

Delayed Cortical Matter Protrusion Following Idiopathic Bilateral Anterior Capsular Rupture: A Case Report

Running Title: Bilateral idiopathic anterior capsular rupture

Dr. Gursimar Kour¹, Dr. Chandni Arora², Dr. Divyanshu Gupta³, Dr. Renu Hashia⁴

¹MBBS, Junior Resident, Department of Ophthalmology, Acharya Shri Chander College of Medical Sciences and Hospital (ASCOMS), Sidhra, Jammu, Jammu and Kashmir, India. Email: [dr.gursimarkour\[at\]gmail.com](mailto:dr.gursimarkour[at]gmail.com)

²MBBS, MS (Ophthalmology), Assistant Professor, Department of Ophthalmology, ASCOMS, Sidhra, Jammu, Jammu and Kashmir, India. Email: [chandni.arora527\[at\]gmail.com](mailto:chandni.arora527[at]gmail.com)

³MBBS, Junior Resident, Department of Ophthalmology, Department of Ophthalmology, Acharya Shri Chander College of Medical Sciences and Hospital (ASCOMS), Sidhra, Jammu, Jammu and Kashmir, India.

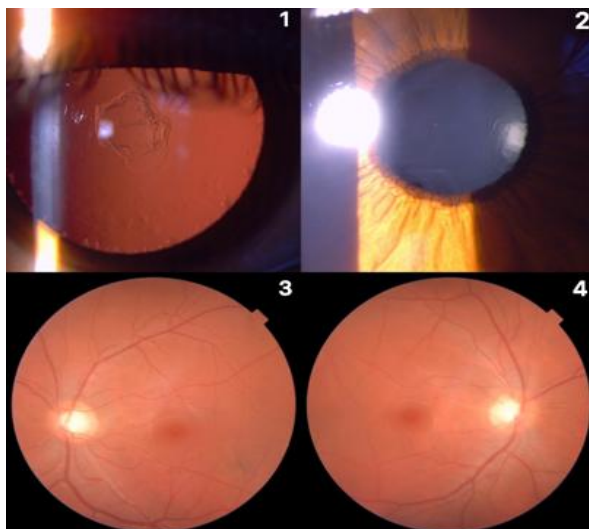
⁴MBBS, MS (Ophthalmology), Professor & Head, Department of Ophthalmology, ASCOMS, Sidhra, Jammu, Jammu and Kashmir, India
Corresponding Author Email: [renuhashia66\[at\]gmail.com](mailto:renuhashia66[at]gmail.com)

Abstract: *Anterior capsular rupture without trauma or any systemic cause is rare. A 21-year-old man came in with redness in both eyes. Slit-lamp examination showed a tear of the anterior capsule on each side, with no cortex in the anterior chamber at that point. His intraocular pressure was up, and we controlled it with topical and oral drugs. He came back two weeks later. The right eye had now extruded cortical material through the tear; the left eye looked the same as before. Orthopedic workup for an underlying connective tissue disease was negative. When a defect like this is found, the patient needs close monitoring. The cortical prolapse and the IOP rise may not be apparent at the first visit.*

Keywords: Anterior capsular rupture, cortical protrusion, intraocular pressure, secondary glaucoma, spontaneous rupture

1. Introduction

Spontaneous tears of the anterior lens capsule are uncommon. Most reported cases are in patients with hypermature cataract or pseudoexfoliation. A few have an underlying basement-membrane disease such as Alport syndrome. The other usual cause is blunt trauma. [1] The capsule itself is the thickest basement membrane in the body and does not tear easily. We report a 21-year-old man who had a capsular defect in both eyes at presentation. The systemic workup was negative. Over the next two weeks, cortical prolapse developed in one eye and the IOP went up.



2. Case Report

A 21-year-old man came to the ophthalmology OPD with a gradual painless drop of vision in both eyes, along with mild redness and itching. He gave no history of trauma, surgery, or any systemic disease. His unaided vision was 6/12 in each eye and improved to 6/9 with correction (OD -1.00 DS/-1.00 DC $\times$ 160°; OS -0.75 DS/-0.50 DC $\times$ 80°). On Goldmann applanation, intraocular pressure (IOP) was 20 mmHg in the right eye and 25 mmHg in the left. On slit-lamp examination, both eyes had circumcorneal congestion. Corneas were clear, anterior chambers were deep, and the lens showed early cataractous changes. A well-defined break in the anterior capsule was seen in each eye. (Figure 1) No cortical material had spilled into the anterior chamber at this point. (Figure 2) Fundus examination after dilatation was normal. (Figure 3, 4) We started topical latanoprost once daily, a fixed combination of dorzolamide and timolol, and oral acetazolamide to bring the IOP down. The patient came back after two weeks. The right eye had developed an active extrusion of cortical lens material through the defect into the anterior chamber. The left eye was unchanged. The capsular tear was the only finding there, and the IOP was still on the higher side. Because the patient was young and both eyes were involved, we asked the orthopedic department to examine him for any underlying connective tissue disease. The workup was unremarkable. He was planned for bilateral cataract extraction with intraocular lens implantation and is on regular follow-up.

3. Discussion

The anterior lens capsule is the thickest basement membrane in the body. It carries most of the structural load on the lens. A spontaneous tear here is rare outside a hypermature cataract or blunt trauma. [2], [3] When neither of these is present, an underlying basement-membrane disorder like Alport syndrome should be considered. [4] The mechanism is not fully worked out. Two explanations are commonly cited. The first is age-related loss of tensile strength of the capsule, which would explain why most reported patients are elderly and have advanced cataract. [2], [4] The second is a rise in intralenticular pressure from cortical liquefaction acting on a capsule that is already weakened. [4], [5] In younger patients, the second mechanism is more often cited, usually with an underlying collagenopathy. [3], [6] Our patient did not fit either pattern. He was 21, had no history of trauma, and his systemic workup, including an orthopedic opinion, was negative. The timing was the unusual feature of the case. At presentation only the capsular defect was visible; the cortex did not push through until two weeks later, and only in the right eye. A similar delay between the appearance of the defect and the cortical prolapse has been described previously. [2], [4] The IOP spike was probably from trabecular obstruction by high-molecular-weight lens proteins and inflammatory debris leaking out through the tear.

4. Conclusion

Idiopathic anterior capsular rupture in a young, healthy adult is uncommon. A bilateral presentation is even less frequent. Once such a defect is identified, follow-up has to be tight, because the cortical prolapse and the IOP rise may only show up several weeks later. Picking these up early is important to preserve vision.

5. Learning Points

- Spontaneous anterior capsular tear is rare in young patients without trauma, and bilateral involvement is even less common.
- The first visit may show only the capsular defect, with no cortex in the anterior chamber.
- Cortical prolapse can follow days or weeks later, and may be unilateral even with bilateral defects.
- The IOP rise is usually due to leak of lens proteins into the anterior chamber and needs early control.
- Always rule out connective tissue disease, particularly Alport syndrome, in a young patient with this finding.

Declaration of Patient Consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initials will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of Interest

There are no conflicts of interest.

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