Original Article

Safety, Acceptability and Efficacy of Periconal as Compared to Retrobulbar Anesthesia in Cataract Surgery

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Purpose: To assess the safety, acceptability and effectiveness of periconal versus retro bulbar along with facial anesthesia in cataract surgery.

Material and Method: A prospective, comparative study was designed to find out the safety, acceptability and effectiveness of periconal (transconjunctival route) and retro bulbar along with facial block for patients undergoing cataract surgery. One hundred and fifty patients were included in this study. The patients were divided in two equal groups. One group received periconal block (transconjunctival route) while other facial along with retro bulbar block. The anesthetic used was a mixture of Xylocaine and bupivacaine in equal proportion. The quantity used was 3 ml for group A and 7-10 ml for group B. A questionnaire was filled for all patients and analyzed to compare two groups.

Results: Total 150 patients were divided in two equal groups**.** Group A; 72 patients were comfortable at the time of injection while in Group B, 71 patients complained of pain. As for as anesthesia, akinesia and analgesia are concerned, results are comparable.

Conclusion: By analyzing the facts and figures in our study, we came to conclusion that periconal anesthesia (transconjunctival route) is an effective, acceptable and safe approach for anesthesia, akinesia and pain at the time of injection and during the surgery.

Preventable blindness is one of the many health problems affecting the developing countries. The estimate of global blindness is 45 million people. About 135 million have low vision. High prevalence of blindness is in Asia and Africa mainly due to cataract. In Pakistan age related cataract remains the single major cause of blindness, contributing to 66.7% of the total 1.78% blindness. All the provinces of Pakistan show almost the same percentage of cataract blindness as 70% in Punjab, 73.6% in Sindh, 57.10% in Balochistan and 70% in NWFP.

Cataract is the most common cause of preventable blindness in Pakistan. Different types of anesthesia are used to perform cataract surgery like general anesthesia, topical anesthesia, facial block with retro bulbar block, periconal block and topical. Cataract surgery is usually done under local anesthesia and this is the most preferred method by all ophthalmic surgeons. Periconal anesthesia has replaced retro-bulbar anesthesia due to its complications like orbital hemorrhage, brain anesthesia, eye ball perforation etc. Single site transconjunctival local anesthesia is preferable type due to less pain at the time of injection, safety, acceptability and effectiveness.

MATERIAL AND METHOD

A study was conducted to compare the safety, efficacy and acceptability of anesthesia and akinesia in retro bulbar along with facial block and periconal block.

In this study 150 patients were recruited having age related cataract. The needles used were 25 G x 1.5 inch in retro bulbar; and in periconal block 24 G/ 1inch. Local anesthetic agents used was mixture of 50% Bupivacaine and 50% Lignocaine. Quantity of anesthetic agent was 7 ml in retro bulbar group while 3 ml in periconal group. A written consent was obtained from every patient. Patients were divided in two groups A & B. In A group, patients received periconal block and in group B, retro bulbar block along with facial block was given. In group A; one drop of proparacaine (Alcain, Alcon Laboratories USA) was instilled before injecting mixture. Exclusion criteria were language barrier, mentally handicapped, deaf and dumb, children and contractures. All surgeries were done by a single surgeon. Type of surgeries were ECCE, ECCE with intraocular lens implant (IOL); Phaco with IOL.

	Group A n (%)	**Group B n (%)**
Phaco with IOL	40 (53.3)	43 (57.3)
ECCE with IOL	25 (33.3)	21 ((28)
ECCE	10 (13.3)	11 (14.7)
Total	75 (100)	75 (100)

A questioner was designed with the following protocol.

Analgesia

0 No pain/ discomfort
1 Slight pain but tolerable
2 Mild pain but still tolerable
3 Moderate pain relieved by topical anesthesia
4 Severe pain require more injection

Anesthesia

Excellent Perfect anesthesia no pain
Good Patient felt pain but tolerable
Fair Patient felt pain and additional topical drops required to continue
Poor Not able to continue surgery additional injection required

Akinesia

Excellent No movement at all
Good Slight movement not interfering surgery
Fair Moderate movement
Poor Gross movement need further anesthetic agent to continue surgery

Sex Distribution

	Group A n (%)	**Group B n (%)**
Male	37 (49.3)	35 (46.7)
Female	38 (50.7)	40 (53.3)
Total	75 (100)	75 (100)

Anesthesia

	Group A n (%)	**Group B n (%)**
Excellent	70 (93.3)	69 (92)
Good	3 (4)	2 (2.7)
Fair	2 (2.7)	4 (5.3)
Total	75 (100)	75 (100)

Analgesia

Pain score	**Group A n (%)**	**Group B n (%)**	**Total n (%)**
0	68 (90.7)	66 (88)	134 (89.3)
1	4 (5.3)	3 (4)	7 (4.7)
2	3 (4)	5 (6.7)	8 (5.3)
3	0 (0)	1 (1.3)	1 (0.7)
4	0 (0)	0 (0)	0 (0)
Total	75 (100)	75 (100)	150 (100)

Observations

Analgesic effect was evaluated by verbal description of patients and akinesia and anesthetic effect by observation of the surgeon and the questionnaire was filled at the end of each operation.

In A group, patients received single site anesthetic agents through transconjunctival route in lower fornix after a drop of local anesthetic. In group B; facial block was followed by retro bulbar block.

Acceptability

95% patients were comfortable at the time of injection in Group A, while 98% patients were not comfortable at the time of injection in Group B.

DISCUSSION

Cataract surgery gets a large share in routine list of ophthalmic surgeon. There are different types of local anesthesia used for this type of surgery like retro bulbar along with facial, periconal two sites, single site periconal and topical anesthesia. Historically cataract surgery was performed without anesthesia. Topical anesthesia was used by Karl Kollar in 1884 as he used cocaine as an anesthetic agent. Retro bulbar anesthesia was first described by Herman Knapp in 1884 as he used 4 % cocaine as ocular anesthetic agent for enucleation. Walter Atkin introduced retrobulbar anesthesia in 1945. There are broad selection of ophthalmic anesthesia needles. In retro bulbar special needles Atkin style 25 G x 1.5 inch, 23 G x 1.5 inch are used. In periconal type of needles used are 25 G x 3/4 inch, 27 G x ¾ inch periconal, 25 G x 1 inch retro bulbar/ periconal.

Concepts and mode of anesthesia are changing for last decades; there was a need to search for a safe, acceptable and effective way of anesthesia. A collaborative study was conducted at Shifa eye clinic Khan Pur and BVH Bahawalpur for this purpose. There are different ways to achieve anesthesia for cataract surgery like general anesthesia, retro bulbar along with facial block, periconal, topical and subtenon anesthesia all around the world. General anesthesia needs special preparation of patients like nothing per oral for at least 6 hours and needs anesthetist to do his job. It has been reserved for children and mentally handicap patients and patients with nodding of heads. So local anesthesia is preferred by most of the ophthalmic surgeons due to its safety and acceptability to patients. There is a change from local anesthesia with sedation from 45 % in 1991 to 6 % in 1996 and local anesthesia alone from 20 % in 1991 to 86% in 1997.

Periconal anesthesia is replacing retrobulbar along with facial block due to its complication like orbital hemorrhage perforation of eye ball, injection to optic nerve etc. Low volume of the anesthetic agents used in periconal block along with short and blunt needle make less chances of orbital hemorrhages than retrobulbar anesthesia. Usually periconal anesthesia, injection containing the local anesthetic agent is introduced superonasally and inferonasally by piercing the skin. Skin is the most pain sensitive part of the body. In our study, this part of the body was bypassed by injecting the cocktail in lower fornix through transconjunctival route. We have found the results are comparable between the two groups as for as pain, movements of eye ball are concerned.

So, periconal anesthesia (transconjunctival route) after single drop of alcain is safe, acceptable and effective to patients and surgeon.

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REFERENCE

1. **Siddiqui AP, Awan HR, Minto H.** Current status of low vision rehabilitation in Pakistan. Pak J Ophthalmol. 1996; 12: 95-7.
2. **Davis BD 2nd, Mandle MR**. Efficacy and complication rate of 16,224 consecutive peribulbar blocks. A postoperative multicentric study. J Cataract Refract Surg. 1994; 20: 327-37.
3. **Nicoll JM, Acharya PA, Ahlen K, et al.** Central nervous system complication. Anesthesia Analg 187; 66: 1298-1302.
4. **Hay A, Flynn HW Jr, Hofman JI, Rivera AH.** Needle penetration of globe during retrobulbar and peribulbar injection. Ophthalmology. 1991; 98: 1017-24.
5. **Ben David B.** Complication of regional anesthesia: an overview. Anesthesia din North America. 2000; 665-7.
6. American Academy of ophthalmology section 11 1998-9; 81-3.
7. **Forestor JV.** Local Anesthesia for eye Surgery Br J Ophthalmol. 1992; 76: 705.
8. Phaecoemulsification, Laser Cataract Surgery and foldable IOL By Agarwal 2nd Edition 2000; 86-93.
9. **Yoshimoto M, Matsumoto S.** Orbital varix rupture during cataract surgery. J Cataract Refract Surg. 2004; 30: 722-5.
10. **Griffiths JD, Pilli S, Luspbader JM.** The effect of retrobulbar anesthesia on optic nerve function ARVO. Abstract 1356. Invest Ophtrhalmol Vis Sci. 1994; 35: 1544.
11. **Grrembaum S.** Anesthesia for Cataract Surgery. In: Greenbaum S, ed, ocular anesthesia. Philadelphi, PA, WB Saunders, 1997; 30-3.