Commentary: Posterior optic buttonholing of intraocular lens implantation through posterior capsulorrhexis margin: A technique of intraocular lens implantation in cases of anterior capsulorrhexis extension in pediatric cataract surgery

In the current issue of this Journal, authors’ report an interesting paper titled “Posterior optic buttonholing of intraocular lens implantation through posterior capsulorrhexis margin: A technique of intraocular lens implantation in cases of anterior capsulorrhexis extension in pediatric cataract surgery.”[1]

The paper focuses on the utility and the technique of posterior optic buttonholing (POBH) or simply put as ‘posterior optic capture’ of the posterior chamber intraocular lens (PCIOL) in patients with anterior capsulorrhexis extension during pediatric cataract surgery. Authors’ report the occurrence and management of this complication in trainees, and even in more experienced surgeons.

We fully endorse the authors’ point that this complication can lead to surgical difficulties especially in young children where primary posterior capsulorrhexis/capsulotomy (PPC) and anterior vitrectomy are mandatory. This poses the challenges of completing the surgery and preferably placing the PCIOL in the capsular bag, while accomplishing adequate size posterior capsulorrhexis. Options in these patients especially for the beginners include completing PPC and anterior vitrectomy (AV), and placing the IOL in ciliary sulcus, or leaving them aphakic. Proceeding with IOL implantation in the ciliary sulcus or bag-sulcus position increases chances of IOL decentration, optic capture, prolonged surgical time, increased post-operative inflammation, corneal edema, and even ocular hypertension.

The technique of POBH first described Gimbel [for reducing chances of visual axis opacification (VAO) formation],[3] and further elaborated by authors[1] has definite advantages of completing PCCC and still placing the IOL in the bag which further prevents anterior migration of the IOL optic and avoids complications in these patients. Further, POBH will prevent lens epithelial cell migration and prevent dense VAO formation in these patients.[2]

Authors’ report good postoperative outcomes in these patients: Increased post-operative inflammation in 3/25 eyes, transient corneal edema in only 2/25 eyes. Further, only one patient developed VAO at 6-month follow-up, and as reported by the authors this patient had mild IOL tilt as well. These results suggest favorable outcomes of this procedure.

Apart from anterior capsulorrhexis extension, this technique can be further utilized in patients with pre-existing anterior capsular dehiscence e.g., traumatic cataracts, patients with large calcified anterior capsular plaques/fibrotic anterior capsules (which might necessitate large anterior capsulorrhexis), and anterior lenticonus. This situation might arise even in intumescent cataracts with intraoperative extension of anterior capsulorrhexis. However, it might be difficult to practice this technique in patients with posterior lenticonus, and partially absorbed cataracts, where the posterior capsular support might be weak.

A few important surgical considerations in these cases are performing manual posterior capsulorrhexis vs. using vitrectome, choosing 3-piece PCIOL (with rigid haptics), obtaining adequate optic capture and the learning curve in these cases. Even though prior literature suggests adequate strength of PCC as compared to manual PCC,[3] at least
theoretically and in our personal experience, it is more likely to extend while doing optic capture, so an adequately sized manual capsulorrhexis is important. The only case who developed VAO, had titled IOL, suggests that even with technique, adequate centration is important. Additionally, as many trainees learn primary posterior capsulotomy by using vitrectome, they might need to learn this technique the posterior capsulorrhexis to be prepared for such an eventuality.

It is interesting to note other options in these cases especially in patients with traumatic cataracts might be retaining a small portion of anterior capsule (like a band) to prevent anterior migration of the IOL optic,[4] and prevent future decentration, and use of intra-operative OCT[5] whenever available to facilitate the surgical procedure. This shall enable in identifying relation of anterior capsule, PC opening and positioning of IOL in these cases for optimizing results.

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