

A modified technique of sutured scleral fixated Intraocular lens implantation - It's simpler!

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Abstract

Background : Scleral Fixated Intraocular Lens (SFIOL) implantation was first described in 1950. Since then different ways of performing the procedure have been described. These are basically grouped into either ab interno or ab externo techniques. **Method :** A retrospective case-series descriptive study. SFIOLs were implanted in 66 eyes of 66 consecutive patients with varying indications at a tertiary centre. The surgery was performed by an ab externo method with a single suture railroading technique, without creation of scleral flaps and without use of viscoelastic material. Post-operative visual recovery and complications over 12 months follow up were studied. **Result :** Visual recovery after the procedure was comparable to other studies. Complications noted were also similar to other studies. **Conclusion :** SFIOL implantation without the creation of scleral flaps reduced surgical time, while the complication rates remained comparable to similar studies. There was a reduced risk of glaucoma without the use of viscoelastic materials in the surgery.

Keywords : Sutured, Scleral fixated (SFIOL), Apakia, Ab externo

Introduction : Sutured scleral fixated intra ocular lens is an established form of treatment for aphakia. This technique is considered superior to anterior chamber IOL implantation for the reason that, the lens is placed in a position which is commensurate with normal anatomy.⁽¹⁾ These

IOLs reduce the complications of bullous keratopathy, angle damage and glaucoma. They also give superior vision as the position of the lens is closer to the nodal point. SFIOLs are indicated for cases with inadequate capsular integrity to place a PCIOL i.e. capsular tear, zonular dialysis and cases where an ICCE technique was performed as a primary procedure for cataract extraction⁽²⁾.

Materials and Methods : In a retrospective study at a tertiary centre in Eastern India 66 eyes of 66 consecutive patients were operated upon by a single surgeon in a single OT over a period of over 4 years. The SFIOL used was PMMA Aurolabs India with optic size 6.5 mm, length 13mm, A constant 118.5, equiconvex, modified C loop haptic with eyelet. The patients were followed up at postoperative days 1 ,7 ,28 and 56 and 6 monthly thereafter.

Procedure : A 270 ° superior peritomy was done after aseptic cleaning and draping of the eye.

Horizontal markings were made 180 ° apart with a keratoplasty marker 2 mm from the limbus using calipers and marking pen (Figure 1). A 7 mm long limbal incision was made superiorly through which a thorough anterior vitrectomy was performed using a 20 G guillotine cutter. Thorough vitrectomy with dedicated vitrectomy instruments is required at the beginning of surgery in order to avoid vitreous-IOL contact and subsequent inflammation-related problems. Additionally, the anterior vitreous skirt must be cleaned before IOL implantation.

A 10/0 double armed polypropylene suture with straight needles was used to perforate the globe and pass the suture from the 9 o' clock to the 3 o' clock meridian 2 mm posterior to the limbus at the markings made earlier, using a Barraquer forceps in one hand and a bent 26 G needle mounted on a 2 ml syringe in the other, using a railroad technique (Figure 2).⁽³⁾

A loop of the suture was externalized through the superior limbal incision using a Kelman Mc Pherson forceps and divided. The two cut ends of the suture were tied to the haptics of the SF IOL

after passing them through the eyelets. (Figure 3)

The SF IOL was then internalized through the incision ensuring that the sutures remained anterior to the haptics to prevent entanglement of the suture with the haptics(Figure 4). The incision was closed with 3 interrupted sutures of 10/0 polyamide thereafter.

Scleral fixation of the 10/0 prolene suture was done on either side was done by taking 3 intrascleral partial thickness bites with the needle and tying off the final pass with itself (Figure 5). It was ensured that the sutures were kept taut to ensure centring of the SF IOL .

Finally the sutures were trimmed flush with the knots to prevent erosion of overlying tenon's capsule and conjunctiva. ⁽⁴⁾ The peritomy was closed with 8/0 vicryl sutures.

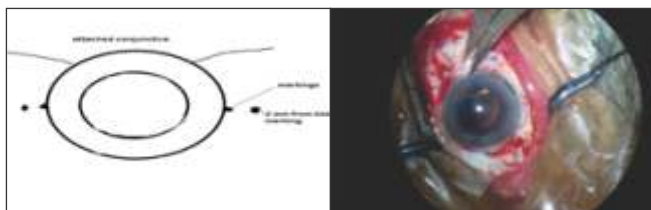


Figure 1 : Marking 2 mm from limbus with caliper and marking pen .

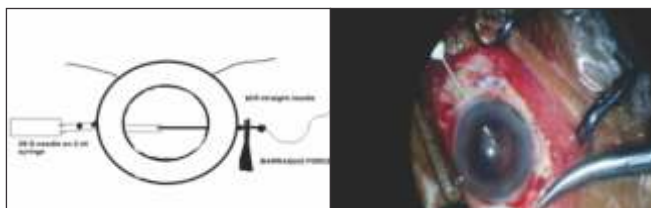


Figure 2 : Railroad technique of passing 10. 0 suture with help of 26 G needle .



Figure 3 : Tying suture to eyelet of the SF IOL after taking out the 10.0 suture .

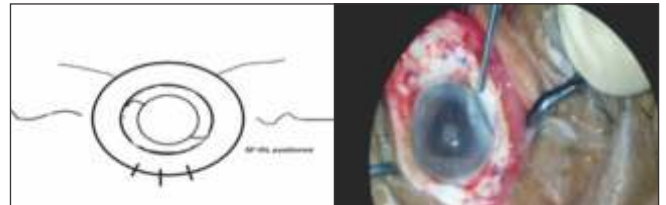


Figure 4 : SFIOL is placed inside the eye .

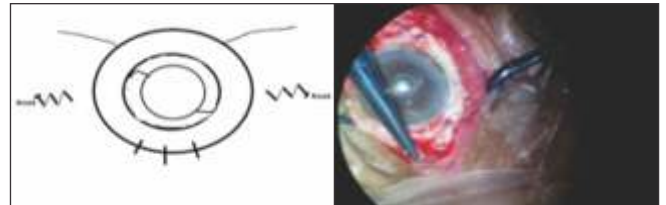


Figure 5 : Three partial thickness sclera bites are taken and then tied to itself

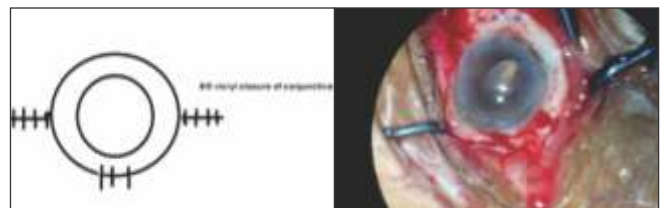


Figure 6 : Wound is closed with 10.0 suture along with conjunctiva

Results : A total of 66 eyes were followed up. In 50 eyes (76%), no intraoperative complications occurred. 16 eyes (24%) developed complications ⁽⁵⁾. The intraoperative complications included mild, transient vitreous hemorrhage in two eyes which was probably caused due to injury to a ciliary vessel while perforating the globe with the 10/0 prolene needle during the railroading step. An early complication (before 2 weeks) noted, was raised intraocular pressure in 6 eyes, all of which needed anti-glaucoma medication for 2 weeks for achieving control. Trabeculectomy had to be performed for one of these eyes. Two cases were noted to have a decentred SF IOL postoperatively and one eye developed a retinal detachment. Late complication (after 2 weeks) included cystoid macular edema in 10 eyes, which resolved in 10 weeks in 8 cases with treatment with topical NSAIDs. Astigmatism of more than 3 dioptres was noted in 9 cases which were all managed adequately with removal of superior limbal sutures. ^(6,7)

The preoperative BCVA was maintained or improved in 63 eyes. The eyes which had non resolving cystoid macular oedema and retinal detachment lost vision. No case of suture erosion was noted in this series.

Discussion : 50 eyes achieved a postoperative Snellen BCVA of 20/40 or better. In our study there was no case of suture exposure or endophthalmitis⁽⁵⁾. Szurman performed this knotless technique on 22 patients (14 IOLs, 5 iris prosthesis, 3 iris diaphragm) with excellent results.⁽⁶⁾ No case of IOL dislocation due to suture degradation or breakage occurred in our study. However in an observational case series by Vote et al., 17 eyes (27.9%) had spontaneous suture breakage with several eyes having multiple episodes.⁽⁹⁾ Drews,⁽¹⁰⁾ in his report published almost 25 years ago, noted that polypropylene may fail after a prolonged period. This might have been due to the unavailability of suture with adequate tensile strength and integrity in those days. We avoided the use of viscoelastic materials which, probably was the reason why very few cases with raised IOP were noted in our series. Not having to create scleral flaps and using only a single suture in our method unlike most other techniques in which two sutures are railroaded and scleral flaps are dissected to cover the knots, results in reduced surgical time as well.

Vitreous haemorrhages could be avoided by using needle at places other than 9 and 3 o'clock. Scleral fixated IOLs have the advantages of remote positioning from corneal endothelium and proximity to the nodal point and rotational axis of the eye.⁽¹¹⁾ It is necessary to appropriately position the IOLs to prevent complications such as pigment dispersion, raised IOP, intraocular haemorrhage and cystoid macular edema. SFIOLs are also associated with decreased corneal endothelial cell density, IOL tilt, decentration and dislocation, vitreous haemorrhage, post-operative refractive errors, infection and retinal detachment.^(12,13) Another disadvantage is the longer surgical time required for its fixation. Glued IOL is another promising technique.⁽¹⁴⁾

Conclusion : The modified SFIOL technique was found to be as safe and effective as conventional techniques. The main advantages of this technique include easy intraoperative suture management and better control of intraocular pressure. SFIOL is a safe technique in well selected cases. The patient must be informed of the various alternatives available and the possible complications in various procedures. This new method will provide better vision and better quality of life to patient undergoing SFIOL.

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