

CASE REPORT

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Pars Plana Capsulectomy with Scissors and Micro Forceps: A Case Report of an Alternative Approach for Membranous Posterior Capsule Opacity

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ABSTRACT Pediatric eye injuries are the leading cause of unilateral blindness in childhood. Post-traumatic cataract development is common, and the risk of posterior capsule opacity occurrence is seen at a high rate. Nd-YAG laser capsulotomy or anterior vitrectomy may be useful, but some patients develop thick posterior membranous capsule opacity and mentioned techniques may not be performed. A 6-year-old girl who had a corneal tear repair, traumatic cataract and thick posterior capsule membrane, which could not be cleared by Nd-YAG laser or vitrectomy, was removed with scissors and micro forceps through the pars plana vitrector entrances. Here, we present a case report as an alternative method of posterior capsulectomy.

Keywords: Pediatric eye injuries; posterior capsule opacity; traumatic cataract; pars plana capsulectomy

Posterior capsule opacity may have fibrous membrane characteristics, especially when it develops after trauma, in childhood. It can be difficult to treat with classical techniques such as YAG-laser capsulotomy or anterior vitrectomy with capsulectomy. In this article, an alternative approach with pars plana capsulectomy with scissors and micro forceps used in a pediatric patient who could not be treated with conventional methods is presented.

CASE REPORT

A 6-year-old girl was admitted to our clinic after self-injuring her eye with a knife. The patient's right eye had a perforated anterior capsule with a full-thickness corneal tear extending from 2 to 7 o'clock and lens materials in the anterior chamber (Figure 1). The patient was taken to an emergency operation under general anesthesia. The existing corneal incision was sutured with 10.0 monofilament, the anterior chamber was formed by ophthalmic viscoelastic device

(OVD), and then the existing lens residues were removed by irrigation and aspiration cannulas (Figure 1). The patient, who was planned for post-operative cataract surgery following corneal incision healing, came for the control examination 1 month later, and the lens was spontaneously dislocated to the anterior chamber and corneal edema was observed. She was taken into operation again under emergency conditions. The lens in the anterior chamber was cleaned by phacoemulsification. The remaining anterior capsule was made as rounded as possible with Utrata forceps under OVD. Posterior capsular opacification (PCO) was observed, but posterior capsulotomy could not be performed due to corneal edema. The capsule support was found to be good and the zonules were intact, so a 22.5 diopter acrylic single-piece lens (Acrysof IOL, Alcon, USA) was implanted into the capsular bag. In the postoperative follow-up, the intraocular lens was central and in the bag position, but diffuse membranous posterior capsule opacification

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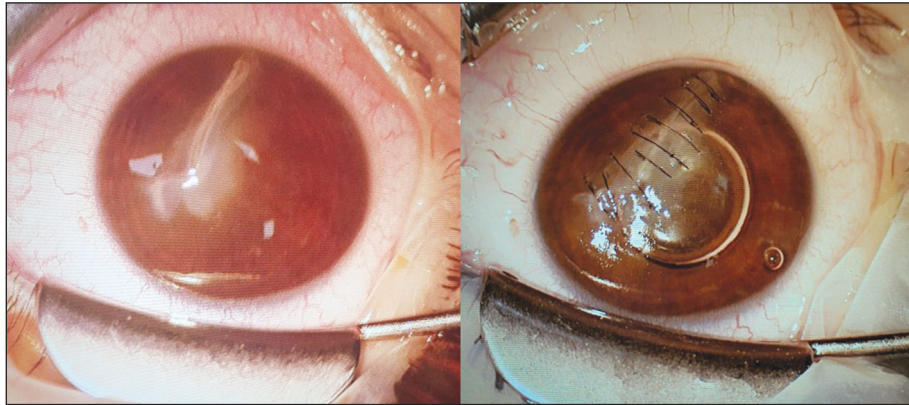


FIGURE 1: Pre-operative corneal incision and lens materials in the anterior chamber on the right side and post-operative corneal sutures with an intracameral air bubble on the left side.

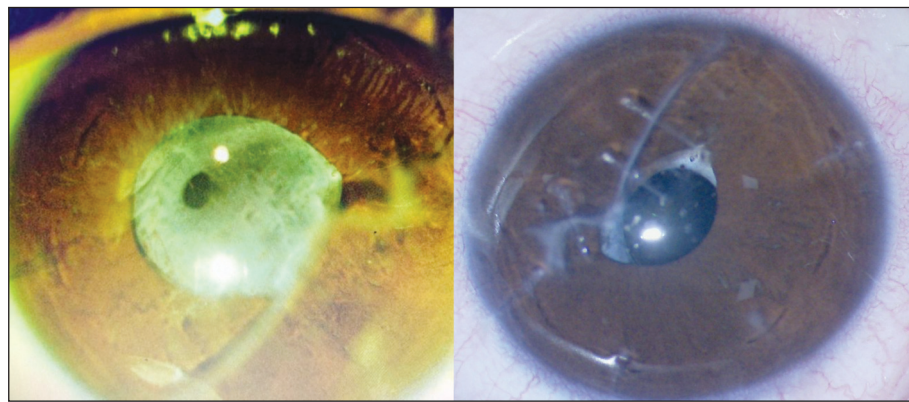


FIGURE 2: Diffuse membranous posterior capsule opacification on the right side, a round-shaped 2.5 mm caliber posterior capsular opening after pars plana membranectomy with suture removal on the left side.

was observed. Neodymium: YAG (Nd-YAG) laser capsulotomy was tried on the cooperative child, but it was not successful, thought to be the membranous structure was too thick (Figure 2). Under these conditions, posterior capsulectomy and anterior vitrectomy were planned with the pars plana approach. 23-gauge vitrectomy ports were opened at 10 and 2 o'clock 3.0 mm away from limbus. The infusion was provided from one. Posterior capsulotomy was tried with the vitrector from the other entrance, but it was observed that the membranous structure was too thick and the vitrector could not break this structure. A 2.5 mm round capsulectomy was performed with curved 23-gauge retinal scissors, small incisions were made in line with the axis and with the help of micro forceps, the hole widened. Then, the anterior hyaloid was removed with the vitrector. Posterior segment examination was performed with Eibos 2 (Haag-Streit, Switzerland) and revealed no pathology. At the

postoperative 1st week, the refractive error of the patient is +0.75 -1.75 axis 60 was measured. In this examination, it was observed that the visual acuity of the patient, who was at the level of hand movements, was improved to LogMAR 0.1 and 0.0 by improving her vision with the Snellen child chart (Figure 2). Because of her visual acuity was LogMAR 0.0, occlusion therapy was not given, and she was followed up closely for amblyopia one year without decreasing vision.

Written informed consent was obtained from the patient and her family for publication of this case report and accompanying images.

DISCUSSION

Ocular trauma is the leading cause of unilateral blindness in the world. Childhood eye traumas differ from adult eye traumas in that they can cause amblyopia.

The development of post-traumatic cataracts and PCOs are common. It has been reported that the rate of PCO formation in pediatric eyes with traumatic cataracts is higher than non-traumatic cataracts, even up to 100%.^{1,2} For children who have traumatic cataract surgery, primary posterior capsulectomy and vitrectomy should be considered, regardless of age at the time of surgery.³ Capsulectomy and anterior vitrectomy can be performed with a corneal or pars plana approach with 23, 25, and 27 gauge systems.⁴ Capsulotomy or capsulectomy could not be performed in our case due to corneal edema. In these cases, or developing posterior capsule opacities later, Nd-YAG laser capsulotomy a secondary surgical capsulectomy under general anesthesia may be considered. Nd-YAG laser capsulotomy has been used for many years and is the first choice. The latter has the advantage of being an office-based non-invasive procedure that does not require high ability levels, but has the main problem is unable to perform in non-cooperative children.⁷ If the patient is compatible, Nd-YAG laser capsulotomy should be performed without delay to prevent the development of amblyopia. Since our patient was compatible, initially Nd-YAG laser capsulotomy was tried, but only a minimal opening occurred in dense membranous PCO with maximum effort (Figure 2). Therefore, we planned pars plana capsulectomy and anterior vitrectomy for our patient under general anesthesia. During the operation, we came across a surprise that the vitrector was unable to remove the very dense membranous PCO. At this point, the membranectomy technique by cutting the PCO with scissors has been used, which saves the day but is not needed much in modern PCO surgery today.⁸ Very important approach for dealing dense membranous PCOs, creating small flaps using 23 gauge horizontal curved vitreoretinal scissors. With help of the micro forceps, these flaps were turned into a round-shaped 2.5 mm opening suitable for the visual axis and, a routine anterior vitrectomy procedure was performed.

Currently, Nd-YAG laser capsulotomy is common and effectively used in the removal of PCOs, but

the dense membranous PCOs after traumatic cataract may highly occur, especially in childhood and Nd-YAG laser cannot be effective as thought. Pars plana or corneal approach vitrectomy and capsulectomy techniques come into play at this stage, but as seen in our case, even these modern systems seem to be inadequate in removing the membranous PCOs. The tools used in posterior segment surgery such as vitreoretinal scissors and forceps are suitable devices that can be used easily in physical removal of the membrane. Although new surgical instruments are used in many cases today, different methods can be used when these instruments are insufficient, as in our case.

In conclusion, vitreoretinal scissors and forceps are simple but convenient surgical instruments for the removal of membranous dense PCOs with pars plana entry and can be used effectively when necessary, also should be kept in mind as an alternative method.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Mehmet Canleblebici, Hakan Yıldırım; **Design:** Mehmet Canleblebici, Hakan Yıldırım; **Control/Supervision:** Mehmet Balbaba; **Data Collection and/or Processing:** Mehmet Canleblebici, Murat Erdağ; **Analysis and/or Interpretation:** Mehmet Canleblebici, Hakan Yıldırım, Murat Erdağ, Mehmet Balbaba; **Literature Review:** Murat Erdağ, Mehmet Canleblebici; **Writing the Article:** Mehmet Canleblebici, Hakan Yıldırım; **Critical Review:** Murat Erdağ, Mehmet Balbaba; **References and Fundings:** Mehmet Canleblebici, Hakan Yıldırım; **Materials:** Mehmet Canleblebici, Hakan Yıldırım.

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