

**A curious case of bilateral angle closure glaucoma**

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## **Abstract**

We present a case report of a 55-year-old non-verbal male with intellectual disability and scoliosis who presented with bilateral eye pain, headache, and worsening visual behavior. Examination revealed bilateral elevated intraocular pressures and shallow chambers consistent with angle closure glaucoma. Despite initial treatment with bilateral laser peripheral iridotomies and ocular hypotensive medications, he presented again several weeks later with similar symptoms and findings. Cataract extraction and placement of an intraocular lens along with glaucoma drainage device implantation were performed. Surgery in each eye was complicated by the intraoperative discovery of zonular dehiscence, which was later attributed to a history of self-induced trauma in the setting of intermittent explosive disorder. The ultimate diagnosis was bilateral secondary angle closure glaucoma caused by self-induced traumatic lens subluxation.

## **History**

A 55-year-old male with history of glaucoma controlled on latanoprost nightly in both eyes, intellectual disability, schizophrenia, seizure disorder, scoliosis, and hypertension presented to his ophthalmologist with one day of worsening severe bilateral eye pain, worsening vision, headache, and decreased appetite. As the patient was nonverbal, limited history was available via his caregiver, who reported no obvious history of trauma, nor use of topiramate or other sulfa-based medications.

## **Examination**

On examination, visual acuity could not be assessed, and intraocular pressures were 60 mmHg in the right eye and 45 mmHg in the left eye. Given difficult cooperation and positioning, limited slit lamp examination revealed bilateral conjunctival injection, microcystic corneal edema with Descemet's membrane folds, shallow anterior chambers with no inflammation, and moderate nuclear sclerotic cataracts. No angle structures were visible on limited gonioscopy. B-scan ultrasonography revealed unremarkable posterior segments. Limited anterior segment optical coherence tomography appeared to reveal bilateral angle closure with possible phacomorphic component.

## **Discussion and Diagnosis**

The patient was diagnosed with bilateral angle closure glaucoma of unclear etiology as there was no evidence of causative medication use nor evidence of causative ocular or systemic pathology. The patient was administered ocular hypotensive drops and oral

acetazolamide. Laser peripheral iridotomy (LPI) was performed with difficulty in each eye. Intraocular pressure could not be measured post-procedure; however, the patient was resting comfortably, seemingly indicative of symptomatic improvement. The patient was started on a regimen of four different ocular hypotensive agents in both eyes in addition to oral acetazolamide.

Five days later, intraocular pressures were 20 mmHg in the right eye and 16 mmHg in the left eye. Slit lamp examination revealed a patent iridotomy in the left eye but patency was questionable in the right eye. An attempt at repeat LPI in the right eye was unsuccessful due to limited patient cooperation. Acetazolamide was discontinued.

Six weeks later, the patient presented with three days of bilateral eye pain, headaches, and dizziness. At the behest of his primary care physician, the patient stopped all eye drops at the onset of symptoms. Examination revealed intraocular pressures of 41 mmHg in the right eye and 46 mmHg in the left eye. Slit lamp examination revealed bilateral conjunctival injection, microcystic corneal edema with Descemet's membrane folds, and shallow anterior chambers with inflammatory cells.

Given the limited ability to intervene in clinic, the decision was made to proceed with examination under anesthesia (EUA) and cataract extraction along with glaucoma drainage device implantation beginning with the right eye. Surprisingly, lens subluxation and vitreous prolapse were discovered. The right eye had 180 degrees of zonular dehiscence. Cataract extraction and anterior vitrectomy were performed, and an

anterior chamber intraocular lens was implanted followed by insertion of an Ahmed glaucoma valve and creation of a surgical peripheral iridotomy. Post-operatively, intraocular pressure in the right eye improved to within normal range. Further investigation revealed the patient's history of intermittent explosive disorder with self-mutilation including trauma to his eyes. A similar operation was performed in the left eye two weeks later. There was 200 degrees of zonular dehiscence that required pars plana vitrectomy and lensectomy. Postoperatively, intraocular pressure as well as the patient's symptoms were significantly improved.

This case presented multiple challenges. History and detailed clinical examination were difficult to obtain. In a more cooperative patient, phacodonesis or other signs of trauma may have been observed on initial clinical examination. Additionally, LPI may have been more easily performed. Published reports demonstrate that lens-induced secondary angle closure attacks may be misdiagnosed initially as primary angle closure, with zonular instability or lens dislocation identified during routine cataract surgery.<sup>1,2</sup>

Intermittent explosive disorder is associated with high rates of self-injury, however literature is scarce on the prevalence of self-induced eye injury in this condition.<sup>3</sup> Self-induced lens subluxation has been reported in a patient with Tourette syndrome, but was not associated with angle closure glaucoma.<sup>4</sup> There is a single report of angle closure secondary to self-induced lens dislocation caused by chronic eye rubbing in a patient with allergic keratoconjunctivitis.<sup>5</sup>

Surgical management of lens-induced secondary angle closure often includes phacoemulsification with insertion of an intraocular lens. In cases of zonular dehiscence, the precise surgical approach may vary depending on factors such as lens position and extent of zonular dehiscence.<sup>6,7</sup> Iris rings, capsular hooks, and/or capsular tension rings or segments may be necessary. The surgeon should be prepared for potential complications such as anterior vitreous prolapse or loss of lens particles into the posterior segment.

## **Conclusion**

This is a unique case of an intellectually disabled patient with intermittent explosive disorder presenting with bilateral secondary angle closure glaucoma caused by self-induced traumatic lens subluxation. Clinical evaluation of this patient presented multiple challenges and evidence of zonular dehiscence was not discovered until the time of surgery. Patients may not recall a history of ocular trauma, or as in this case, may be unable to verbalize it. Ophthalmologists should obtain a thorough medical history including psychiatric disorders, in addition to looking for signs of trauma in patients who present with signs of bilateral angle closure glaucoma. Furthermore, if examination is limited, a decision to perform an EUA should be an early consideration. Zonular dehiscence should be considered and planned for pre-operatively.

## References

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