The Literature

BY EMILY WAISBREN, MD; DAVID C. RITTERBAND, MD; JOHN SEEDOR, MD; AND JAI G. PAREKH, MD, MBA

COMPLICATIONS AND VISUAL OUTCOMES AFTER GLUED FOLDABLE INTRAOCULAR LENS IMPLANTATION IN EYES WITH INADEQUATE CAPSULES

Kumar AK, Agarwal A, Packiyalakshmi S, et al[1]

ABSTRACT SUMMARY

In 2008, Agarwal and colleagues developed a technique for fixating a posterior chamber IOL in eyes with insufficient or absent capsular support using fibrin glue-assisted scleral fixation. They called it the *glued IOL technique*. This study looks at complications and visual outcomes at an average of 16.7 months. Indications for a secondary IOL included intraoperative capsular loss, a subluxated lens, or secondary IOL placement for aphakia. Exclusion criteria included preoperative glaucoma, aniridia, macular scar, traumatic subluxation, combined surgeries, incomplete operative medical records, and postoperative follow-up of less than 6 months. The intraoperative and postoperative complication rates, reoperation rate, and visual outcomes were analyzed.

> "Glued IOLs are an excellent option, with good outcomes and minimal serious complications."

The study included 208 eyes with a mean follow-up period of 16.7 months ±10.2 (standard deviation [SD]). The intraoperative complications were hyphema (0.4%), haptic breakage (0.4%), and deformed haptics (0.9%). Early complications occurred in 29 eyes (13.9%) and included corneal edema (5.7%), epithelial defect (1.9%), and anterior chamber reaction (2.4%). Late complications occurred in 39 eyes (18.7%) and included optic capture (4.3%), IOL decentration (3.3%), haptic extrusion (1.9%), a subconjunctival haptic (1.4%), macular edema (1.9%), and pigment dispersion (1.9%). Reoperation was required in 16 eyes (7.7%). Indications for reoperation included IOL repositioning in seven eyes, haptic repositioning in three eyes, conjunctival suturing in two eyes, and pars plana vitrectomy in one eye. Corrected distance visual acuity improved or remained unchanged in 84.6% of eyes. The postoperative corrected distance visual acuity was 20/40 or better and 20/60 or better in 38.9% and 48.5% of eyes, respectively.

IN VIVO ANALYSIS OF GLUED INTRAOCULAR LENS POSITION WITH ULTRASOUND BIOMICROSCOPY

Kumar DA, Agarwal A, Packiyalakshmi S, Agarwal A[2]

ABSTRACT SUMMARY

The same group as for the previous research[1] performed a prospective study using ultrasound biomicroscopy of glued transscleral-fixated posterior chamber IOLs in eyes with inadequate capsules. The investigators measured optic tilt relative to the iris plane, haptic location, iris-IOL contact, vitreous incarceration, and central anterior chamber depth. They correlated these measurements to clinical variables such as vision and refractive error.

The study enrolled 46 eyes with a mean follow-up period of 24.6 months ±14.3 (SD). Of the eyes, 17.4% showed optic tilt. The investigators found that 92.4% of the haptics were in the ciliary sulcus and 7.6% were in the pars plicata. There was no significant association between optic tilt and haptic location. The mean ocular residual astigmatism was 0.50 ±0.20 D, and there was no difference in the ocular residual astigmatism with and without tilt. There was no correlation between ocular residual astigmatism and IOL position or between tilt and postoperative vision or cylinder.

INTRASCLERAL FIBRIN GLUE INTRAOCULAR LENS FIXATION COMBINED WITH DESCEMET-STRIPPING AUTOMATED ENDOTHELIAL KERATOPLASTY OR PENETRATING KERATOPLASTY

Sinha R, Shekhar H, Sharma N, et al[3]

ABSTRACT SUMMARY

In a retrospective analysis, Sinha et al evaluated the outcomes of intrascleral glued IOL fixation combined with penetrating keratoplasty (PKP) and Descemet-stripping automated endothelial keratoplasty (DSAEK). Outcomes were assessed at 6 months and included visual acuity, anterior segment biomicroscopy, IOP, central

> "The technique is ... strong enough to sustain the manipulation required for more involved corneal procedures such as DSAEK and PKP."

corneal thickness, and IOL status. The study evaluated 11 eyes, six of which underwent PKP and five of which underwent DSAEK. The mean distance visual acuity improved from 1.95 logMAR ±0.29 (SD) to 0.16 logMAR ($P < .001$). The mean central corneal thickness was 0.741 ±0.71 µm preoperatively and 0.579 ±0.20 µm postoperatively ($P < .001$). At 6 months, there were no cases of IOL decentration or complications.

DISCUSSION

When the posterior capsule ruptures or there is a lack of zonular support, an IOL can be placed in the anterior chamber, or it can be implanted in the posterior chamber within the ciliary sulcus. Iris or scleral fixation is used to secure the lens. This approach is generally thought to be superior to anterior chamber IOLs, which carry the risk of complications such as corneal endothelial cell loss, pseudophakic bullous keratopathy, peripheral anterior synechiae, and glaucoma. All of these mechanical complications relate to the anatomic position of the lens.[4]

Although the anatomic position of transsclerally sutured IOLs is preferable, they present their own challenges, including longer surgical time, manipulation of the ciliary body resulting in hemorrhage, suture-related complications such as knot slippage, weakening and erosion of the suture material, IOL tilt, and glaucoma.[5] Kumar et al developed the fibrin glue-assisted scleral fixation technique, which allows for IOL fixation without the placement of sutures.[6] The technique uses a pair of partial-thickness scleral flaps made 180º apart with underlying sclerotomies that allow externalization of the haptic of a three-piece IOL. The haptic tips are buried inside a small scleral pocket, and the scleral flaps are closed using fibrin glue beneath the flap. This is a sutureless technique, and the scleral tunnels permit long-term fixation of the haptics and IOL.[6]

The three studies summarized herein show that glued IOLs are an excellent option, with good outcomes and minimal serious complications. The technique is also strong enough to sustain the manipulation required for more involved corneal procedures such as DSAEK and PKP. Longer-term data are needed as well as comparative, prospective studies. The technique, however, is promising. ■

Section Editor Edward Manche, MD, is the director of cornea and refractive surgery at the Stanford Eye Laser Center and a professor of ophthalmology at the Stanford University School of Medicine in Stanford, California. Dr. Manche may be reached at edward.manche@stanford.edu.

Jai G. Parekh, MD, MBA, is the managing partner at Brar-Parekh Eye Associates in Woodland Park, New Jersey, and chief of cornea and external diseases/chief of the Research Institute at St. Joseph's HealthCare System, located in Wayne/Paterson, New Jersey. Dr. Parekh is also a clinical associate professor of ophthalmology on the Cornea Service at the New York Eye & Ear Infirmary of Mt. Sinai/Icahn School of Medicine at Mt. Sinai in New York City. Dr. Parekh may be reached at (973) 785-2050; kerajai@gmail.com.

David C. Ritterband, MD, is a clinical professor of ophthalmology at the New York Eye & Ear Infirmary of Mt. Sinai/Icahn School of Medicine at Mt. Sinai in New York City.

John Seedor, MD, is a clinical professor of ophthalmology at the New York Eye & Ear Infirmary of Mt. Sinai/Icahn School of Medicine at Mt. Sinai in New York City.

Emily Waisbren, MD, is a fellow in cornea, external disease, and refractive surgery at the New York Eye & Ear Infirmary of Mt. Sinai in New York City. Dr. Waisbren may be reached at (917) 242-1251; ecwaisbren@gmail.com.

1. Kumar DA, Agarwal A, Packiyalakshmi S, et al. Complications and visual outcomes after glued foldable intraocular lens implantation in eyes with inadequate capsules. *J Cataract Refract Surg*. 2013;39(8):1211-1218.
2. Kumar DA, Agarwal A, Packiyalakshmi S, Agarwal A. In vivo analysis of glued intraocular lens position with ultrasound biomicroscopy. *J Cataract Refract Surg*. 2013;39(7):1017-1022.
3. Sinha R, Shekhar H, Sharma N, et al. Intrascleral fibrin glue intraocular lens fixation combined with Descemet-stripping automated endothelial keratoplasty or penetrating keratoplasty. *J Cataract Refract Surg*. 2012;38(7):1240-1245.
4. Smith PW, Wong SK, Stark WJ, et al. Complications of semiflexible, closed-loop anterior chamber intraocular lenses. *Arch Ophthalmol*. 1987;105:52-57.
5. Vote BJ, Tranos P, Bunce C, et al. Long-term outcome of combined pars plana vitrectomy and scleral fixated sutured posterior chamber intraocular lens implantation. *Am J Ophthalmol*. 2006;141:308-312.
6. Agarwal A, Kumar DA, Jacob S, et al. Fibrin glue-assisted sutureless posterior chamber intraocular lens implantation in eyes with deficient posterior capsules. *J Cataract Refract Surg*. 2008;34:1433-1438.

CONTACT US

Send us your thoughts via e-mail to letters@bmctoday.com.