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Original Research Paper

Opthalmology

# A COMPARISON OF SUB-TENON BLOCK WITH PERIBULBAR BLOCK IN SMALL-INCISION CATARACT SURGERY

**Dr D. Swapna Madhuri** — Postgraduate In Maharaja Institute Of Medical Sciences (MIMS).

**Dr Prof. V. Rajeswara Rao** — Professor Of Ophthalmology In MIMS.

KEYWORDS :

## INTRODUCTION:

- Cataract is the leading cause of preventable blindness in the world.
- Cataract extraction with intraocular lens implantation is perhaps the most effective surgical procedure .
- Small incision cataract surgery (SICS) is a common procedure to remove cataracts and improve vision.
- Adequate anesthesia and akinesia (lack of eye movement) are important for the success and safety of SICS procedures. Two commonly used local anesthetic techniques for SICS are sub-Tenon's block and peribulbar anesthesia.
- Sub-Tenon's block involves injecting local anesthetic into the sub-Tenon's space, which is the potential space between the Tenon's capsule and the sclera.
- Peribulbar anesthesia involves injecting local anesthetic outside the muscle cone, around the eyeball .
- Both techniques have advantages and disadvantages, The purpose of this study is to compare the efficacy and safety of sub-Tenon's block versus peribulbar anesthesia for small incision cataract surgery.

## MATERIALS :

This is an observational case study design carried out in the ophthalmology department MIMS, nellimarla from 1st June 2023 to 30th December 2023.

- **Inclusion Criteria:**

1) All patients with cataract.
2) Patients who gave consent.

- **Exclusion Criteria:**

1) Age <40yrs
2) Sensitivity to Xylocaine
3) Who did not give consent
4) People who preferred phacoemulcification.

- Institutional ethics committee clearance was obtained before the start of the study.

- **Methodology:**

Fifty patients who came to the ophthalmology OPD for small-incision cataract surgery (SICS) were included in the study. The participants were divided into two groups of 25 as per the surgeon.

- The pain was scored at the time of administration of block, during surgery and after the surgery using the numerical reporting Scale (NRS)
- The level of akinesia was assessed on a grade of 0–8 where each of the recti muscles akinesia was given a score of 0, 1, or 2.

Where 0 is no akinesia/full movement,
1 is partial akinesia / reduced movement, and
2 is absolute akinesia/no movement.

- A total score of <2 was considered as unsuccessful akinesia.
- Where $P < 0.05$ was considered significant. The pain was scored at the time of administration of block, during surgery and after surgery. The level of akinesia was assessed on a grade of 0–8.The presence or absence of complications like chemosis or subconjunctival hemorrhage noted. The data Statistical analysis was done using PSS version 25.0 .$P < 0.05$ was considered significant.
- The presence or absence of complications like chemosis or subconjunctival hemorrhage was noted at the time of administration of the block.
- The data were analyzed by descriptive statistics. The comparison between the two groups was done using the Chi-square test and the Student unpaired t-test. A statistical package SPSS version 25.0 was used to do the analysis. $P < 0.05$ was considered significant.

## RESULTS:

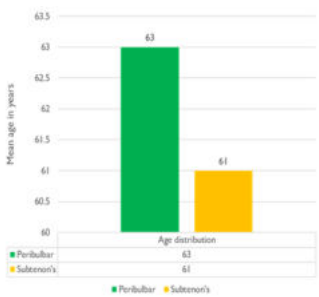
The baseline pain score was higher in the peribulbar group. The onset of akinesia was faster in sub-tenons .There was no significant difference in complications in both groups. A Total of 50 patients who gave consent for the study were selected,of which 25 patients underwent small incision cataract surgery under subtenon's anesthesia and 25 under peribulbar anesthesia.

- The average time of onset of akinesia with sub-Tenon's anesthesia was 2.78 ± 0.958 min and peribulbar anesthesia was 9.96 ± 2.141 min. The difference was statistically signicant (P = 0.00).

Extraocular movements and ease of procedure between the two groups was almost the same and not statistically signicant.

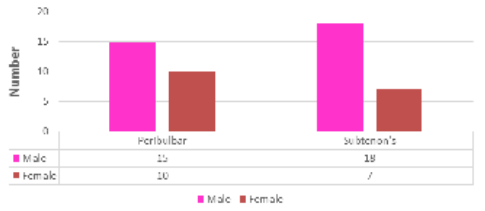
- The incidence of minor complications such as chemosis and SCH were more in sub-Tenon's technique.
- Peribulbar anesthesia ranked higher on pain score (5.12 ± 1.255) at the time of administration compared to sub-Tenon's anesthesia (3.77 ± 1.716), the difference being statistically signicant (P = 0)
- The Pain score was higher in Peribulbar anesthesia compared to Sub tenon's anesthesia.
- The average time of onset of Akinesia was faster in Sub-Tenon's anesthesia .
- The incidence of minor complications such as Chemosis and SCH were little more in sub-Tenon's technique compared to peribulbar technique.

**Mean Age Distribution Of Study Group**

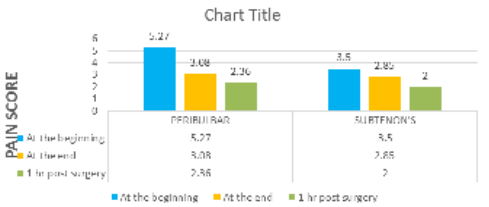


| Age in years | Peribulbar | Subtenon's |
|---|---|---|
| 40-50 | 1 | 2 |
| 50-60 | 8 | 1 |
| 60-70 | 11 | 10 |
| 70-80 | 5 | 1 |
| MEAN | 63 | 61 |

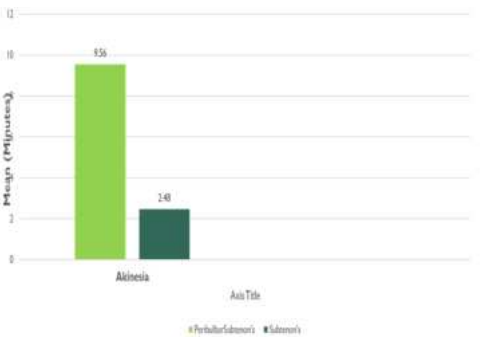
**Sex Distribution**



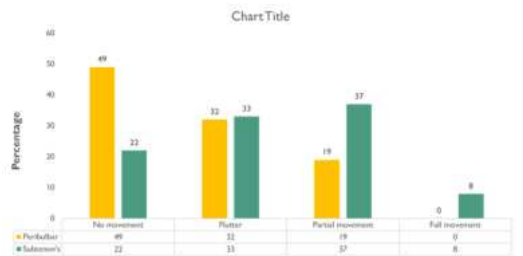

**Pain**

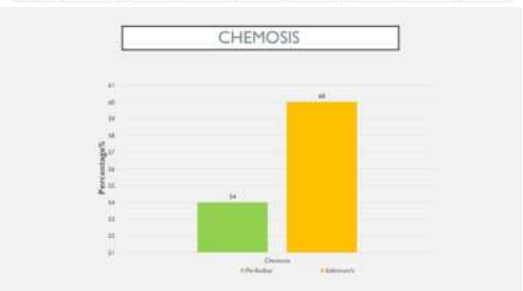



**Onset Of Akinesia**

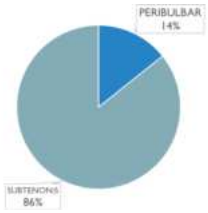



**Distribution Of Akinesia 5 Mintutes After Anesthesia**




**Subconjunctival Hemorrhage**




## DISCUSSION

- Due to quick onset and fewer complications, sub-Tenon's anesthesia is slowly replacing peribulbar block in manual cataract incision surgery.
- Significantly less amount of anesthetic solution is used in sub-Tenon's (3ml as compared to peribulbar 7ml).
- This is supported by Briggs et al.

**Comparision Of Onset Of Akinesia**

| PERIBULBAR | SUBTENONS |
|---|---|
| • Mean±SD | • Findings also support faster onset of akinesia with sub-Tenon's block. |
| • 9.68±1.253 minutes 2.48±0.895 minutes | |
| PValue=0.0001 | • This was supported by Azmon et al. |

**Comparision Of Pain During The Time Of Administration Of Anesthesia**

| Peribulbar | Subtenon's |
|---|---|
| pain score : 5.12±1.25 | 3.77±1.76 |
| P value=0.003 | |

**Incidence Of Minor Complications**

**Peribulbar Subtenon's**

| Chemosis(+) | 13 | 15 |
|---|---|---|
| Chemosis(-) | 12 | 10 |
| TOTAL PERSONS | 25 | 25 |

**Peribulbar Subtenon's**

| SCH(+) | 4 | 22 |
|---|---|---|
| SCH(-) | 21 | 3 |
| TOTAL PERSONS | 25 | 25 |

- The minor complications are more in sub tenon's anesthesia may be due to damage of the subconjunctival vessels during dissection into the sub-Tenon's space .
- Chemosis was probably due to the injection getting deposited into the wrong anatomical plane.
- These complications, however, did not lead to cancellation of any surgeries.

## CONCLUSION:

Sub-tenons block is an effective and safer technique of ocular anesthesia for SICS. It can be considered as an alternative to the conventional peribulbar block for SICS.

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