



Outcomes of dislocated intraocular lens repair with McCannel suture

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To the Editor:

Repair of dislocated intraocular lens (IOL) after cataract surgery can employ a variety of surgical approaches. IOL repositioning can include fixation to iris or fixation to sclera through ab interno and ab externo methods. Among these approaches, McCannel suture iris fixation may provide advantages, especially in cases of absent capsular support or weakened zonules, such as lower risk of endophthalmitis, better suture longevity, and reduced surgical time [1, 2]. Complications of hyphema and/or uveitis can be minimized with optimal technique [3].

In our retrospective chart review, a total of 16 eyes had IOL dislocation repair by McCannel 10-0 polypropylene suture iris fixation from October 2007 to June 2020. Two surgeons, individually conducted the operations (MWM and KHP). The main outcome measures were postoperative visual acuity, change from preoperative visual acuity, and complications observed. Cases of in-the-bag IOL dislocation were included. Group mean values were compared using a one-tailed *t*-test.

The mean (\pm SD) age at surgery was 71.7 ± 11.2 years, and a majority were male (75%). The mean follow-up was 8.2 ± 8.4 months. Of the 16 eyes, 3 had IOL dislocation still within the capsular bag (Table 1). There was improvement from preoperative ($20/97 \pm 190$) to postoperative visual acuity ($20/61 \pm 93$, $n = 16$, $p = 0.1$). For [those] eyes with a 4–20-month follow-up period, there was an improvement from preoperative ($20/134 \pm 237$) to postoperative visual acuity ($20/78 \pm 117$, $n = 10$, $p = 0.1$). The majority ($n = 12$) did not have any postoperative complications. One eye had postoperative vitreous hemorrhage, and two had cystoid

Table 1 Demographics of the patient population.

Age (years)	71.7 ± 11.2
Gender	Male (75%)
Length of follow-up (months)	8.2 ± 8.4
Still in capsular bag	3/16

Table 2 Outcome vision and complications.

Vision	
Preoperative best-corrected visual acuity (Snellan)	$20/97 \pm 190$
Postoperative best-corrected visual acuity (Snellan)	$20/61 \pm 93$
Complications	
Transient cystoid macular edema	2 (12.5%)
Transient vitreous hemorrhage	1 (6.3%)
Recurrent subluxation	1 (6.3%)

macular edema; all these complications resolved with observation or topical therapy. One eye had recurrent subluxation requiring IOL removal and scleral fixated IOL implantation (Table 2).

This study demonstrated good visual acuity outcomes with low rates of complication for patients undergoing McCannel iris suture for IOL dislocation repair. We recommend this technique particularly for dislocated IOL still visible in the pupil and easily elevated into the correction position. The technique can be used for most one-piece and three-piece IOLs. Our approach is supported by another study demonstrating superior outcomes of small-incision iris suturing in the absence of capsular support [4]. Furthermore, a retrospective study for 58 eyes found similarly low rates of complication such as cystoid macular oedema or vitreous hemorrhage [2]. However, another retrospective study for 44 eyes also reported cases of transient increases in intraocular pressure [5]. Studies investigating alternate methods for IOL dislocation repair continue to be wary of iris chafing resulting in increased rates of uveitis and pigment dispersion, which were not

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observed in our study [6]. To avoid this complication, we recommend that the McCannel sutures be tied relatively loosely: tightly enough to maintain IOL position but not so tightly to cause bunching of iris stroma. We recommend mid-iris placement of two McCannel sutures (one per haptic), because a more central location can increase pupillary distortion, and a more peripheral location or the use one suture can increase the risk that the iris haptic will slip out. It is important that surgeons keep this approach in mind because it requires less surgical manipulation and time than some other techniques.

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Author contributions MWM conceived of the idea and planned study design. BKY carried out the review of medical records, statistical analyses, and manuscript writing. All authors provided critical feedback and revision of the manuscript.

Compliance with ethical standards

Conflict of interest The authors declare that they have no conflict of interest

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References

1. McCannel MA. A retrievable suture idea for anterior uveal problems. *Ophthalmic Surg* 1976;7:98–103.
2. Rusu I, Chen Z, Zizva J, Myung JS, Wald KJ. Incidence of cystoid macular edema with iris-fixated posterior chamber intraocular lenses in patients presenting with lens dislocation. *Int Ophthalmol*. 2014;34:1153–8.
3. Chang DF, Masket S, Miller KM, Braga-Mele R, Little BC, Mamalis N, Oetting TA, Packer M. Complications of sulcus placement of single-piece acrylic intraocular lenses. Recommendations for backup IOL implantation following Posterior Capsule Rupture. *J Cataract Refract Surg*. 2009;35:1445–58.
4. Condon GP, Masket S, Kranemann C, Crandall AS, Ahmed II. Small-incision iris fixation of foldable intraocular lenses in the absence of capsule support. *Ophthalmology* 2007;114:1311–8.
5. Michaeli A, Soiberman U, Loewenstein A. Outcome of iris fixation of subluxated intraocular lenses. *Graefes Arch Clin Exp Ophthalmol*. 2012;250:1327–32.
6. Budoff G, Miller CG, Halperin SJ, Jeng-Miller KW, Fine HF, Wheatley HM, et al. One-year outcomes of a novel technique for rescuing and scleral fixating a posterior dislocated intraocular lens-bag complex without conjunctival opening (Hoffman pockets). *Retina*. 2016;36:1935–40.