

Scleral fixation– Where are we?

Editorial

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Correction of surgical aphakia with spectacles or contact lenses have some limits such as image size disparity, “pincushion” distortion, ring scotoma, and altered spatial perception, and implanting an intraocular lens (IOL) provides many advantages over both of these methods. There is yet no established consensus on the best IOL fixation technique in the absence of adequate capsular support. Options include anterior chamber IOLs (AC-IOLs) and suture fixated (SF) or sutureless posterior chamber lens implants (PC-IOLs).

Previous designs of AC-IOLs have been noted to carry a higher risk of post-operative complications such as corneal endothelial damage, uveitis-glaucoma-hyphema syndrome, and cystoid macular edema[1]. Although, newer designs offer significant improvements, they cannot be implanted in the absence of adequate iris tissue[2,3]. In addition, these lenses are placed remote to the nodal point of the eye, thus, form a higher magnification which will cause anisokonia in unilateral cases.

Posterior chamber IOLs are usually placed over a residual capsule or fixated to iris or sclera in the absence of a capsular bag. Fixating the IOL to the iris may cause pupil distortion, limited pupillary dilation and iris chafing, and secondary complications such as intraocular inflammation and secondary glaucoma[4,5]. Also this fixation technique requires sufficient iris tissue for fixating the lens.

Suture fixation of the lens to the scleral wall through the ciliary sulcus or pars plana has a steep learning curve. However, unlike AC-IOLs, sutured PC-IOLs are placed away from the corneal endothelium and anterior chamber angle and therefore less likely to cause endothelial cell loss, anterior synechia or angle closure glau-

coma. Moreover, the lens stays closer to the nodal point, which will form a physiological magnification. Scleral fixation procedure is performed not only in patients in whom IOL fixation is required but also for capsular rings, prosthetic irises and/or lenses or other intraocular drug delivery devices.

Although experienced surgeons have achieved excellent results with various trans-scleral suturing techniques, complications may arise. Suture related complications like suture erosion, suture breakage, and suture-related endophthalmitis are unique to SF-IOLs [6,7]. In order to prevent these, there is the need to bury, or rotate the knot in all techniques. Use of a scleral flap, autologous cornea, dura mater, or fascia lata patches have been described to cover the ends, and rotation of the knot into the tissue has been reported.

Some of the technical problems may be overcome by the use of newer technologies. Lesser complication rates can be obtained when 9-0 propylene or 7-0 Gore-tex sutures are chosen. Also, using a method such as Hoffman scleral pocket technique [8] or rotation of the sutures may help to prevent suture problems. In addition, there are some studies showing the advantages of endoscopic or endoilluminator guided fixation for precise fixation of the haptics in the sulcus [9]. In order to prevent tilt or decentration, a 4-point scleral fixation technique [10,11,12] may be chosen which would facilitate burial of the knots by rotating the sutures in the sclera, but less commonly preferred since it requires 4 scleral entries.

A part from the above-mentioned trans-scleral fixation methods, novel techniques were reported for sutureless intra-scleral IOL fixation, describing fixation of the haptics in limbus-parallel scleral tunnels.

In 2006, Scharioth performed the first intrascleral haptic fixation of a standard three-piece intraocular lens and reported the surgical technique in 2007[13]. Later, a variation of this technique with the use of fibrin glue to attach the haptics to the sclera as well as to glue the scleral flaps and overlying conjunctiva has been published by Amar Agarwal [14]. Although suture less fixation techniques offer significant advantages, further prospective clinical trials with longer follow-up are needed to evaluate the long-term visual outcome and complication profiles in such cases.

To sum up, the surgeon should make the fixation choice tailor made for each aphakic patient considering the risks of complications, the status of the eye and his or her expertise. Long-term results as well as randomized studies are still needed to determine which procedure is better in eyes, which could equally accommo-

date either type of fixation.

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