Recurrent scleral-fixated intraocular lens dislocation with spontaneous repositioning produced by tilting and head movements

Matthew O’Riordan, MB, BCh, BAO, Vasant Raman, FRCS (Glasg), MS, MBBS

Introduction: An unusual case of a patient who could repeatedly reposition his dislocated sulcus poly(methyl methacrylate) intraocular lens (IOL) by head movements and tilting his body is reported.

Patient and clinical findings: An 86-year-old man presented with a 3-year history of recurrent episodes of transient blurred vision and monocular diplopia in his left eye. 20 years previously, he had phacoemulsification cataract surgery complicated by posterior capsule tear, which was treated with anterior vitrectomy and a secondary scleral-fixated IOL. Over the previous 3 years, he had recurrent episodes of IOL dislocation. He could regain normal vision by tilting his head and trunk. The dislocated IOL was maneuvered into position by capturing the haptic into the residual capsular remnant by appropriate head movements. On examination, his corrected distance visual acuity (CDVA) was counting fingers, and the posterior chamber IOL was subluxated inferiorly. During presentation, he could not reposition it himself, warranting a surgical intervention.

Diagnosis, intervention and outcomes: He underwent suturing of the IOL in the sulcus. The IOL was well-centered with a CDVA of 6/9.

Conclusions: To the authors’ knowledge, this is the first case report of a patient who could repeatedly reposition a dislocated IOL through tilting and head movements.

The incidence of posterior capsule rupture with vitreous loss during phacoemulsification cataract surgery is around 1.4%. The amount of residual capsular support decides the options of securing an intraocular lens (IOL). This can include a ciliary sulcus posterior chamber IOL (PC IOL) if there is adequate capsular support, but in its absence, the options include iris-fixated IOL or scleral-fixated posterior chamber IOL (SF IOL). Scleral-fixated IOL insertion using a sutured technique was first described by Malbrán et al. in 1986. Maggi et al. pioneered a sutureless technique in 1997, which has since been modified into the glued IOL technique and the Yamane technique. Despite similar visual outcomes and a technically challenging operative procedure, scleral fixation remains the preferred method of IOL implantation in patients without an intact capsule.

CASE REPORT

An 86-year-old man presented to eye casualty with sudden-onset diplopia and blurred vision in his left eye after nose blowing. Over the previous 3 years, he had several similar episodes precipitated by sudden head movements, such as sneezing and coughing. He would regain normal vision by tilting his head, with the back flexed forward repeatedly until the symptoms resolved. But during the presentation, he was unable to regain his vision and unable to drive or read. He did not complain of pain or other visual disturbances and denied obvious trauma. He had an ocular history of bilateral primary open-angle glaucoma managed with latanoprost (monopost) drops, brinzolamide/brimonidine tartrate (Simbrinza) topical drops,
and selective laser trabeculoplasty. In addition, he had a background of anterior uveitis with long-standing chronic cystoid macular edema in his right eye accounting for the poor vision in that eye. His medical history included atrial fibrillation, mitral valve repair for mitral stenosis, and transient ischemic attack.

On examination, his corrected distance visual acuity (CDVA) was 6/24 in his right and left eyes. He had no relative afferent pupillary defect. A slitlamp examination in the left eye revealed an inferiorly dislocated IOL with the IOL haptic visible in the visual axis (Figure 1). The anterior chamber was deep and quiet, and intraocular pressure measured 18 mm Hg and 14 mm Hg in the right and left eyes, respectively. A fundus examination revealed a cup-to-disc ratio of 0.8 in both eyes. Optical coherence tomography (OCT) demonstrated a lamellar macular hole with epiretinal membrane in the left eye and chronic cystoid macular edema in the right eye. The right pseudophakic IOL was well-centered. The left eye had a CDVA of 6/9 during his previous visits. He was still active and wished to continue driving.

As the IOL remained permanently dislocated and the vision in the left better eye impaired, he wished to have an IOL fixation procedure. In the past, because the repeated episodes of IOL dislocation, the patient wished to have a permanent surgical intervention but was dissuaded from it because of a low endothelial cell count (cell density of 952 cells/mm²). In the current instance, the patient was ready to undertake the risk for endothelial decompensation with a need for a corneal graft should the need arise. Surgery was performed without using an anterior chamber maintainer or any ophthalmic viscosurgical device in the anterior chamber. The integrity of the anterior chamber was maintained by extramanipulation in the anterior chamber was avoided to prevent an increased risk for corneal decompensation. At 1 week follow-up, the IOL was well-centered (Figure 2) with a clear cornea and no anterior chamber activity. His CDVA was 6/9 in the left eye, and intraocular pressure measured 19 mm Hg. This was maintained at his most recent visit 2 months postsurgery.

**DISCUSSION**

We described a case of recurrent SF IOL dislocation and self-repositioning by head and body tilting. Over the years, he had astutely worked out the head movement strategy to reposition the dislocated IOL. It is likely one of the fixation sutures had initially severed 3 years previously, but with head maneuvers, he could reposition the IOL by capturing the superior haptic into some capsular remnant. The PC IOL was suspended in the ciliary sulcus with just one intact suture in place. The superior free haptic would rotate within the ciliary sulcus with the intact fixed inferior haptic acting as a hinge. The IOL was never seen to move in an anteroposterior direction although the eye was vitrectomized, and the posterior segment would not have offered any resistance, particularly in the supine position. This cycle of dislocation and repositioning continued for several years until the IOL became permanently dislodged. The displaced haptic was then sutured to the sclera, which has since successfully prevented any further dislocation, at least in the short-term.

Complications of SF IOLs include knot erosion, suture breakage with IOL tilt and dislocation, ocular hypertension, suprachoroidal hemorrhage, retinal detachment, and endophthalmitis. Rates of IOL dislocation with sutured SF IOL vary between 0% and 15% among studies with a minimum follow-up of 50 months. McAllister et al. reported that among 82 eyes of 72 patients across a mean follow-up of 83 months, 5 eyes (6.1%) experienced suture breakage. This occurred at a mean of 4.9 years postoperatively. The rate of suture breakage is known to increase with a longer follow-up, yet there are no studies that have evaluated this risk beyond a 10-year span. Younger patients are at a higher risk, which is likely due to continuous microtrauma associated with a more active lifestyle.
In our patient, chronic biodegradation of the suture material and gravitational pull likely resulted in suture erosion almost two decades after implantation.4

In recent years, there has been debate over the most appropriate suture material for scleral fixation. Sutures with bigger knots such as the Gore-Tex 7-0 polytetrafluoroethylene suture and the 9-0 polypropylene with its increased tensile strength have been suggested as alternatives to the 10-0 polypropylene, to mitigate against the risk for suture erosion.8,9 Recently, however, Wasiluk et al. reported a suture breakage rate of 13.8% among patients with a 9-0 polypropylene suture, which is similar to studies analyzing the 10-0 suture.10 The case series by Bhojwani et al. using the polytetrafluoroethylene suture included 100 patients with a mean follow-up of 23 months, and they reported no case of suture breakage or IOL displacement.11 A large study with a longer follow-up period is still required to ascertain the rate of suture breakage and compare accurately between the different suture materials. Suture breakage with IOL luxation remains the most common reason for reoperation among patients with an SF IOL.4 Despite recent repositioning, the patient in this case will still carry a significant risk for suture degradation with IOL dislocation from both the repaired and the opposite haptic suture.

To the authors’ knowledge, this is the first case of an SF IOL undergoing recurrent subluxation and spontaneous repositioning, produced by the patient’s head movements.

WHAT WAS KNOWN BEFORE
- Dislocation of SF IOL due to polypropylene suture breakage is well known.

WHAT THIS PAPER ADDS
- A rare case of suture breakage, from an SF IOL undergoing recurrent subluxation and self-repositioning, effected by the patient’s head and body tilting maneuver, is reported.
- Suturing the dislocated IOL haptic into position in such cases can be an effective management option if the patient can no longer reposition the IOL.

REFERENCES
1. National Ophthalmology Database Audit annual report shows a 30% reduction in unadjusted Posterior Capsule Rupture rates. Royal College of Ophthalmologists. Available at: https://www.rcophth.ac.uk/2018/08/national-ophthalmology-database-audit-annual-report-shows-a-30-reduction-in-unadjusted-posterior-capsule-rupture-rates/. Accessed May 20, 2021
2. Malbran ES, Malbran E Jr, Negri I. Lens guide suture for transport and fixation in secondary IOL implantation after intracapsular extraction. Int Ophthalmol 1986;9:151–160
3. Maggi R, Maggi C. Sutureless scleral fixation of intraocular lenses. J Cataract Refract Surg 1997;23:1289–1294
4. Vote BJ, Transo P, Bunce C, Charteris DG, Da Cruz L. Long-term outcome of combined pars plana vitrectomy and scleral fixated sutured posterior chamber intraocular lens implantation. Am J Ophthalmol 2006;141: 303–312
5. Stern MS, Todorich B, Woodward MA, Hsu J, Wolfe JD. Scleral-fixated intraocular lenses: past and present. J Vitreoretin Dis 2017;1: 144–152
6. Patel LG, Starr MR, Ammar MJ, Yonekawa Y. Scleral fixed secondary intraocular lenses: a review of recent literature. Curr Opin Ophthalmol 2020; 31:161–166
7. McAlister AS, Hirst LW. Visual outcomes and complications of scleral-fixated posterior chamber intraocular lenses. J Cataract Refract Surg 2011; 37:1263–1269
8. Price MO, Price FW Jr, Werner L, Berle C, Mamalis N. Late dislocation of scleral-sutured posterior chamber intraocular lenses. J Cataract Refract Surg 2005;31:1320–1326
9. Luk AS, Young AL, Cheng LL. Long-term outcome of scleral-fixated intraocular lens implantation. Br J Ophthalmol 2013;97: 1308–1311
10. Wasiluk E, Krasnicky P, Dmuchowska DA, Proniewska-Skrętek E, Mariak Z. The implantation of the scleral-fixated posterior chamber intraocular lens with 9/0 polypropylene sutures—long-term visual outcomes and complications. Adv Med Sci 2019;64: 100–103
11. Bhojwani D, Vasavada AR, Vasavada V, Vasavada S, Praveen MR, Srivastava S. Intraoperative performance and long-term postoperative outcomes after scleral fixation of IOLs with polytetrafluoroethylene suture. J Cataract Refract Surg 2020;46:1480–1486

Disclosures: None reported.

First author:
Matthew O’Riordan, MB, BCh, BAO
Royal Eye Infirmary, University Hospitals Plymouth NHS Trust, Plymouth, United Kingdom