

Outcomes and Challenges in the Surgical Management of Subluxated Cataracts: A Retrospective Study

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Abstract: Purpose: To highlight the difficulties and outcomes of surgical management in subluxated cataracts. Method: A retrospective study was conducted at Akash institute of medical sciences and research center from August 2023 to July 2024. A total of 30 cases of subluxated cataracts that underwent manual SICS were included in the study. Visual acuity, severity of subluxation, type of surgery, intra and post - operative complications were recorded. Results: Post - op vision was better in the pseudophakic group but complications were also higher in this group. Degree of subluxation did not influence the final visual outcome. Conclusion: Managing subluxated cataracts surgically is challenging due to the inherent defects in the lens capsule that complicate IOL implantation. IOL implantation should be carried out in all viable cases. However, diligent follow - up is crucial to manage the increased risk of postoperative complications in pseudophakic eyes.

Keywords: subluxated cataracts, MSICS, Iris claw lens

1. Introduction

Ectopia lentis refers to a condition where the natural crystalline lens is displaced from its normal position within the patellar fossa, either due to hereditary factors or acquired causes¹. The lens may be partially displaced (subluxated) or completely dislocated into areas such as the anterior chamber, vitreous cavity, or onto the retinal surface. This condition is typically associated with zonular weakness, leading to altered lens curvature and resulting in refractive errors like lenticular myopia and astigmatism.²

In the initial stages, patients often respond well to spectacle correction; however, due to the progressive nature of the disorder, surgical intervention becomes necessary in most cases over time. When the lens demonstrates minimal instability and the capsule - zonule complex remains largely intact, conventional techniques such as phacoemulsification or standard extracapsular cataract extraction can be performed. These procedures are often supplemented with stabilizing devices such as capsular tension rings (CTR), modified CTRs (e. g., Cionni rings), capsular tension segments (CTS), and capsular support hooks (SalehiHad & Turalba³ 2010). In contrast, cases with significant lens instability may require more extensive surgical approaches, such as large - incision extracapsular or intracapsular cataract extraction (Khokhar⁴ et al., 2018), as standard phaco techniques may not provide adequate support.

This study was designed to evaluate surgical outcomes in patients with subluxated cataracts. It also aimed to analyze the demographic characteristics, compare results based on surgical techniques, assess the status of the lens and type of intraocular lens (IOL) implanted, and identify any

intraoperative complications that occurred during the procedures.

2. Material and Methods

A retrospective study was carried out at Akash Institute of Medical Sciences and Research Center over a one - year period, from August 2023 to July 2024. The study included 30 patients diagnosed with subluxated cataracts who underwent manual small incision cataract surgery (MSICS). Institutional ethics committee approval was obtained prior to initiating the study.

Demographic information and detailed clinical histories were recorded for each patient, including the duration of symptoms and any history of recent or past ocular trauma. The evaluation also included an assessment of possible syndromic conditions, systemic comorbidities, and relevant family history.

Clinical data gathered encompassed uncorrected visual acuity (UCVA), corrected distance visual acuity (CDVA), intraocular pressure (IOP), the direction and extent of lens subluxation, cataract type, fundus evaluation, axial length measurements, and keratometric readings.

All surgical procedures were performed using a sclero - corneal tunnel approach. In cases of vitreous loss, an open - sky anterior vitrectomy was performed. A primary posterior chamber intraocular lens (PCIOL) was implanted in most cases; however, anterior chamber intraocular lenses (ACIOLs) were used when capsular support was compromised. If neither option was feasible, patients were left aphakic and scheduled for secondary intraocular lens implantation via scleral fixation (SFIOL).

Surgical records were reviewed to note the surgical approach, type of IOL implanted, and any intraoperative challenges or complications. Final postoperative CDVA, as well as any complications such as glaucoma, IOL decentration, or visual axis opacification, were also documented.

Patients underwent postoperative evaluations on day one, at one week, and at six weeks. Each follow - up included a comprehensive clinical examination, with assessments of visual acuity, IOP, and any notable clinical findings or complications.

3. Results

The study analyzed 30 eyes from 26 patients with subluxated cataracts, with a mean age ranging from 45 to 70 years. The cohort included 19 males and 11 females. Surgery was performed on the right eye in 15 patients, the left eye in 11, and both eyes in 4. Lens subluxation was bilateral in 26 eyes and unilateral in 4.

Initial and final best corrected visual acuity (BCVA) outcomes are summarized in **Table 1**.

At presentation		Final	
BCVA	Number	BCVA	Number
>6/18	-	>6/18	12
6/18 - 6/60	4	6/18 - 6/60	10
5/60 - 3/60	8	5/60 - 3/60	6
2/60 - PL	18	2/60 - PL	2
No PL	-	No PL	-

Subluxation was most commonly supero - temporal (14 eyes), followed by inferior (7), temporal (5), and supero - nasal (4). Cataract types included nuclear sclerosis with posterior subcapsular opacity (15 eyes), cortical (10), anterior subcapsular (1), and rosette - shaped (1). A history of trauma was noted in 4 cases.

All patients underwent manual small incision cataract surgery (MSICS). Primary IOL implantation was performed in 22 eyes: 10 with a posterior chamber IOL and capsular tension ring (CTR), 8 with an iris claw lens, and 4 with an anterior chamber IOL (ACIOL). Secondary IOL implantation was required in 8 eyes: 2 with scleral - fixated IOLs (SFIOL), 4 with iris claw lenses, and 2 with ACIOLs.

Table 2: Lens status and the type of IOL used

Aphakia	Pseudophakia	
8	PCIOL with CTR	10
	Iris claw lens	8
	ACIOL	4
	SFIOL	2

Vitreous loss was the most frequent intraoperative complication, occurring in 12 cases and managed with open - sky vitrectomy. Other complications included iridodialysis (1), extended zonular dialysis (1), and cortical matter drop (2).

Postoperatively, the most common issue was significant corneal edema (10 eyes), followed by transient IOP elevation (4), and isolated cases of pupillary peaking with vitreous strand, optic capture, and IOL decentration. Nd: YAG capsulotomy was performed in 2 cases.

Table 3: Intra - operative and post - operative complications

Intra - op complications		Post - op complications	
Vitreous loss	12	Corneal edema	10
Iridodialysis	1	Transient IOP elevation	4
Zonular dialysis	1	Pupillary peaking with vitreous strand	1
Cortical matter drop	2	Optic capture & IOL decentration	1

Final BCVA was significantly better in pseudophakic eyes compared to aphakic ones. Neither the direction of subluxation nor cataract type had a significant impact on visual outcomes.

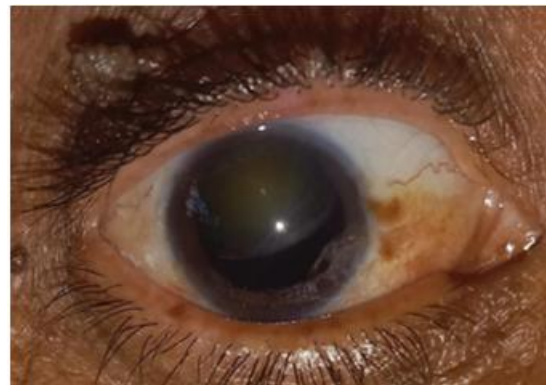


Figure 1: Right eye supero - temporally subluxated

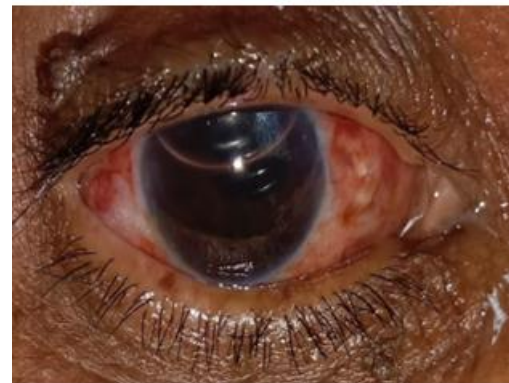


Figure 2: POD 1 of Right eye SICS with cataract iris - claw lens

4. Discussion

Subluxated or dislocated lenses impair vision due to altered refraction, astigmatism, and fluctuating phakic and aphakic zones⁵. Surgical correction of ectopia lentis is complex and involves techniques such as limbal or pars plana lensectomy, phaco - aspiration, intra - lenticular lens aspiration (ILLA), and intracapsular cataract extraction (ICCE).

Intraocular lens (IOL) implantation options include anterior chamber IOLs (ACIOLs), iris - claw IOLs, scleral - fixated IOLs (SFIOLs), and posterior chamber IOLs (PCIOLs) with capsular support. ⁶ the choice depends on surgeon preference and ocular comorbidities.

This study found significantly better best - corrected visual acuity (BCVA) in pseudophakic eyes compared to aphakic ones. Prior research supports superior outcomes with PCIOLs over ACIOLs. (Smiddy ⁷et al, 1995). SFIOLs, especially in eyes lacking posterior capsular support, have shown strong

safety and efficacy profiles with minimal complications. (Yadav⁸ et al., 2012)

However, the retrospective design and limited one - year follow - up, along with incomplete baseline data—particularly regarding subluxation severity—limit the study's conclusions.

5. Conclusion

Surgical management of subluxated cataracts is complex due to zonular weakness, which affects all stages of the procedure and increases the risk of complications impacting both safety and vision. Deficiencies in the lens capsule add further challenges to IOL implantation.

Implanting an IOL is recommended whenever feasible to optimize visual outcomes, but close and ongoing follow - up is essential to monitor and address the higher likelihood of postoperative complications in pseudophakic eyes.

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Conflict of interest:

None declared.

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