

Phacoemulsification under Topical Anesthesia in a Tertiary Care Hospital

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ABSTRACT

Introduction: The use of topical anaesthesia for cataract surgery dates back to 1884 when Knapp used 5% cocaine to anaesthetize cornea. The advancement in cataract surgery techniques like small stepped, self-sealing corneal incisions, phacoemulsification and advanced intraocular lenses has allowed the use of topical anaesthesia thus reducing surgical time and need of akinesia.

Materials and Methods: Prospective non-comparative evaluation of patients' and surgeon's satisfaction under topical anaesthesia. All patients received topical anaesthesia with proparacaine 0.5%. A 10-point visual analogue scale was given to patients to rate the level of pain felt during the operation. Also, the level of patient satisfaction, the need for supplemental anaesthesia, level of ocular motility, surgical complications and postoperative visual acuity were recorded.

Results: Total number of cases were 156 out of which 86 (55.1%) were males and 70 (44.9%) were females. Nuclear sclerosis was most common type of cataract followed by mixed opacities. Majority of patients had no intraoperative movement and 30.8% of patients had some movement. Surgeon was dissatisfied in only 12.2% cases who had disturbing movements during surgery. Although majority of patients felt no pain (68%) or mild pain (23.7%) during surgery 8.3% cases had moderate to severe pain which required supplemental intracameral lidocaine.

Conclusion: Topical anaesthesia is cost effective, provides high patient comfort during surgery, is less stressful for the patient, saves

considerable time and complications compared to regional anaesthesia.

Key Words: topical anaesthesia, phacoemulsification, pain assessment, surgeon's satisfaction

INTRODUCTION

The use of topical anaesthesia for cataract surgery dates back to 1884 when Knapp used 5% cocaine to anaesthetize cornea (1). It failed to gain acceptance among surgeons at that time because of need of akinesia during surgery. The advancement in cataract surgery techniques like small stepped, self-sealing corneal incisions, phacoemulsification and advanced intraocular lenses has allowed the use of topical anaesthesia thus reducing surgical time and need of akinesia (2-6). Phacoemulsification is now increasingly being performed under topical anaesthesia with studies demonstrating results comparable with regional blocks (7-12). It has become preferred mode of anaesthesia for phacoemulsification cataract surgery at our center as it saves considerable amount of time and complications associated with other blocks.

MATERIALS AND METHODS

Prospective non-comparative evaluation of patients' and surgeon's satisfaction under topical anaesthesia. All surgical procedures were performed in the SKIMS-MCH by the same surgeon. Patients

were counselled regarding the procedure and were advised to cooperate with the surgeon and avoid movement of eyes and to fix eye towards operating microscopic light source. One fifty six patients were included in the study. All patients received topical anesthesia with proparacaine 0.5%. The eye drops were instilled into the eye to be operated fifteen minutes prior to surgery. Instillation was done three times, at an interval of five minutes.

Most patients were administered dilating drops, phenylephrine 2.5% and cyclopentolate 1%, one drop, three times each, 15 minutes apart, starting 1 hour before surgery.

No bridle rectus suture was used. Clear corneal incision was given which was very small (about 3.5mm). Continuous curvilinear capsulorhexis (CCC) of 4-5 mm was done. After doing the hydroprocedure, the lens nucleus was phacoemulsified by stop and chop technique and direct chop technique. Cortical matter was aspirated out using two separate canulas (bimanual I/A). Viscoelastic material was injected. The foldable IOLs were used. The viscoelastic was then aspirated. 0.5cc vigamox was injected intracamerally. The side port hydration was done. The surgeon's satisfaction was determined by patient's cooperation regarding movement of eye during procedure.

Pain assessment: A 10-point visual analogue scale was given to patients to rate the level of pain felt during the operation. Patients were asked to inform the surgeon if

they experienced any pain at any point of the surgery. If so, additional anesthesia was given. Also, the level of patient satisfaction, the need for supplemental anaesthesia, level of ocular motility, surgical complications and postoperative visual acuity were recorded.

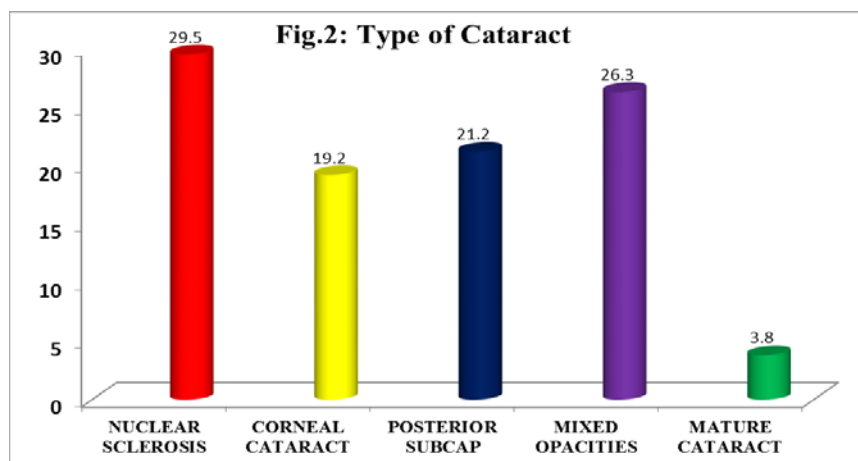
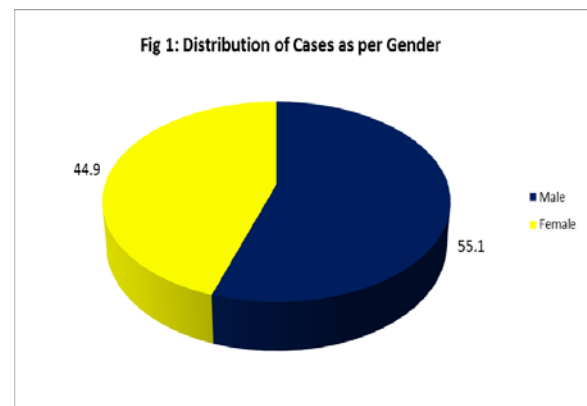
INCLUSION CRITERIA:

- Cases of both sexes.
- Significant cataract causing impairment of visual functions not correctable by glasses.
- Patients who gave informed written consent.

EXCLUSION CRITERIA:

- Patients with types of cataracts other than senile cataract
- uncooperative patients
- Lidocaine, proparacaine sensitivity.
- Patients with hearing disorders, dementia, Asthma.

RESULT



Total number of cases were 156 out of which 86 (55.1%) were males and 70 (44.9%) were females **Fig 1**.

Nuclear sclerosis was most common type of cataract followed by mixed opacities **Fig 2**.

Almost 90% of the cases had visual acuity 6/60 or less. 46.8% of cases had visual acuity 6/60, 37.2% cases had finger counting vision, 10.3% had 6/36 and 5.8% could perceive hand movements only **Table 1**.

| Vision | No. of Cases (n) | % of Cases |
|--------|------------------|------------|
| HM | 9 | 5.8 |
| FC | 58 | 37.2 |
| 6/60 | 73 | 46.8 |
| 6/36 | 16 | 10.2 |
| Total | 156 | 100.0 |

Majority of patients had no intraoperative movement and 30.8% of patients had some movement. Surgeon was dissatisfied in only 12.2% cases who had disturbing movements during surgery **Table 2**.

| Movement | No. of cases (n) | %age of Cases |
|---------------------|------------------|---------------|
| No Movement | 89 | 57 |
| Some Movement | 48 | 30.8 |
| Disturbing Movement | 19 | 12.2 |
| Total | 156 | 100.0 |

Although majority of patients felt no pain (68%) or mild pain (23.7%) during surgery 8.3% cases had moderate to severe pain which required supplemental intracameral lidocaine **Table 3**.

| Degree of pain | No. of cases (n) | %age of cases |
|--------------------|------------------|---------------|
| No pain | 106 | 68 |
| Mild pain | 37 | 23.7 |
| Moderate to severe | 13 | 8.3 |
| Total | 156 | 100.0 |

Postoperative visual acuity was 6/6 in majority of cases **Table 4**.

| Vision | No. of Patients (n) | % of Patients |
|--------|---------------------|---------------|
| 6/6 | 107 | 68.6 |
| 6/9 | 36 | 23.0 |
| 6/12 | 9 | 5.8 |
| 6/18 | 4 | 2.6 |
| Total | 156 | 100.0 |

Posterior capsular rent was noted in 6 cases among which 2 had vitreous loss.

| | | |
|---------------------|-----|------|
| EXTREMELY SATISFIED | 101 | 64.7 |
| SATISFIED | 46 | 29.5 |
| DISSATISFIED | 9 | 5.8 |

Only 9 (5.8%) patients were dissatisfied with surgery under topical anaesthesia **Table 5**.

DISCUSSION

Cataract surgery is the most commonly performed surgery in ophthalmology. Carl Koller in 1884 demonstrated the use of topical cocaine to anaesthetize cornea (13). Knapp used a 5% cocaine formulation to perform cataract surgery under topical anaesthesia in same year. Due to popularization of retrobulbar & peribulbar anaesthesia this technique failed to gain acceptance. Fichman in 1992 reintroduced the use of topical anaesthesia for phacoemulsification (13,14).

Topical anaesthesia for phacoemulsification cataract surgery has several advantages compared to peribulbar or retrobulbar anaesthesia, as it eliminates the risk of globe perforation, retrobulbar haemorrhage and damage to orbital contents. No post-operative ptosis or diplopia is seen. Preservation of full ocular movements gives an edge to surgeon by improving surgical access if needed. The technique is also economical, avoids undesirable cosmetic adverse effects, and allows instant visual rehabilitation (15-25).

Numerous studies have reported topical anaesthesia to be safe and efficacious mode of anaesthesia. Some of the commonly employed agents for providing topical anaesthesia during phacoemulsification include lidocaine (4%), proparacaine (0.5%) and ropivacaine (1%).

Topical anaesthesia is more rapid and acceptable to patients. A surgeon has to win patients confidence by making the patient comfortable during the procedure with constant surgeon-patient communication and telling the patient to keep the eye still for a moment particularly

during capsulorhexis, IOL insertion and it also requires full cooperation of the patient (26,27). In our study patient as well as surgeon were comfortable in maximum number of cases.

Most studies have reported that the patient perceived pain to be low and tolerable under topical anaesthesia compared to those receiving peribulbar anaesthesia (28). Topical anaesthesia supplemented with intracameral lidocaine has been proved to be safe and efficacious (29). In our study we also found that patient experienced No or mild pain under topical anaesthesia. Moderate to severe pain was felt in few cases which were supplemented with intracameral lidocaine 0.1–0.5 mL which was injected into the anterior chamber (30).

In our study 6 patients had posterior capsular rupture out of which 2 patients had vitreous loss. However, intracameral lidocaine proved adequate for additional anterior vitrectomy. Though the intraoperative complications were not associated with the type of anaesthesia.

CONCLUSION

Topical anaesthesia has found large acceptance because it's cost effective, provides high patient comfort during surgery, is less stressful for the patient, saves considerable time and complications compared to regional anaesthesia. Surgery related pain and patient discomfort were significantly lesser in patients along with topical anesthesia. Earliest visual rehabilitation as the patient starts seeing within an hour of surgery with dark glasses on for photophobia is an advantage. There is no need of overnight bandaging and the eye drops can be started immediately. Topical anaesthesia is safe & satisfactory alternative for clear corneal phacoemulsification in selected cataract patients in hands of experienced cataract surgeon.

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