

A COMPARISON OF PERIBULBAR WITH PARABULBAR ANAESTHESIA IN PATIENTS UNDERGOING MANUAL SMALL INCISION CATARACT SURGERY

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ABSTRACT: PURPOSE: To study and compare the efficacy of peri bulbar anaesthesia with para bulbar anaesthesia in patients undergoing manual small incision cataract surgery (MSICS).

METHODS: Two hundred patients were randomized to peri bulbar and para bulbar groups. All surgeries were performed by same surgeons. Pain during administration of anaesthesia, 1 hour after surgery and 6 hours after surgery was graded on a visual analogue pain scale and compared for both the techniques. The ocular akinesia after anaesthesia was compared for both the techniques.

RESULTS: There was no significant difference in pain between both the groups during anaesthesia, 1hour after anaesthesia and 6 hours after anaesthesia. There was no significant difference in the ocular akinesia between both the groups. **CONCLUSION:** Subtenon's technique for administration of anaesthesia during MSICS is as safe and effective as the peri bulbar technique giving equally good analgesia during and after the surgery.

KEYWORDS: Manual small incision cataract surgery, peri bulbar anaesthesia, para bulbar anaesthesia.

INTRODUCTION: Manual small incision cataract surgery (MSICS) is the commonest surgery done in developing countries to reduce the cataract load for which good anaesthesia and akinesia are the main pre- requisites. Some surgeons perform this surgery in selected patients under topical anaesthesia but complicated cataract and other procedures may require intraconal (retrobulbar), extraconal (peribulbar), and sub-Tenon's blocks, which provide akinesia as well as anaesthesia.

Regional anaesthesia is commonly performed to achieve this. Pain is not the only consideration that determines patient preference for the anaesthesia technique. In 1992, Stevens described a technique for Sub -Tenon's anaesthesia which entailed the application of topical anaesthesia, use of an eye speculum, making a small incision in the conjunctiva and passing a blunt cannula posteriorly in the sub – conjunctival space. The injectate administered at this site passes into the Sub – Tenon's space causing less collateral tissue damage with faster recovery but with the fear of complete akinesia.

Peri bulbar block is another popular choice for patients undergoing cataract surgery. A number of studies have demonstrated it to provide optimal conditions for cataract surgery. However, drawbacks include the risks of optic nerve injury, retro bulbar haemorrhage, globe perforation with the use of long needles (1 – 1.25) and a rise in intraocular pressure.

In this study an attempt is made to compare the efficacy of para bulbar anaesthesia with peri bulbar anaesthesia in MSICS. Patients comfort using the pain score immediately after the anaesthesia, 1 hour after the anaesthesia and 6 hours after the anaesthesia and the ocular akinesia achieved are also considered in the study.

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AIM: To compare the efficacy of peri bulbar anaesthesia with para bulbar anaesthesia in MSICS.

MATERIAL AND METHODS: 200 patients who underwent MSICS out of which 100 patients were given peri bulbar anaesthesia and another 100 were given para bulbar anaesthesia were studied. The study was conducted in patients from N.G.O. Camps, for 1 year from July 2013 to June 2014.

Inclusion Criteria: All cataract cases with normal IOP with clear cornea.

Exclusion Criteria:

1. Supplementation of anaesthesia.
2. Sub – Tenon’s could not be given because of difficult cannulation due to conjunctival fibrosis.
3. Retro bulbar haemorrhage in the peri bulbar group.

Type of Study: Prospective comparative study.

METHODS OF STUDY: Each patient was randomly assigned by opening an envelope on entering the pre anaesthetic room. Peri bulbar anaesthesia or subtenon anaesthesia was accordingly given. The patients and the surgeon were masked till 10 min before surgery.

The patients were asked to gauge for pain during the anaesthesia, 1 hour after the anaesthesia and 6 hours after the anaesthesia. The surgeon was asked to check the extra ocular movements. All patients underwent MSICS.

Subtenon Anaesthesia: The eye to be operated was painted with povidone iodine. After draping, a lid speculum was applied and two drops of topical 4% lignocaine were instilled. The patient was instructed to look upwards and outwards. Blunt Westcott's scissors were used to make a small nick on the conjunctiva and the tenons capsule in the inferonasal quadrant, 4 mm from limbus.

The scissors were then skewed through the nick to create a path in the subtenons space. Conjunctival forceps were used to grip the conjunctiva and a curved subtenon cannula was then inserted on to the bare sclera and glided along the contour of the globe. One ml of 2% lignocaine with 1:10 000 adrenaline was injected slowly in the posterior subtenon space.

Peri bulbar Anaesthesia: 3 ml of 2% lignocaine with 1:10000 adrenaline was injected using a 24G needle at junction of middle and outer third of the lower orbital margin with the needle directed towards floor of orbit. A supplementary injection of 2 ml was given at the supra orbital notch with needle directed towards orbital roof. The eyelid was then closed and pressure was applied for 5 min.

Visual analog pain Scale: The patients were asked to grade the pain they felt on a linear scale of Grade 1-4 (Grade 1-mild pain, grade 2- moderate pain, grade 3 - severe pain and grade 4 - no pain).

RESULTS: About 200 patients underwent MSICS between July 2013 to June 2014 and were operated upon by the same surgeon.

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Age in years	No. of patients
40 - 50	24
50 - 60	66
60 - 70	84
>70	26
AGE	

Gender	Male	Female
Peribulbar	66	34
Parabulbar	58	42
Total	124	76
GENDER		

Table 1: The various grades of pain during anaesthesia are depicted.

			GROUP		Total
			Peri	Pera	
T1	G1	Count	56	58	114
		% of GROUP	56.0%	58.0%	57.0%
	G2	Count	25	32	57
		% of GROUP	25.0%	32.0%	28.5%
	G3	Count	14	8	22
		% of GROUP	14.0%	8.0%	11.0%
	G4	Count	5	2	7
		% of GROUP	5.0%	2.0%	3.5%
	Total	Count	100	100	200
		% of GROUP	100.0%	100.0%	100.0%
TABLE 1: Crosstab					

	Value	df	Asymptotic Significance
Pearson Chi-Square	3.817	3	.282
Chi-Square Tests			

		Value	Approximate Significance
Nominal by Nominal	Contingency Coefficient	.137	.282
N of Valid Cases		200	
Symmetric Measures			

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Chi square test shows that there is no significant difference between both the groups with regards to pain on administration of the anaesthesia.

Table 2: The various grades of pain 1 hour after anaesthesia are depicted.

			GROUP		Total
			Peri	Pera	
T2	G1	Count	24	22	46
		% of GROUP	24.0%	22.0%	23.0%
	G2	Count	16	18	34
		% of GROUP	16.0%	18.0%	17.0%
	G3	Count	8	10	18
		% of GROUP	8.0%	10.0%	9.0%
	G4	Count	52	50	102
		% of GROUP	52.0%	50.0%	51.0%
Total	Count	100	100	200	
	% of GROUP	100.0%	100.0%	100.0%	

TABLE 2: Crosstab

	Value	df	Asymptotic Significance
Pearson Chi-Square	.466	3	.926

Chi-Square Tests

		Value	Approximate Significance
Nominal by Nominal	Contingency Coefficient	.048	.926
N of Valid Cases		200	

Symmetric Measures

Chi square test shows that there is no significant difference between both the groups with regards to pain 1 hour after anaesthesia.

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Table 3: The various grades of pain 6 hours after anaesthesia are depicted.

			GROUP		Total
			Peri	Pera	
T3	G1	Count	43	40	83
		% of GROUP	43.0%	40.0%	41.5%
	G2	Count	40	48	88
		% of GROUP	40.0%	48.0%	44.0%
	G3	Count	14	10	24
		% of GROUP	14.0%	10.0%	12.0%
	G4	Count	3	2	5
		% of GROUP	3.0%	2.0%	2.5%
	Total	Count	100	100	200
		% of GROUP	100.0%	100.0%	100.0%
TABLE 3: Crosstab					

	Value	df	Asymptotic Significance
Pearson Chi-Square	1.702	3	.636
Chi-Square Tests			

		Value	Approximate Significance
Nominal by Nominal	Contingency Coefficient	.092	.636
Symmetric Measures			

Chi square test shows that there is no significant difference between both the groups with regards to pain 6 hours after anaesthesia.

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Table 4: Describes the various scores of ocular akinesia after anaesthesia.

			GROUP		Total
			Peri	Pera	
T4	Good	Count	68	54	122
		% of GROUP	68.0%	54.0%	61.0%
	Minimal	Count	27	33	60
		% of GROUP	27.0%	33.0%	30.0%
	Poor	Count	5	13	18
		% of GROUP	5.0%	13.0%	9.0%
Total	Count	100	100	200	
	% of GROUP	100.0%	100.0%	100.0%	
TABLE 4: Crosstab					

	Value	df	Asymptotic Significance
Pearson Chi-Square	5.762	2	.056
Chi-Square Tests			

		Value	Approximate Significance
Nominal by Nominal	Contingency Coefficient	.167	.056
Symmetric Measures			

This was statistically insignificant.

DISCUSSION: Subtenon anaesthesia was as comfortable as peri bulbar anaesthesia for the patient at the time of anaesthetic administration. They also had good analgesia intra operatively, but some cases had incomplete akinesia. The surgery was started immediately after administration of anaesthesia in both groups.

The subtenon technique appeared to be the safest method of introducing anaesthetic fluid into the retro bulbar space without the potential complication of a sharp needle injection.

It is likely that subtenons anaesthesia offers a significantly reduced risk of complication such as scleral perforation, retro bulbar haemorrhage, optic nerve injury and injection of anaesthetic solution into the subarachnoid space, as no sharp instrument is passed into the orbit. It should, however, be used with caution in patients with compromised sclera.

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A randomized study in Denmark comparing retrobulbar, subtenon and topical anaesthesia for phacoemulsification found retro bulbar techniques had less discomfort/pain during surgery but patient preferred subtenon or topical anaesthesia, as it did not involve the needle prick during anaesthesia.

Subtenon anaesthesia has also been used for optic nerve sheath fenestration. Subtenon anaesthesia has been found to be more comfortable for the patient, reliable, long lasting and with deeper anaesthesia as compared to topical anaesthesia for phacoemulsification patients. It was also more comfortable for the surgeon with better pupillary dilatation.

Limitations of the study include subjective nature of the visual analog pain scales and that the field testing or optic nerve damage analysis was not done. But past studies and postoperative visual acuity results indicate that it would not be significant.

CONCLUSION: The subtenon's technique for the administration of anaesthesia during MSICS is as safe and effective as the peri bulbar technique giving equally good analgesia during and after the surgery. It is recommended as a safe and effective alternative to peri bulbar anaesthesia for MSICS.

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