Scleralfixatedintra-ocularlens : A case report

Vijay Pai¹, Jayaram Shetty², Hrishikesh Amin³ & Samatha P. Shetty⁴

^{1,3}Professors, ²Professor & HOD, ⁴Junior Resident, Department of Ophthalmology, K.S. Hegde Medical Academy, Nitte University, Mangalore, Karnataka, India.

Correspondence

Vijay Pai

Professor, Department of Ophthalmology, K. S. Hegde Medical Academy, Nitte University, Mangalore - 575 018, Karnataka, India.

Mobile : +91 98452 78406 E-mail : eyevijay@yahoo.com

Abstract

In the surgical management of aphakia in cases with deficient posterior capsule¹, we have described this particular technique which is cost effective and technically less challenging at the same time with satisfactory results.

Keywords : Scleral fixated IOL, SFIOL, Intraocular lens, Aphakia, Secondary IOL

Introduction

In recent times, Scleral Fixated Intra Ocular Lens (SFIOLs) are preferred over Anterior Chamber IOLs² in the surgical management of aphakia in cases with deficient or absent posterior capsule. Historically, various techniques have been described for SFIOL using sutures, glues or techniques where just the tucking of the haptics of the IOL is done without the use of sutures or glue.^{1,8,9,10,11,12}

In this particular case we would like to describe a novel technique to perform SFIOL without the need for any specialized instrumentation.

Case History

A 72 yr old gentleman presented in the eye OPD with hypermature cataract with secondary glaucoma. Prior to this he had gradual, painless, progressive decrease in vision in the same eye since more than 6 years. He was a known case of Diabetes Mellitus, Hypertension and Ischemic Heart Disease.

His Best Corrected Visual acuity in the right eye was

Perception of Light with accurate Projection of Rays and in left eye was 6 / 18 . Slit lamp examination of his RE showed ciliary congestion, microcystic corneal oedema, shallow anterior

chamber, mild flare, pseudoexfoliative material at the pupillary margin, sluggishly reacting pupil and hypermature cataract. On further examination, phacodonesis along with iridodonesis was noted. Left eye examination on slit lamp was unremarkable except for immature senile cataract. Intraocular pressure was 60mmHg in the right eye and 16mmHg in the left eye by Goldmann applanation tonometry.

Based on the clinical findings a diagnosis of Right eye hypermature subluxated cataract with pseudoexfoliation and secondary glaucoma and Left eye senile immature cataract was made.

After medical control of intraocular pressure, subsequent day lens extraction with anterior vitrectomy was performed under LA. To facilitate the delivery of lens, radial iridotomy was done at 12 'o' clock.

At the time of discharge his best corrected visual acuity was 6/60 and IOP was under control. Patient was re admitted 5 weeks later wherein Right eye scleral fixated IOL with anterior vitrectomy and pupilloplasty was done under LA. (Fig.1)

Two scleral pockets (Fig.2) approximately 3mm*3mm in dimension were created at 3 and 9 'o' clock limbus. Scleral tunnel from previous surgery was re-opened. Two clear corneal side port incisions were made at 2 and 10 'o' clock. Anterior vitrectomy was performed. 10-0 prolene suture with one end straight needle and the other end micro point

Access this article online

Quick Response Code

spatula, was passed at 3 'o' clock and brought out at 9'o' clock by rail road technique³ (Fig.3) using a 1 ½ inch 26 guage needle. The suture was pulled using a sinskey hook through the main wound and was cut. The two cut ends were sutured to the eyelets in the haptics of the SFIOL. The IOL was positioned behind the iris, knots were secured in the scleral bed and the scleral flaps sutured using 10-0 nylon. The radial iridotomy was sutured using 10-0 prolene by Siepser knot^{4, 5}. (Fig.4) Anterior vitrectomy was performed again using Triamcinolone as a guide and the main wound was sutured with single 10-0 nylon suture.

Post operatively, the vision was 6/60 and the patient had mild anterior chamber reaction with IOP of 28mmHg which was managed medically. At the end of first week, the Best Corrected Visual Acuity improved to 6/12 and IOL was well centred(Fig.5) with an intraocular pressure of 16mmHg by Goldmannapplanation tonometry.

Fig.1 : Pre-operative status

Fig.2 : Creating a scleral flap at 9'o'clock

Fig.3 : Rail road technique

Fig. 4 : Siepser knot

Fig. 5 : Final outcome with SFIOL in place

Discussion

Since the introduction of IOLs in the late 1940s by Sir Harold Ridley, there have been a lot of changes in the designs, fixation and indications for its use⁶. Intact posterior capsule is mandatory for routine posterior chamber IOL (PCIOL) implantation⁷. Anterior chamber IOLs have been tried in the absence of posterior capsule but, have been noted to carry high risk of post operative complications. Some surgeons suggested suturing a posterior chamber lens to the iris, but complications such as iris chafing, uveitis, and

pupillary constriction were noted. To avoid these complications, methods to transsclerally fixate posterior chamber lenses to the ciliary sulcus have been developed⁶.

SFIOLs were first reported by Malbran⁸ and co-authors in patients who had previous intracapsular cataract extraction. Later on, various alternatives using different kinds of sutures, needles and IOL designed have been suggested by surgeons world-over.

Technique for sutureless intrascleral fixation of PCIOLs was first reported by Maggi and Maggi^{9, 10}. Gabor and Pavlidis¹¹ described a technique for sulcus fixation of the haptics of the IOL. Use of a biological glue to attach the haptic to sclera was a technique described by Agarwal.^{12, 13}

It is recommended to measure the white to white distance to avoid IOL decentration due to disparity between the globe and IOL. Flexible materials such as polypropylene and polymethylmethacrylate with low resistance to deformation are recommended for the haptics of the IOL. This reduces the risk of haptic fracture during surgery.

Scleral fixated IOLs have the advantages of remote positioning from corneal endothelium and proximity to the nodal point and rotational axis of the eye.

It is necessary to appropriately position the IOLs to prevent complications such as pigment dispersion, raised IOP, intraocular haemorrhage and cystoid macular edema. Scleral fixation of IOLs are also associated with decreased corneal endothelial cell density, IOL tilt, decentration and dislocation, vitreous haemorrhage, post-operative refractive errors, infection and retinal detachment⁹. Another disadvantage is the longer surgical time required for its fixation.

Conclusion

Scleral fixated PCIOL implantation provide favourable visual outcomes in cases with inadequate capsular or zonular support. Needle guided intrascleral fixation of the IOL is possible using instruments used in standard cataract surgery. However, it requires a longer duration of follow up.

References

1. Por Y.M., Lavin M.J. Techniques of Intraocular Lens Suspension in the Absence of Capsular/Zonular Support. *Survey of Ophthalmology*, Volume 50, Issue 5, 429–462
2. Lee V Y, Yuen H K, Kwok A K. Comparison of outcomes of primary and secondary implantation of scleral fixated posterior chamber intraocular lens. *Br J Ophthalmol* 2003;87:1459–1462
3. D K Berler and M A Friedberg. Scleral fixation of posterior chamber intraocular lens implants combined with vitrectomy *Trans Am Ophthalmol Soc.* 1991; 89: 215–234
4. S. Siepser, MD, Closed-Chamber Slipping Suture Technique for Iris Repair. *EyeWorld*, July 1997, page 3
5. David F. Chang, Siepser slipknot for McCannel iris-suture fixation of subluxated intraocular lenses. *J Cataract Refract Surg* 2004; 30:1170–1176
6. Shapiro A, Leen MM. External transscleral posterior chamber lens fixation. *Arch Ophthalmol.* 1991; 109: 1759-60.
7. Apple DJ, Brems RN, Park RB, Kavk-Van Norman D, et al Anterior chamber lenses. Part I Complications and pathology and a review of designs. *Cataract Refract Surg* 1987, 13:157-174
8. Malbran, ES, Malbran, E Jr, and Negri, I. Lens guide suture for transport and fixation of secondary intraocular lens implantation after intracapsular extraction. *Int Ophthalmol.* 1986; 9: 151–160
9. Rodríguez-Agirretxe I, Acera-Osa A, Ubeda-Erviti M. Needle-guided intrascleral fixation of posterior chamber intraocular lens for aphakia correction. *J Cataract Refract Surg* 2009; 35:2051–2053
10. Maggi, R. and Maggi, C. Sutureless scleral fixation of intraocular lenses. *J Cataract Refract Surg.* 1997; 23: 1289–1294
11. Gabor, S.G. and Pavlidis, M.M. Sutureless intrascleral posterior chamber intraocular lens fixation. *J Cataract Refract Surg.* 2007; 33: 1851–1854
12. Kumar DA, Agarwal A, Prakash D, Jacob S, Agarwal A. Glued Intrascleral Fixation of Posterior Chamber Intraocular Lens in Children. *Am J Ophthalmol*, Volume 153, Issue 4, 594 - 601.e2
13. Kumar DA, Agarwal A, Jacob S, Agarwal A. Glued Trans-scleral Intraocular Lens Exchange for Anterior Chamber Lenses in Complicated Eyes: Analysis of Indications and Results. *Am J Ophthalmol*, Volume 156, Issue 6, 1125 - 1133.e2