



## Comparative Evaluation of Cases Undergoing Primary and Secondary SFIOL and Secondary PCIOL Implantation

### KEYWORDS

SFIOL, Aphakia, Capsulorrhexis, Parsplana Vitrectomy

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**ABSTRACT** 1) **Objectives** :- To compare the outcome and complication rate following primary and secondary scleral fixated intraocular lens (SFIOL) and secondary sulcus placement of IOL.  
 2) **Design** :- Retrospective interventional comparative cases series.  
 3) **Patients (Materials and Methods)** :- 212 eyes of 206 patients undergoing SFIOL implantation were analysed. Group I included primary SFIOL in cases of subluxation, gross phacodonesis and traumatic dislocation. Group II included postcataract aphakia with or without capsular support. Group III included secondary posterior chamber intraocular lens (PCIOL) over capsulorrhexis rim.  
 4) **Method** :- Retrospective analysis of the cases for the period of 6 months after surgical intervention.  
 5) **Result** :- Group III had better final best corrected visual acuity Group I had worst visual outcome.  
 6) **Conclusion** :- combined parsplana vitrectomy and scleral fixated sutured IOL implantation is an effective and safe procedure to correct aphakic eyes without capsular support. Keeping capsulorrhexis margins intact will allow PC IOL implantation and will give best possible results.

### Introduction

Implantation of a transscleral suture-fixated posterior chamber intraocular lens (SFIOL) is often used in the surgical management of aphakia in the absence of capsular support or as a primary procedure in dislocated and subluxated lens in trauma or connective tissue disease. Theoretical advantage of their use relate to a perceived better safety profile over anterior chamber intraocular lenses in regards to complication such as corneal endothelial compromise, peripheral anterior synechia and glaucoma<sup>(1)</sup>. These issues are particularly relevant as population group on whom this type of surgery is undertaken are emergency cases of nucleus or IOL drop, where endothelial count is not known or in a blunt trauma and Psuedoexfoliation where ACIOL is relatively contraindicated. Another situation is cases with nucleus or IOL drop with intact capsulorrhexis margin where we can put IOL in the sulcus with vitreous surgery.

The combined approach of pars plana vitrectomy and scleral fixation of the IOL is associated with a different profile of possible complications as retinal breaks, detachment, vitreous hemorrhage, iris capture or suture related complications which might be dreadful in the form of IOL dislocation or endophthalmitis<sup>(2)</sup>. In addition wound related problems or inflammatory reaction due to primary cataract surgery or blunt trauma related glaucoma and iris damage make management more complex.

The purpose of this retrospective study was to compare the outcome and complication rate following primary and secondary SFIOL and secondary sulcus placement of IOL.

### Material and Methods

This retrospective observational study included 212 post-operative cases and their follow up of at least 5 months. Cases were divided into Group 1- primary SFIOL (n=84) included cases of subluxation (of connective tissue disorders), gross phacodonesis or traumatic dislocation, Group-2 secondary SFIOL (n=82) included post cataract aphakia, either with or without nucleus or IOL drop without any capsular support, and Group-3 (n=46) included secondary PCIOL over capsulorrhexis rim in nucleus or IOL drop cases.

Patients' medical records were reviewed and information obtained on demographic data, complete ophthalmological check up, details of primary cataract surgery, baseline preop best corrected visual acuity, intra-operative complication, postoperative complication, final best corrected visual acuity and additional surgical intervention.

In all the cases of primary and secondary SFIOL (group 1 and 2) standard procedure of 3 port 20G pars plana vitrectomy with or without PVD induction and 4 point scleral fixation with knots below scleral flap was followed. In group 3 pars plana vitrectomy with sulcus placement of PCIOL over intact rhhexis margin was done or repositioning of dislocated IOL was done.

Subluxated or dislocated lenses or dropped nucleus pieces of lens were managed by lensectomy with either vitreous cutter or phacofragmentation or managed with MVR blade by hand shake method. Dropped IOL was removed and exchanged with scleral fixated IOL. Additional procedures of iridodialysis repair, trabeculectomy with MMC was done in required cases.

## Results

A total of 212 eyes of 206 patients (139 males and 73 females with M: F ratio of 1.9:1) were analyzed with average follow up of 6.2 months with average age of 55.22 years. Of all cases 53 (25%) were nucleus drop, 44 (20.75%) aphakic post cataract surgery, 34 (16.03%) were lens subluxation due to marfans or other connective tissue disorders, 31(16.62%) were IOL dislocation, 23 (10.84%) due

to Posterior dislocation of lens due to blunt trauma and 5 (2.36%) due to anterior dislocation. 22 (10.37%) gross phacodonesis due to pseudoexfoliation.

Out of 212 cases 60 (28.30%) had pseudoexfoliation which either contributes to risk factor for gross phacodonesis, nucleus or IOL drop and associated conditions like Glaucoma, CRVO, BRVO.

Table 1 about comparison of 3 groups:

Parameters	Group I (n=84)	Group II (n=82)	Group III (n=46)	Gundula B et al (3)
Average Age	48.35	63.76	53.60	67.8
Range	8-70	16-87	12-75	34-89
Male : female	54:30	54:28	31:15	37:26
Cause of Sx	34 subluxation lens 23 post dislocation lens 22 phacodonesis 5 ant dislocation lens	33 ahakia 23 IOL drop 26 nucleus	27 nucleus drop 11 ahakia 6 IOL drop 2 IOL decenterat	40% trauma 25% Phacodonesis, subluxation 25% aphakia 10% post RD or other Sx
Pre-op visual acuity	0.08	0.15	0.15	1.025+/-0.65 log MAR
Post-op visual acuity	0.3556	0.37	0.46	0.766+/-0.75
Intrap retinal breaks	6 (7.14%)	2 (2.43%)	0	
Major complication	17 (20.23%)	14 (10.07%)	4 (8.68%)	
Retinal detachment	1 (1.19%)	2 (2.43%)	0	9.5%
Sec glaucoma	7 (8.33%)	4 (4.87%)	1 (2.17%)	30%
Vit hemorrhage	4 (4.76%)	19(1.21%)	0	4.8%
Intractable CME	3(3.56%)	7 (8.53%)	1(2.17%)	
IOL dislocation	0	0	1(2.17%)	6.3%
Choroidal,hypotony	2 (2.38%)	0	0	8%
Minor post-op problems	36 (42.85%)	24(29.26%)	3(6.52%)	
Optic capture	8 (9.52%)	4(4.87%)	0	7.9%
Pigment on IOL	14 (16.66%)	6 (7.31%)	1 (2.17%)	
IOL decentration	3(3.56%)	2(2.43%)	0	
Corneal haze or SKs	4 (4.76%)	6(7.31%)	0	
Mild CME	7(8.33%)	6(7.31%)	2(4.34%)	
Profound loss of vision	8(9.52%)	3 (3.65%)	1(2.17%)	

## Discussion

Malbran et al were the first to describe trans-sulcus scleral fixation of posterior chamber IOLs in aphakic eyes that had previously undergone ICCE in 1986. There were also a number of favourable reports on secondary SFIOL in the literature. However, to the best of our knowledge, no study has compared primary and secondary SFIOL implantations in relation to cataract surgery with or without capsular support or SFIOL implantation in dislocated or subluxated lenses.

When we compared three groups, group 3 had better final best corrected visual acuity, with least minor and major complications possibly because of planned surgery on quiet un-inflamed eye with least manipulation intraoperatively due to simple placement of PCIOL on capsulorrhexis margin. Group 1 had worst visual outcome, with maximum major and minor complication rate. Group 1 patients had associated trauma related problem in the form of iridodialysis, traumatic mydriasis, secondary glaucoma or

commotio-retinae, another subgroup were young patients with subluxation due to connective tissue disorders having amblyopia, or retinal degenerations which might contribute to lesser final visual outcome and more complication rate. None of our patients had suture related problem as compared to other studies, probably due to less follow up period. Our overall complication rates are much less compared to other studies (2),(6),(7) our final visual outcome is comparable to other studies.

In conclusion, despite the underlying pathologic pathologic features in many of our patients, combined pars plana vitrectomy and scleral-fixated sutured IOL implantation is an effective and safe procedure to correct aphakia in eyes without capsular support. It is always advisable to make efforts to keep capsulorrhexis margin intact to allow PCIOL implantation after vitreoretinal intervention which will give best possible results.

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