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# TO STUDY THE OUTCOMES OF SMALL INCISION CATARACT SURGERY AND TRABECULECTOMY (COMBINED SURGERY) AT GMC AKOLA.

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**Abstract**
Patients who have both cataracts and glaucoma frequently develop these conditions together during their elderly years, so surgeons perform combined surgical procedures to prevent multiple surgeries and enhance treatment results. The study evaluated the IOP control and visual restoration outcomes of combined manual small incision cataract surgery with trabeculectomy (MSICS-Trab) procedures. The study evaluated 53 eye procedures from 49 patients who received MSICS-Trab surgery at GMC Akola. The study followed patient outcomes for one year after surgery. The study evaluated preoperative and postoperative measurements of intraocular pressure alongside visual acuity findings and examination of treatment complications and drug utilization. The mean IOP value decreased to 13.41 mmHg from its initial measurement of 27.04 mmHg. 69.8% of eyes reached ≥6/18 visual acuity while becoming medication-free during the twelve months. The procedure demonstrated high complete success rates alongside a low occurrence of complications. The MSICS-Trab procedure presents a secure effective, and practical approach to manage glaucoma and cataracts simultaneously in tertiary care facilities with limited resources.

**Keywords:** Cataract, Glaucoma, MSICS-Trabeculectomy, Intraocular Pressure, Vision Restoration

## Introduction

Cataract and glaucoma are the two most common causes of visual impairment in general and often occur together in elderly patients. Over 51% of the total numbers is affected by blindness around the world, cataract remains the leading cause of reversible blindness worldwide, majorly in developing countries where access to surgical services may be very limited.[1] On the other side of the coin, glaucoma, commonly known as the “silent thief of sight,” is the second leading cause of irreversible blindness, with over 76 million people worldwide [2] Cataract and glaucoma coexist as a major clinical challenge. These conditions are not uncommon in elderly populations and tend to worsen one another. The cataract-induced opacification may mask or hinder accurate measurement of glaucomatous optic neuropathy, whereas glaucoma, particularly in its advanced stage, can limit the potential visual recovery after cataract surgery.[3] In addition, treatment of one condition may affect the rate of progression or control of the other and complicate surgical and long-term management. Glaucoma and cataract in low-resource settings remain undiagnosed until the late stages because of a lack of awareness, limited access to ophthalmic services, and poor screening infrastructure. Often, patients

present to tertiary care centers with a significant visual impairment from both conditions and urgent surgical intervention is required by the time they arrive.[4] Consequently, the public health importance is to devise an effective, accessible, and affordable surgical approach to address both diseases simultaneously.

Each of the cataract and glaucoma management individually has its own set of challenges. Developing countries have advanced much in the field of cataract surgery, especially using new techniques such as phacoemulsification and femtosecond-assisted procedures.[5] The management of glaucoma, however, is much more complicated since it involves chronic lowering of intraocular pressure (IOP) to retard optic nerve damage. The treatment becomes multifaceted when both conditions coexist. Cataract surgery performed alone in a glaucomatous eye can temporarily reduce IOP, but the effect is usually insufficient for long-term control, particularly in moderate to severe glaucoma cases.[6] On the other hand, if glaucoma filtration surgery is performed first, such as trabeculectomy, cataract progression and subsequent complications from future cataract extraction may result.[7] Historically, some settings have performed trabeculectomy with cataract extraction staged. Nevertheless, drawbacks of this strategy include increased healthcare costs, longer recovery periods, risk of bleb failure after subsequent surgeries, and psychological stress to the patient.[8] The part of surgical follow-up is inconsistent, and access to surgery is limited, both due to limited resources as well as the less frequent life life-threatening, and less rare nature of many surgical conditions. Thus, a combined surgical approach is now a viable and increasingly popular strategy, particularly in such settings. The combined procedures have a known benefit of lowered cumulative surgical risk, reduced recovery time, better patient compliance, and lower health care costs. They address both conditions in a single session, most importantly, providing a chance for simultaneous visual rehabilitation and long-term IOP control.[9] There have been various combined approaches adopted globally. These include ECCE-Trab: Extracapsular Cataract Extraction with Trabeculectomy, Phaco-Trab: Phacoemulsification with Trabeculectomy, MSICS-Trab: Manual Small Incision Cataract Surgery with Trabeculectomy, Phaco-MIGS: Phacoemulsification with Minimally Invasive Glaucoma Surgery. There are indications and disadvantages of the operation depending on the severity of the conditions, including the surgeon's expertise and available resources. MSICS-Trab procedure has emerged as a cost-effective and technically appropriate modality, where Phacoemulsification may not be widely accessible, and the outcomes of these procedures are comparable to Phaco-Trab procedures. [10]

Combining cataract and glaucoma surgery is based on the necessity to perform both procedures at the same time to restore vision and achieve sustained IOP control with minimal complications. The combined surgery is particularly advantageous in patients with moderate to advanced glaucoma who fail to control IOP adequately or poorly tolerate medical therapy, as well as in those with visually significant cataract associated with uncontrolled IOP. Introduced in 1968 by Cairns and Watson, trabeculectomy is still the gold standard glaucoma filtration surgery with its well-known ability to lower IOP. On the other hand, MSICS is a sutureless, cost-effective, and reproducible technique for cataract extraction with a low complication rate, suitable for high-volume centres in developing countries.[11] These two procedures can be integrated to permit: Reduced risk of bleb failure post-cataract surgery, better visual and functional outcomes, reduction in the use of hypotensive drugs, better quality of life, and fewer follow-up burdens. Similar IOP and visual outcomes have been reported by studies from other parts of India and Nepal comparing MSICS-Trab and Phaco-Trab, validating the role of MSICS-Trab in such settings.[12] In addition, MSICS can be performed with less infrastructure than phacoemulsification, thus making it a feasible technology for widespread implementation.

The objectives of this study are to evaluate the effectiveness of combined manual small incision cataract surgery and trabeculectomy (MSICS-Trab) in reducing intraocular pressure (IOP) and minimizing the dependence on hypotensive medications in patients with coexisting cataract and glaucoma. Second, the study aimed to determine the amount of visual acuity improvement following the procedure, including differences among glaucoma subtypes and additional coexistent ocular comorbidities.

## Surgical Options for Combined Management

### Phacoemulsification with Trabeculectomy (Phaco-Trab)

In most developed countries, Phacoemulsification with trabeculectomy (Phaco-Trab) is favored by surgeons because it is a precise, minimally invasive type of combined surgery. It employs ultrasonic energy for emulsification and removal of the cataract, and trabeculectomy to reduce intraocular pressure.[13] Phaco-Trab is effective but depends on sophisticated equipment, skilled personnel, and higher costs, making the procedure unavailable in resource-limited settings.[14] Although it has been successful clinically, the issue of bleb failure postoperatively, especially after cataract removal, and the complexity regarding postoperative care make its use less feasible for everyday operation in high-volume, low-resource settings like GMC Akola.

### Manual Small Incision Cataract Surgery with Trabeculectomy (MSICS-Trab)

Manual Small Incision Cataract Surgery with trabeculectomy (MSICS-Trab) is a practical and cost-effective alternative widely used in developing countries. In particular, this technique is useful when phacoemulsification equipment is not available. The self-sealing scleral tunnel incision is used to remove the cataract, and then a standard trabeculectomy is done to manage intraocular pressure.[15] One of the Ethiopian review and studies in general show that MSICS-Trab provides comparable outcomes as Phaco-Trab concerning vision restoration and IOP control.[16] It also reduces the risk of complications of advanced technologies and is more suitable for ophthalmic surgeons working in tertiary eye care centers in limited resource settings.

### Phaco-MIGS: Emerging Techniques in Developed Settings

A newer frontier in the surgical management of coexisting cataract and glaucoma is phacoemulsification combined with minimally invasive glaucoma surgery (Phaco-MIGS). Microinvasive devices are used to enhance aqueous outflow via these procedures with minimal tissue disruption.[17] Phaco-MIGS is less complicated and quicker to recover but is mainly done in developed countries because Phaco-MIGS relies on expensive implants and advanced surgical systems as shown in Figure 1. The technique is still evolving, and there are limited long-term data on efficacy and cost-effectiveness. [18] Its high cost and limited access to low-resource settings are still a serious barrier to widespread adoption in this setting.

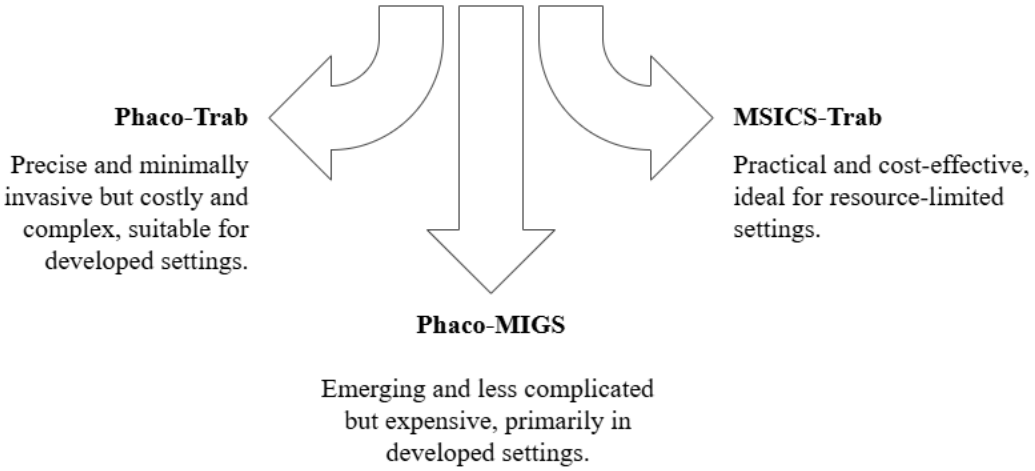


**Figure 1: Comparison of Surgical Options for Combined Cataract and Glaucoma Management in Different Healthcare Settings**

## Surgical Technique of Combined MSICS and Trabeculectomy

### Preoperative Evaluation

The selection of appropriate candidates for the combined MSICS and trabeculectomy procedure was dependent on preoperative evaluation. Patients were included in the study if they had visually significant cataracts and pre-existing glaucoma, including primary open-angle glaucoma (POAG),

pseudoexfoliative glaucoma (PXFG), chronic angle closure glaucoma, etc. Gonioscopic findings and optic disc changes, or persistently elevated IOP >21 mmHg on repeated visits, were used to make a diagnosis of glaucoma. If the fundus was obscured by dense cataracts, clinical history and risk factors were considered. The data collected included age, sex, Snellen visual acuity, baseline IOP, and the number of anti-glaucoma medications used.[19]

**Step-by-Step Surgical Procedure**

It was done under peribulbar anesthesia. Standard MSICS steps were followed with the application of 0.2 mg/ml Mitomycin-C (MMC) under the conjunctiva for 2–3 minutes. The scleral tunnel was made, and the cataract was removed by the can opener or capsulorrhexis technique. An intraocular lens (IOL) of PMMA was placed in the capsular bag.[20] Kelly's punch (approx 1.5 mm × 3 mm) was then used to create a posterior sclerostomy at the tunnel floor to allow drainage of aqueous.[21] The conjunctiva was sutured back, and the scleral tunnel was secured with two nylon sutures one permanent and one releasable.

**Use of Antifibrotic Agents (Mitomycin-C)**

Routinely in the combined procedure, MMC, an antifibrotic agent, was used to minimize postoperative scarring. In most cases, the scleral tunnel construction was performed after 2–3 minutes of application of a 0.2 mg/ml concentration of the drug to the subconjunctival or Tenon's area.[22] MMC facilitates the reduction of IOP and prevents bleb failure by limiting fibroblast proliferation and extracellular matrix formation. Especially in PXFG and in situations with limited follow-up infrastructure, its use is very important. This is consistent with what has been reported in other developing countries using similar protocols for performing combined glaucoma and cataract surgeries [23]

**Postoperative Medication and Follow-up Protocol**

Topical antibiotics (1-2 weeks), and steroids (10-12 weeks) for postoperative care were used to prevent infection and control inflammation.[24] The patients were followed at day 1, week 1, month 1, month 3, and thereafter at 3–6 months intervals as shown in Table 1. During follow-ups, IOP control and bleb function were based on the removal of releasable sutures. At the end of surgery, steroids and antibiotics were subconjunctival injected. By using this follow-up strategy, complications were managed in a timely fashion, and bleb morphology was optimized. Such standardized follow-up protocols are necessary to achieve surgical success and are in line with the evidence-based approaches in similar combined procedures.[25]

**Table 1: Summary of Surgical Technique for Combined MSICS and Trabeculectomy**

| Step | Details | Anesthesia | Antifibrotic Use | IOP Control Method | Intraocular Lens | Follow-Up Protocol |
|---|---|---|---|---|---|---|
| 1. Preoperative Evaluation | Visual acuity, IOP, glaucoma type, fundus exam, risk factors | Not applicable | Not applicable | Not applicable | Not applicable | Baseline data collection |
| 2. Anesthesia | Peribulbar injection | Peribulbar | Not applicable | Not applicable | Not applicable | Performed before incision |
| 3. Antifibrotic Agent | Mitomycin-C (0.2 mg/ml for 2–3 min under the conjunctiva) | Peribulbar | Applied before the scleral tunnel | Prevents fibrosis, enhances bleb success | Not applicable | Standardized with safety measures |
| 4. Cataract Removal | MSICS via scleral tunnel, can- | Peribulbar | Already applied | Posterior | PMMA IOL | Suturing of the scleral |

| | | | | | | |
|---|---|---|---|---|---|---|
| | opener/capsulorrhexis technique | | | sclerostomy via Kelly's punch | | tunnel and conjunctiva |
| 5. Trabeculectomy | Sclerostomy (1.5 × 3 mm) at the tunnel floor | Peribulbar | Enhances bleb formation | Enables aqueous drainage | Not applicable | Peripheral iridectomy is not routinely done |
| 6. IOL Implantation | PMMA lens placed in the capsular bag | Peribulbar | Not applicable | Not applicable | PMMA IOL | Maintains visual rehabilitation |
| 7. Postoperative Care | Topical antibiotics (1–2 weeks), steroids (10–12 weeks), follow-up schedule | Not applicable | Maintains bleb, prevents inflammation | Monitored via IOP and bleb function | Not applicable | Follow-ups: Day 1, Week 1, Month 1, then q3–6 mo |

**Patient Demographics and Baseline Ocular Characteristics**

**Age and Gender Distribution**

The study included 53 eyes of 49 patients who received combined MSICS and trabeculectomy surgery. The participant group consisted of 65.1 ± 8.66-year-old patients whose ages spanned from 50-80 years**.** The study revealed that patients older than 60 years made up 72.5% of the total population because aging affects both cataract and glaucoma development. The patient cohort included 29 females who made up 59.18% of the subjects, while 20 males comprised 40.8% of the total patients .[26] The findings match worldwide ocular morbidity patterns because both cataract and glaucoma become more prevalent with advancing age. The results regarding combined procedures from India and Nepal show parallel age trends to the findings.[27]

**Glaucoma Subtypes and Laterality**

Pseudoexfoliative glaucoma (PXFG) emerged as the primary diagnosis in 24 eyes (45.2%), while primary open-angle glaucoma (POAG) affected 12 eyes (22.6%) of the total patients. The study showed ocular hypertension along with angle-closure glaucoma and phacomorphic and steroid-induced glaucoma at 11.3% 7.5%, and 5.6%, respectively.[28] The findings demonstrate that PXFG exists as the most prevalent condition in other country's patient populations according to previous investigations.[29] The surgical operations were performed on 30 right eyes (58.8%) and 23 left eyes (45.1%). The IOP instability of PXFG underscores the need for surgical intervention to establish stable control, according to reports.[30]

**Preoperative Visual Acuity and IOP Status**

The preoperative vision of all eyes was measured- below 6/18. Visual impairment reached advanced stages in 39 eyes (73.5%) since their visual acuity measurement fell under 6/60.[31] The mean IOP measurement before surgery reached 27.04 ± 1.08 mmHg. A total of 2.65 ± 0.63 hypotensive medications were used by patients, and some patients received oral acetazolamide.[32] The advanced disease condition and requirement for combined surgical intervention become evident due to the high medication requirements and poor visual acuity at presentation. The reported data matches previous results from South Asian studies.[33]

**Coexisting Ocular Comorbidities**

Various patients presented with other eye conditions that might interfere with their visual recovery. 10 eyes (18.8%) had age-related macular degeneration (ARMD) as one of their ocular conditions, while 8 eyes (15.1%) had high myopia, and 4 eyes (7.5%) had diabetic retinopathy.[34] The assessment of glaucoma became challenging due to dense cataracts, which obstructed proper fundus examination in 25 eyes (47.2%), as shown in Figure 2. The eyes with continued poor vision after surgery showed

glaucomatous optic nerve damage, together with posterior capsular opacity IOL decentering, and corneal opacity. The assessment of visual outcomes following combined surgery depends on these factors for appropriate patient counseling.[35]

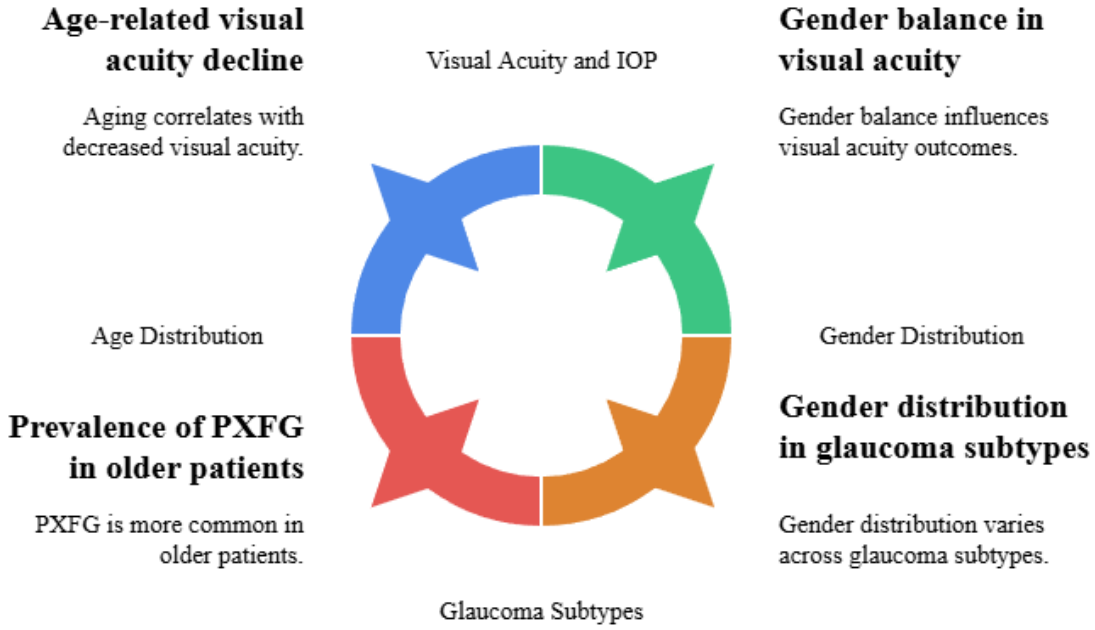


**Figure 2: Patient Demographics and Ocular Characteristics Overview**

**Visual Outcomes Following Surgery**

**Improvement in Snellen Visual Acuity**

The study enrolled eyes that presented with Snellen visual acuity below 6/18 before surgery, and 73.5% of these eyes had vision worse than 6/60. The surgical procedure led to substantial vision improvement because 71.4% of patients reached ≥6/18 vision at the 12-month follow-up. The success rate of MSICS-Trab procedures in India and Nepal amounted to 65.7% to 78.2% of patients who experienced similar visual improvements. The surgical restoration of vision demonstrates how combining MSICS with trabeculectomy effectively treats patients who have cataract and glaucoma conditions in areas that lack advanced phacoemulsification equipment.

**Time-Based Visual Recovery**

Postoperative visual recovery proceeded at a regular pace. The study revealed that 56.6% of eyes reached >6/18 vision at one week, but this number increased to 75.4% at three months, followed by 73.5% at six months, and 69.8% at twelve months. The reduced visual acuity at 12 months might be caused by late complications or existing medical conditions, as shown in Table 2. Comparative studies have shown that visual acuity reaches stability levels between 3 to 6 months after surgery. Immediate postoperative vision impairment due to early inflammatory response is compensated by lasting visual improvement, which indicates the long-term effectiveness of this visual rehabilitation approach.[36]

**Causes of Suboptimal Visual Recovery**

The visual acuity reached <6/18 in 28.6% of patients during a one-year follow-up. The documented reasons for suboptimal visual recovery consisted of glaucomatous optic nerve damage, age-related macular degeneration, posterior capsular opacification, decentered intraocular lenses, and corneal opacities. The most prevalent subtype of pseudoexfoliative glaucoma shows particular connection to weak zonules along with anterior chamber inflammation, which increases surgical difficulty and generates postoperative complications. The combination of conditions shows why doctors should assess patients before surgery, along with providing information about expected vision outcomes, because patients with advanced glaucoma or retinal problems may not regain complete vision.

**Table 2: Visual Acuity Outcomes Following Combined MSICS and Trabeculectomy (n = 53 eyes)**

| Time Point | >6/18 (%) | <6/18–6/60 (%) | <6/60 (%) |
|---|---|---|---|
| Preoperative | 0 (0%) | 14 (26.4%) | 39 (73.5%) |
| 1 Week | 30(56.6%) | 10 (18.8%) | 13 (24.5%) |
| 3 Months | 40 (75.4%) | 4 (7.5%) | 9 (16.9%) |
| 6 Months | 39 (73.5%) | 7 (13.2%) | 7 (13.2%) |
| 12 Months | 37 (69.8%) | 6 (11.3%) | 10 (18.8%) |

**Intraocular Pressure Control Outcomes**

**Preoperative vs. Postoperative IOP Trends**

The clinical study showed that patients experienced a major decrease in intraocular pressure after undergoing combined MSICS and trabeculectomy procedures. The mean IOP measurement before surgery was 27.04 mmHg. The IOP decreased to 14.40 mmHg at 1 week and then to 12.29 mmHg at 3 months, followed by 13.01 mmHg at 6 months and 14.32 mmHg at 12 months ($p < 0.001$).[37] The sustained reduction in IOP stands as a vital factor in stopping glaucoma advancement along with protecting patients' vision. The mean IOP measurements from different studies showed 13.9 mmHg at 3 years and 11.2 mmHg at 6 weeks postoperatively.

**IOP Outcomes by Glaucoma Type**

The surgical procedure successfully decreased intraocular pressure for all types of glaucoma patients. Data showed that IOP levels remained below 15 mmHg at 12 months for POAG patients at 12.83 mmHg PXFG patients at 13.60 mmHg, and patients with ocular hypertension at 14.51 mmHg. The patients with phacomorphic glaucoma showed initial elevated IOP levels, but these pressures decreased significantly after the surgery. These results affirm the effectiveness of the combined procedure regardless of glaucoma type. Cataract extraction demonstrated an independent IOP-lowering effect because it deepened the anterior chamber while remodeling the angle, which contributed to these positive results. The cases of PXFG experienced better outcomes because they tend to show pressure changes.

**Success Rates: Complete, Qualified, and Failure**

The one-year follow-up revealed that IOP control success reached 87.7% among all patients. An evaluation of the treatment success revealed complete success (IOP 5–20 mmHg without medications) in 71.4% of eyes and qualified success (IOP 5–20 mmHg with medications) in 16.3%. Out of all patients, 12.2% experienced surgical failure because their IOP remained above 21 mmHg while using medication. A study shows comparable success rates for these procedures, which measure at 89% and 92.3%. The high success outcomes demonstrate that MSICS-Trab can function as the primary treatment for glaucoma patients with coexisting cataracts in limited resource environments.

**Comparison with International Studies**

The IOP reduction, along with success rates measured in this study, matched results published in international literature. International study shows postoperative IOP measurements of 13.9 mmHg and 89% success rate at 3 years, 65.7% IOP control at 8 weeks, and 11.2 mmHg IOP at 6 weeks as shown in Figure 3. This study achieves better long-term IOP control than the international study, with its 27% failure rate at 6 months. The effectiveness of MSICS-Trab matches Phaco-Trab procedures when advanced technologies are scarce in healthcare settings.

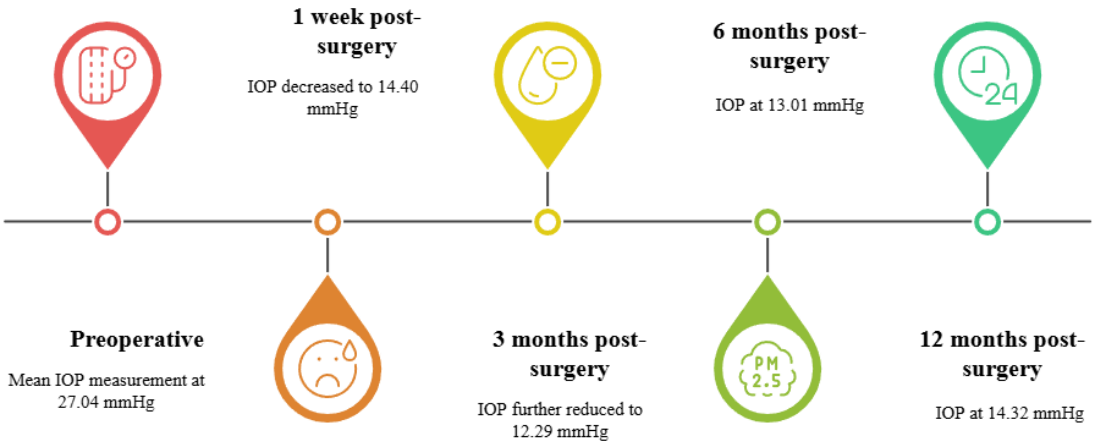


**Figure 3: Tracking Intraocular Pressure Control Pots- Surgery**

**Reduction in Hypotensive Medication Use**

**Medication Burden Pre and Post-Surgery**

Patients received 2.65 ± 0.63 hypotensive medications before surgery, which included both topical and systemic acetazolamide administration. The number of hypotensive medications used at 12 months post-surgery reached 1.49 ± 0.82 ($p < 0.001$). The surgical combination of MSICS-Trab resulted in decreased patient requirements for IOP medication control. The combination of surgery has produced pronounced results in medication reduction, according to multiple studies showing advantages in minimizing eye surface toxicity alongside reduced costs and systemic side effects. The reduction in medication number leads to better patient adherence and improved glaucoma management.

**Proportion of Drug-Free Eyes Postoperatively**

During the first three months after surgery, 81.8% of eyes (43 out of 53) required no hypotensive medications. The 12-month follow-up revealed that 66% of eyes (35 eyes) still required no medications, as shown in Table 3. The surgical combination leads to an extended period of IOP control. Multiple studies have documented comparable rates of medication independence which supports the effectiveness of this treatment method for reducing long-term eye drop usage. Patients benefit most from becoming medication-independent in contexts where access remains inconsistent while patients struggle to sustain lengthy drug therapies.

**Clinical and Economic Implications**

The major decrease in medication requirements following surgery leads to significant clinical and economic benefits. The clinical benefits include decreased risks from medication non-adherence and medication side effects, as well as decreased eye surface problems. The financial weight that patients bear for their eye care expenses decreases because they spend their money out of pocket. Patients who experience a drug-free course of recovery following surgery need fewer appointments to manage prescriptions, especially when serving rural and underserved communities. The combination of MSICS-Trab stands as both a medical and financial solution for treating patients with cataracts and glaucoma.

**Table 3: Reduction in Hypotensive Medication Use Pre and Post-Surgery (n = 53 eyes)**

| Follow-Up Time Point | Mean No. of Medications | Standard Deviation (SD) | P-Value | % Drug-Free Eyes |
|---|---|---|---|---|
| Preoperative | 2.65 | ± 0.63 | – | 0% |
| 3 Months Post-op | 1.10 | ± 0.05 | < 0.001 | 81.8% (43 eyes) |
| 6 Months Post-op | 1.16 | ± 0.75 | < 0.001 | – |
| 12 Months Post-op | 1.49 | ± 0.82 | < 0.001 | 66% (35 eyes) |

## Intraoperative and Postoperative Complications

### Intraoperative Adverse Events

Six eyes experienced intraoperative complications, with five of them having pseudoexfoliative glaucoma because this condition weakens zonules and impairs pupil dilation. The surgical procedure resulted in zonular dehiscence posterior capsular rupture, and vitreous loss according to the reported complications.[38] Surgical technique demands special attention in pseudoexfoliative cases because of the inherent risks. The surgical risk for lens extraction increases because weak zonules and fragile capsules are present in these eyes. The literature shows that MSICS-Trab procedures result in similar complications that affect between 5% and 15% of patients, mainly due to advanced glaucoma or dense cataracts.

### Early Postoperative Complications

Postoperative complications developed early in a few patients who underwent surgery. The patient experienced hyphema in one eye inflammatory membranes in the pupil's shallowness of the anterior chamber, and hypotony with choroidal effusion in one eye. Pseudoexfoliation patients showed an increased prevalence of inflammatory membranes because of their elevated wound healing characteristics.[39] The postoperative medical management of these complications demonstrates why patients require close monitoring after their procedures, even though these complications are temporary. Other combined surgery studies report similar brief complications, which medical treatment resolves successfully before affecting long-term results.

### Bleb Morphology and Long-Term Filtering Status

The final follow-up revealed that 75.5% of eyes demonstrated functioning filtering blebs, but 24.5% had flat non-functional blebs, as shown in Figure 4. A diffuse elevated bleb creates the necessary condition for maintaining long-term reduction of intraocular pressure following trabeculectomy surgery.[40] Successful bleb formation occurred after Mitomycin-C application because it helped minimize subconjunctival fibrosis. Flat blebs usually signal bleb failure because of scarring, thus requiring potential additional treatment. A study shows that antifibrotic agents maintain functional blebs in more than 70% of MSICS-Trab procedures.

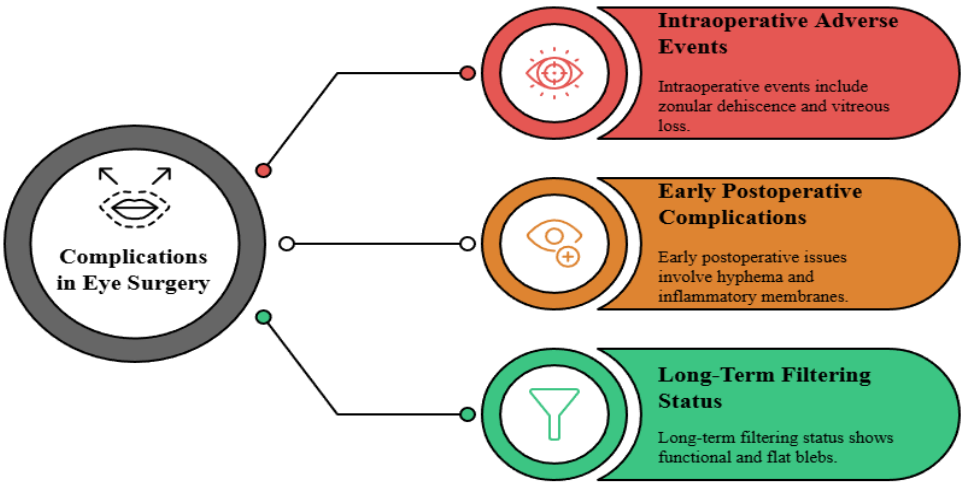


**Figure 4: Navigating Complications in Eye Surgery**

## Conclusion

The study shows that combined manual small incision cataract surgery with trabeculectomy (MSICS-Trab) functions as a safe and effective surgical approach to treat patients who have both cataract and glaucoma in limited-resource environments. The surgical operation led to a lasting decrease in intraocular pressure (IOP) from an initial mean measurement of 27.04 mmHg to 13.41 mmHg at the one-year postoperative evaluation. Visual outcomes showed positive results because 69.8% of eyes

obtained Snellen visual acuity better than or equal to 6/18. The treatment successfully reduced intraocular pressure to 87.7% success, while 66% of patients-maintained control without requiring hypotensive drugs. The treatment produced minimal complications, which healthcare providers successfully controlled while filtering blebs functioned adequately in most eyes during the follow-up period. The postoperative medication requirements decreased substantially, which reduced patient financial costs while enhancing their ability to stick to their treatment plan. The MSICS-Trab procedure demonstrates strong suitability for application in tertiary eye care centers because it works well in settings without phacoemulsification and advanced glaucoma surgeries available in developing countries. The medical procedure provides an economical, complete solution for treating two major causes of blindness through one intervention while enhancing treatment results and healthcare system efficiency in areas with limited access to services.

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