

Single Functional Eye With a Dehiscent Posterior Capsule

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As a surgeon, I like to approach every difficult situation as a challenge to overcome. Sometimes I succeed; sometimes I do not. I chose to discuss this case, because it reiterates the importance of the surgical principles taught to me over the years.

CASE PRESENTATION

A 10-year-old boy was referred to me for congenital cataract surgery on his right eye. His left eye had previously undergone surgery by another ophthalmologist for a congenital cataract. Unfortunately, the course was not as good as expected, and the child had ended up with an ACIOL and subsequent corneal decompensation with severe glaucoma. For the past year, he had experienced difficulty reading and writing, which was negatively affecting his performance at school.

A dilated examination of his right eye revealed two distinct lesions. There was a well-demarcated area of preexisting defect in the posterior capsule, documented by the presence of thick demarcated margins and white dots on the posterior capsule and in the anterior vitreous (the fishtail sign) (Figure 1). Adjacent to the defect was a sharply defined area of globular thinning of the posterior capsule. Posterior capsular bowing (posterior lentiglobus) was visible, and the junction between the edge of the globular anomaly and the adjacent capsule was sharply defined.

My task was to remove the lenticular material and, more importantly, to place an IOL, preferably in the capsular bag.

SURGICAL COURSE

Strategy

I had two surgical options. The easier was to perform a pars plana lensectomy with anterior vitrectomy and either implant the IOL in the ciliary sulcus or fixate it to the iris/sclera. Because the child was monocular, I want-



Figure 1. Preoperatively, an oval area of preexisting defect with an adjacent round area of lentiglobus was visible in the posterior capsule.

ed to implant the IOL in the bag. My plan was to remove the lenticular material without extending the posterior capsular defect, after which I would try to achieve a strong posterior capsulorhexis margin for implantation of the IOL in the bag.

Cataract Procedure

As always, I adopted a closed-chamber technique. It includes a valvular incision, injection of an ophthalmic viscosurgical device (OVD) into the anterior chamber before the removal of any instruments from the eye, bimanual I/A, and a two-port anterior vitrectomy, if required. Initially, I made a 1-mm clear corneal paracentesis incision. Subsequently, I created an anterior capsulorhexis under sodium hyaluronate 1.4% (Healon GV; Abbott Medical Optics Inc., Santa Ana, CA). The anterior capsulorhexis was initiated with a 26-gauge needle and completed using a microincisional capsulorhexis forceps (ASICO LLC, Westmont, IL) that was compatible with the 1-mm incision.

I avoided hydrodissection because of the dehiscent posterior capsule. I performed bimanual I/A while adhering to the principles of the slow-motion technique described by Robert Osher, MD.¹ My fluid parameters

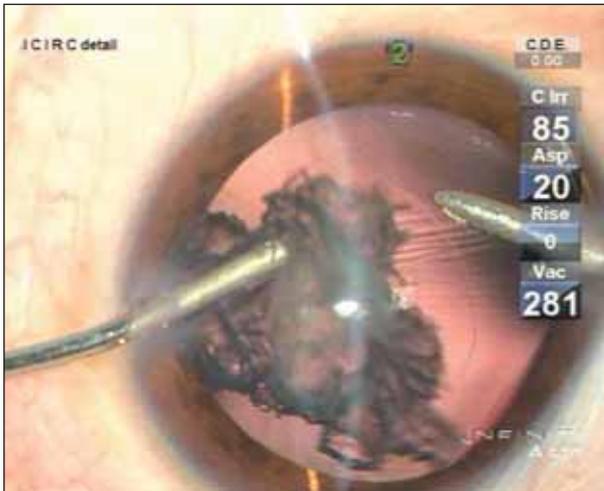


Figure 2. The surgeon used modest aspiration parameters.

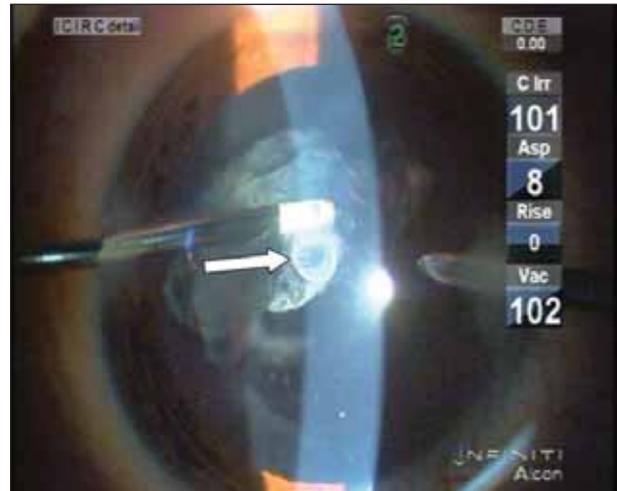


Figure 3. The whitish disc-like area showed adhesions of the cortex to the underlying lentiglobus.

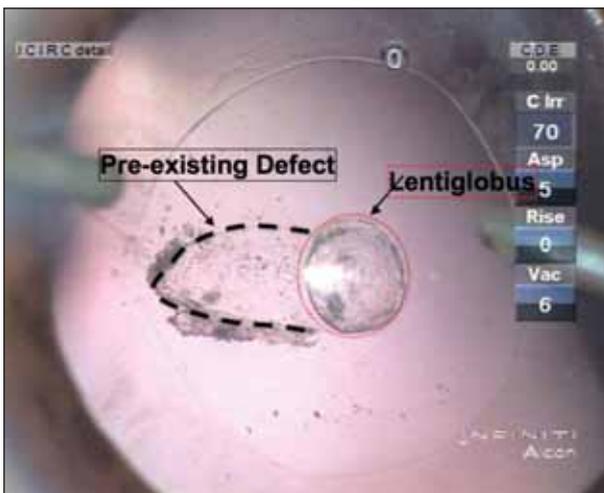


Figure 4. The area of posterior lentiglobus and preexisting defect were distinctly visible after cortical removal.

were modest, and I further reduced them as cortical aspiration proceeded. Specifically, I used an aspiration flow rate of 20 mL/min, preset vacuum of 300 mm Hg, and a bottle height of 80 cm. I would like to emphasize here the importance of using as low an aspiration flow rate and bottle height as possible in order to minimize turbulence and fluctuations in the chamber (Figure 2). This, in turn, will minimize forward movement of the posterior capsule and prevent extension of a preexisting dehiscence.

As I proceeded with cortical aspiration, a distinct disc-shaped whitish area could be seen in the cortex above the area of lentiglobus, suggestive of an adhesion to the overlying cortex (Figure 3). I always inject an OVD before

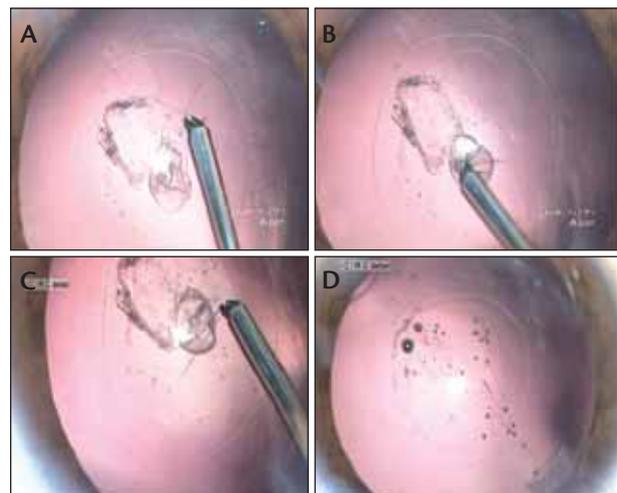


Figure 5. The surgeon carefully performed a controlled posterior capsulorhexis to encompass the areas of weakness (A-C) to produce a complete, centric posterior capsulorhexis (D).

withdrawing the irrigating probe from the eye to prevent transient shallowing of the anterior chamber and forward bulging of the posterior capsule-anterior vitreous face complex.

Posterior Capsular Management

At the completion of I/A, the preexisting defect with the adjacent area of posterior lentiglobus was easily visualized (Figure 4). Now, I had to consider the options for managing the posterior capsule. Although I could have implanted the IOL straightaway, the weakened posterior capsule might then have given way, and I might have

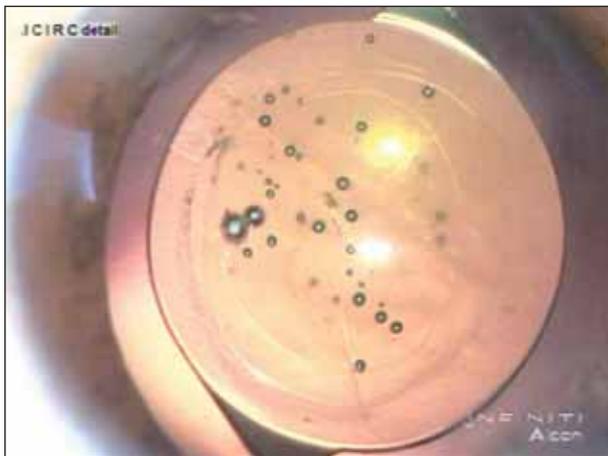


Figure 6. In-the-bag implantation of a single-piece hydrophobic acrylic IOL.

ended up placing the IOL in the sulcus. The better option was to create a strong margin in the posterior capsule that would allow in-the-bag implantation. My goal was to perform a manual posterior capsulorhexis that encompassed the areas of defect and weakness to create a strong margin. Creating a correctly sized posterior capsulorhexis in cases such as this one, however, is not always predictable. My backup plan was to perform a pars plana vitrectomy with anterior vitrectomy. With a vitrectomy, however, the size of the opening cannot always be controlled, which is why I had reserved this approach as a second alternative.

I nicked the edge of the defect with a 26-gauge needle. I completed the posterior capsulorhexis with the microincisional capsulorhexis forceps by frequently grasping the capsular flap. The direction of pulling should be toward the center as well as anteriorly to prevent extension of the posterior capsulorhexis. I could finally encompass the two areas of weakness within the capsulorhexis. The end result was a complete, strong posterior capsulorhexis margin (Figure 5). There was no identifiable vitreous disturbance.

At this point, I enlarged the paracentesis incision to 3.2 mm and implanted a single-piece AcrySof Natural IOL (+25.00 D; Alcon Laboratories, Inc., Fort Worth, TX) in the capsular bag (Figure 6). I could maneuver the lens as it slowly unfolded. After suturing the main incision with 10-0 nylon, I injected 0.1 to 0.2 mL of preservative-free triamcinolone acetonide (Aurocort; Aurolabs, India; not available in the United States) intracamerally to confirm the absence of vitreous in the anterior chamber. I find this a simple yet effective means of identifying vitreous disturbance/residual vitreous, particularly after pediatric cataract surgery.

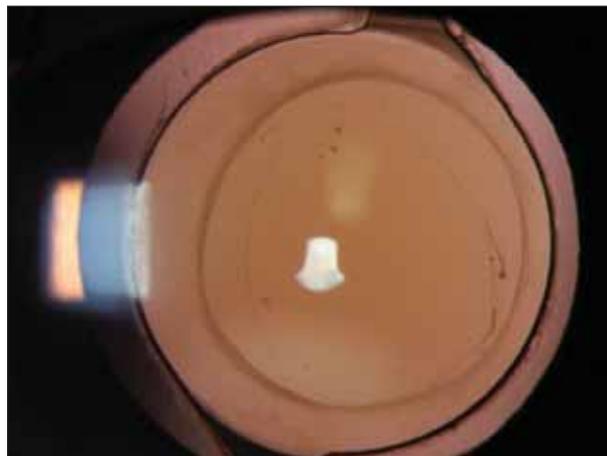


Figure 7. A well-centered IOL and clear visual axis 1.5 years postoperatively.

OUTCOME

One year postoperatively, the child continued to do fine, with a BCVA of 6/18. At his last follow-up visit, the IOP was well controlled, the IOL was well centered, and the visual axis remained clear (Figure 7). The boy and his parents are delighted that he can attend school and catch up with his studies.

LESSONS LEARNED

For me, this case confirmed the value of adhering to the principles of a closed-chamber technique and using microinstrumentation to maintain a closed chamber during all phases of the lens' removal. I found that using modest fluid parameters minimizes fluctuations in the anterior chamber as well as fluttering of the posterior capsule. The case also reinforced for me that injecting an OVD before retracting instruments from the eye prevents transient forward bulging of the posterior capsule-anterior vitreous face. Finally, the case impressed upon me the advantages of implanting a single-piece hydrophobic acrylic IOL in the bag. ■

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1. Osher RH. Slow motion phacoemulsification approach. *J Cataract Refract Surg.* 1993;19(5):667.