fluid misdirection and aqueous misdirection. Risk of complications including aqueous misdirection can be observed even many years after the surgery.

Hence meticulous preoperative preparation will not only reduce the risk of intra operative complications but can also prepare the surgeon to anticipate and hence take appropriate surgical decisions to mitigate the risks like difficulty in maintaining the chamber, iris prolapse and aqueous misdirection. Post operative inflammation in such cases can be protracted and can lead to supraciliary effusions or worsen the preexisting pathology. Hence appropriate use of steroids and cycloplegia may also be required to reduce the risk of supraciliary effusions and aqueous misdirection.

Similarly inability to identify thick vascular choroid and/ or a thick sclera preoperatively may lead to higher risk of fluid and aqueous misdirection and as well as higher risk of post-op macular oedema. Such a complication may be prevented by planning surgery under General anaesthesia (GA) with pre-operative intravenous mannitol. While operating under GA, it is also possible to reduce end tidal volume of carbon dioxide leading to reduced choroidal volume and hence reducing the risk of aqueous misdirection. Also, mitigating higher risk of aqueous misdirection requires surgeon to be adequately trained in managing such a complication.

It is thus of paramount importance to classify microphthalmia and identify the surgical risks. Even experienced surgeons may not classify microphthalmos correctly and hence not anticipate the surgical risks. For example an eye with axial length of 23 mm may not arise a suspicion of being a small eye unless surgeon pays special attention to anterior segment dimensions and actively look for relative anterior microphthalmos e.g. white to white diameter of less than 11 mm and anterior chamber depth (ACD) of less than 2.2 mm. Smaller and crowded anterior segment may lead to unpredictable surgeon induced astigmatism and refractive error. In addition, industry standards are not stringent regarding the refractive power of IOL over the power of +30 D. Deviation of 1 dioptre from an indented power is an accepted industry standard. This coupled with unpredictable post-op IOL position means that it is unreasonable to promise refractive excellence with patients.

Hence, the challenge is not the implantation of high powered IOL but it is the clinical assessment of a complex pathology to mitigate the risk of complications. Preventing harm and planning management of complications should be the aim.

REFERENCE

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