IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 17, Issue 01 Ver. XI January. (2018), PP 63-65
www.iosrjournals.org

A Prospective Study of Anesthetic Methods – Peribulbar, Sub - Tenon's and Topical Anesthesiain Manual Small Incision Cataract Surgery (MSICS)

[1]Dr Vommi Venkata Ramesh,[2]Dr Adapa Venkata Ramana,
[3]Dr Nakka Spoorthi Lahari,[4]Dr Sangu Venkata Padmavathi,
[1]Assistant Professor of Anesthesia,[2]Assistant Professor,[3] Junior Resident,[4]Junior Resident
Department of Ophthalmology, Andhra Medical College, Visakhapatnam.
Corresponding Author:DrVenkata Ramana Adapa

Abstarct
Purpose*: The aim of the study is to compare the intra and post-operative patient discomfort, patient cooperation and surgical complications for MSICS (Manual Small Incision Cataract Surgery) using Peribulbar, Sub – Tenon's and Topical anesthesia.* ***Methods****: This prospective randomized trial included 150 consecutive patients having done elective MSICS with PCIOL(posterior chamber intra ocular lens) who were given one of the three types of anesthesia.Patients and surgeon were asked to grade patient discomfort, patient cooperation and surgical complications accordingly.* ***Results****: There was a significant difference in the pain scores during administration of anesthesic (P>0.0001) the mean pain scores were 1.66, 0.96 and 0.020Peribulbar, sub – Tenon's and Tropical respectively. The pain scores during surgery nearly equal in all groups (P=0.17).The mean scores were 0.88, 0.94 and 1.32 for Peribulbar, sub – Tenon's and Tropical respectively. Whereas the mean pain scores six hours after surgery were higher in topical (1.1) when compared to the peribulbar(0.36) and sub – Tenon's(0.48).Squeezing of the lids and eye movements were on higher side in topical. Sub-conjunctival haemorrhage and chemosis were on higher side in peribulbar and sub-Tenon's. Patient cooperation was better in peribulbar and sub-Tenon's.* ***Conclusion****: All the three methods have given reasonable analgesia during MSICS, Whereas Topical anesthesia may be reserved for less apprehensive patients. Sub-Tenon's is an alternative to peribulbar anesthesia with much effectiveness and safety in MSICS*
Keywords *MSICS PCIOL Chemosis Sub-conjunctival haemorrhage*

Date of Submission: 05-01-2018 Date of acceptance: 24-01-2018

I. Introduction

Manual small incision cataract surgery is the commonest ophthalmic surgical procedure being performed worldwide and preferred anesthetic technique for it is local anaesthesia[1,2,3]. The provision of ophthalmic regional anesthesia for cataract surgery varies globally. Akinetic and non-akinetic methods both are widely used[8]. Beside this patient's comfort, safety and low complication rates are essentials for local anesthesia. Main role of Anesthesia in surgery is to get akinesia and analgesia. The peribulbar block is relatively safe but serious complications have also been reported[10,11]. Surgeons are showing interest on the methods to shorten the duration of surgery and less invasive methods of anesthesia. Sub-tenon's anesthesia was first described by Turnbull in 1884[18]. Topical and sub-Tenon's methods are good alternative methods for getting reasonable analgesia, patient friendly administration and less induction time[4,5]. Sub-Tenon's and Topical anesthesia has gained wide popularity. Topical does not provide akinesia. Complete lack of akinesia can pose significant difficulty when dealing with uncooperative patients.Topical and sub - Tenon's anesthesia are the newer methods when compared to the peribulbar block for the cataract surgery[6]. The object of the study is to compare the discomfort, cooperation and complications of the patient during and after surgery for the MSICS using peribulbar, sub-tenon's and topical anesthesia

II. Materials and Methods

The prospective randomized study consists of 150 consecutive patients having elective MSICS(Manual Small Incision Cataract Surgery)with posterior chamber intra–ocular lens (PCIOL) implantation at our institute. Patients were studied with the following exclusion criteria: Lignocaine sensitivity, size of the pupil less than 5mm, h/o convulsions/epilepsy, Inability to give informed consent and Inability to understand visual analogue pain scale.The patients were randomized to undergo surgery with one of the three types of anesthesia. Topical anesthesia: Patients in topical group were treated with proparacaine hydrochloride twice, 10 min before Surgery

and just prior to corneal incision. This may be supplemented intra-operatively by injection of local anesthetic into the anterior chamber of the eye with a blunt needle through the operative incision (intracameral). Peribulbar anesthesia:Peribulbar block (Diffusing agent hyalase was added to the combination of 4 ml of 2% lignocaine hydrochloride,2ml 0.5% of bupevocaine and adrenaline 1 in 1000) was given in peribulbar space 4ml was injected with 24G needle at the junction of medial two thirds and lateral one third of infra orbital margin and 2ml superiorly just medial to supra-orbital notch in the peribulbar space) to other group. Sub-Tenon's anesthesia:Sub-Tenon' (episcleral or parabulbar anesthesia) consists of the injection of 3 to 5 ml of local anesthetic inside the episcleral space. The local anesthetic can be injected through a blunt cannula after opening a small button hole into the conjunctiva and Tenon's capsule with a blunt Wescott scissors, while the conjunctiva is grasped with a small forceps to other group. All surgeries were performed by single surgeon. Patients were instructed to grade pain during administration of anesthetic, during surgery and six hours post – operatively on a 4 point linear visual pain scale. The surgeon graded the chemosis, Sub Conjunctival Hemorrhage, sqeezing of the lids, akinesia, miosis after administration of anesthetic and while undergoing surgery. The surgeon also graded for the patient cooperation during the surgery on a scale of 0(mild) to 4(surgery not possible). Chi - square test and Fisher's exact test were used for analysis and P valve of less than 0.05 was considered statistically significant.

Table-1 Pain scores of patients while giving anesthesia

Type of anesthesia	Pain level					Mean pain score (SD)
	0	1	2	3	4	
Peribulbar	10	15	12	8	5	1.66 (1.2)
Sub – Tenon's	16	25	5	3	1	0.96(0.9)
Topical	49	1	0	0	0	0.020(0.1)

Table-2 Pain scores of patients at thetime of Sugery

Type of anesthesia	Pain level					Mean pain score (SD)
	0	1	2	3	4	
Peribulbar	21	21	3	3	2	0.88(1.1)
Sub–Tenon's	21	19	4	4	2	0.94(1.1)
Topical	13	15	17	3	2	1.32(1.1)

Table-3 Pain scores of patients six hoursafter Surgery

Type of anesthesia	Pain level					Mean pain score (SD)
	0	1	2	3	4	
Peribulbar	35	12	3	0	0	0.36(0.6)
Sub–Tenon's	31	14	5	0	0	0.48(0.7)
Topical	20	12	12	4	2	1.12(1.1)

Table 4 Complications observed with each anesthetic technique

Technique	Squeezing	Miosis	Eye movement	Chemosis	S.C.Hemorrhage
Peribulbar	6	3	3	26	6
Sub – Tenon's	5	4	6	17	10
Topical	15	9	34	0	0

The details of the pain scores during administration of anesthetic, during surgery and 6 hours postoperatively are shown in Table 1, 2 and 3. Pain scores were significantly lower in Topical anesthesia but there was no statistically significant difference in the pain scores of the peribulbar($P<0.0001$) and sub-Tenon's ($P<0.001$) group, the mean pain scores were 1.66, 0.96 and 0.020 for Peribulbar , sub-Tenon's and Topical respectively. The overall pain scores during surgery were similar in all groups ($P=0.17$), the mean pain scores being 0.88, 0.94 and 1.32 for peribulbar, sub-tenon's and topical respectively. There was no statistically significant difference among the three groups. Whereas the mean pain scores six hours after surgery were on higher side in topical compared to the peribulbar (0.36) and sub-tenon's(0.48),this was not statistically significant. Among the complications, squeezing of the lids ($p=0.03$) and eye movements ($P<0.0001$) were significantly more commonly noted in topical group.Chemosis ($P<0.0001$) and sub-conjunctival haemorrhage ($P=0.01$) were significantly more in peribulbar and sub-tenon's group(Table 4). Patient cooperation is more in Peribulbar and sub-tenon's when compared to topical group($P=0.02$).

III. Discussion

Regional anesthesia is commonly used for ophthalmic surgery. The anesthetic technique mustproduce optimal surgical conditions, providing good anesthesia for the patient in a safe manner.Retro-bulbar anesthesia was the only technique used for many years ago[7].Rare but serious complications haveled many surgeonreplacethistechnique withperibulbaranesthesia[9,10].Peribulbaranaesthesia does not eliminate serious complications totally, although these probably occur less frequently than with retrobulbar anesthesia[9,12]. In our studyperibulbar and sub-tenon's groups are comfortable for the patient when compared to the topical group which is more comfortable at the time of administration of anesthesia[4,5]. Topical group was associated with squeezing of the lids and eye movements during the surgery and more discomfort after the surgery. Studies have shown topical anesthesia to be less comfortable for the patient during surgery[9,13]. Patient comfort in sub-tenon's anesthesia at the time of surgery and after surgery is similar to that of peribulbar group. Sub-tenon's group is associated with minimal complications like squeezing and eye movements when compared to topical anesthesia. The findings of our study is similar to a previous study on the efficacy of sub-tenon's anesthesia for MSICS[6]The findings of our study indicate that all the three techniques provide comparable analgesia during MSICS whereas topical anesthesia best reserved for more cooperative patients. Sub-tenon's anesthesia is an equally effective and safer alternative to peribulbar anesthesia for MSICS.

References

[1]. Gogate PM, Deshpande M, Wormald RP. Is manual small incision cataract surgery affordable in the developing countries? A cost comparison with extracapsular cataract extraction. Br J ophthalmol 2003; 87: 843-46.
[2]. Gogate PM, Deshpande M, Wormald RP, Deshpande R, Kulkarni SR. Extracapsular cataract surgery compared with manualsmall incision cataract surgery in community eye care setting in western India: a randomized controlled trial. Br J Ophthalmol 2003; 87: 667-72.
[3]. Data A, Ghosh AK, Basu S, Das KS, Ghoshal S. Exploring the anaesthetic options for manual small incision cataract surgery (MSICS): A comparative evaluation of peribulbar, sub-tenon's and topical anaesthesia. AIOC 2008:82-83.
[4]. Srinivasan S,FernAI,SelvarajS,HasanS.Randamized double-blind clinical trial comparing topical and sub-tenon's anesthesia in routine cataract surgery Br J Anaesth 2004;93;683-6
[5]. Zafirakis P, Voudouri A, Rowe S, Livir-Rallatos G, Livir-Rallatos C, Canakis C, et al. Topical versus sub-Tenon's anesthesia without sedation in cataract surgery. J Cataract Refract Surg 2001; 27; 873-9.
[6]. Parker T, Gogate P, Deshpande M, Adenwala A, Maske A, Verappa K. Comparison of subtenonanaesthesia with peribulbaranaesthesia for manual small incision cataract surgery. Ind J Ophthalmol 2005; 53: 255-59.
[7]. Murdoch IE. Peribulbar versus retrobulbaranaesthesia. Eye 1990; 4: 445-49.
[8]. Manners TD, Burton RL. Randomised trial of topical versus sub- Tenon's local anaesthesia for small-incision cataract surgery. Eye 1996; 10: 367-70.
[9]. El-Sherbeny M, Kallil R, El-Gazzar H, Alrabiey M, Hamed M. Comparative study between sub-tenon's, conventional peribulbar block and low volume single injection medial canthus block of anterior segment surgery. Ain Shams J Anaesthesiol 2011;4: 15-23.
[10]. Davis DB, Mandel MR. Efficacy and complication rate of 16,224 causative peribulbar blocks. A postoperative multicentre study. J Cataract Refract Surg 1994; 20: 327-37.
[11]. Mount AM, Seward HC. Scleral perforations during peribulbaranaesthesia. Eye 1993; 7:766-67.
[12]. Ball JL, Woon WH, Smith S. Globe perforation after 2nd injection peribulbar. Eye 2002; 16: 663-65.
[13]. Waterman H, Mayer S, Lavin MJ, Spencer AF, Waterman C. An evaluation of the administration of subtenon local anaesthesia by a nurse practitioner. Br JOphthalmol 2002; 86 (5):524-26.
[14]. Turnbull CS. The hydrochlorate of cocaine, a judicious opinion of its merits. Med Surg Rep 1884; 29: 628-29

Venkata Ramana Adapa"A Prospective Study of Anesthetic Methods – Peribulbar, Sub - Tenon's And Topical Anesthesia in Manual Small Incision Cataract Surgery(MSICS)."IOSR Journal of Dental and Medical Sciences (IOSR-JDMS), vol. 17, no. 1, 2018, pp. 63-65