Original Research Article

Occurrence of Postoperative ptosis after cataract surgery in tertiary care hospital of south Gujarat area

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Abstract

Objectives: To find out the influence of superior rectus (bridal suture), demographic factors and intraoperative surgical time in occurrence of postoperative ptosis. **Material and Methods:** 260 patients posted for cataract surgery were enrolled in the study and divided in group A with superior rectus and group B without superior rectus suture used during cataract surgery. Preoperatively we recorded demographic details, measurements like MRD1 (margin reflex distance), levator function test and photograph of patients in primary gaze position,all measurements were compared postoperatively on follow up, we also recorded intraoperative time during cataract surgery. **Results:** Occurrence of ptosis was 11.5% (15/130) in group A and in group B 7.7% (10/130). About 12 patientssuffered with right side and 13 patientsleft sideptosis. Shortest operative time is 12 min whereas longest time is 32 min recorded. **Conclusions:** It was concluded that occurrence of ptosis is slightly more in patients operated with bridal suture and longer operative time. No significant role of demographic factor observed but females are involved more compared to male patients in development of ptosis.

Keywords: Postoperative ptosis, Superior rectus suture (Bridal suture), Cataract surgery

Introduction

Ptosis is an abnormally low position of upper eyelid relative to the visual axis and corneal light reflex; It may be congenital or acquired [1]. Postoperative ptosis is a known complication and overlooked frequently after intraocular surgery. A study suggests that nearly one third of acquired ptosis is postsurgical [2].

Cataract surgery is a major surgery in ophthalmology and small incision cataract surgery (SICS) is still most preferred method for cataract extraction in developing country like India by bulk operating surgeons e.g, Govt hospitals, camps, trust hospitals.

The risk of postoperative ptosis was shown to be associated with several risk factors such as longer surgery resulting in prolonged eyelid compression from lid speculum, prolonged eyelid oedema from periocular inflammation, use of superior rectus bridle suture, toxic effect of anaesthetic drugs, prolonged surgical time and foreign body reaction from conjunctival sutures [3,4,5].

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In patients with persistent postoperative ptosis, it has been seen that disinsertion of LPS muscle has occurred. Superior rectus bridle suture used during ECCE/SICS procedures cause ptosis by injury to the levator palpebrae superioris muscle [6].

This happens due to grasping of superior rectus bridle suture during passage of bridle suture and traction of superior rectus /levator complex by the bridle suture, which can cause levator aponeurotic dehiscence [5,7].

So,the purpose ofour prospective study isto find out various etiological factors causing postoperative ptosis especially role of superior rectus bridle suture, demographic factors and duration of surgeryin patients operated for cataract surgery in our institute.

As SICS is most commonly performed anterior segment surgery and postoperative ptosis is significant concern to ophthalmologist, it is very much necessary to identify the causative factors and thereby applying novel form of approach in surgery to reduce the above complication.

Material and Method

Type of study: This was a randomized comparative prospective study.

Place of study: The study was conducted at GMERS Medical College, Valsad, Gujarat.

Inclusion and Exclusion criteria: Inclusion criteria for the study was unilateral cataract irrespective of grading of cataract and exclusion criteria were preexisting ptosis, other lid malposition, combined surgeries and traumatic cataract.

Institutional Ethics Committee permission was taken before starting the study. Informed written consent was taken from each participants enrolled in the study.

Sampling methods: Total 260 patients were included and operated with small incision cataract surgery (SICS) using routine peribulbar block anesthesia by lidocaine 2% + bupivacaine (0.75%), use of wire speculum using superior conjunctival flap with superior incision. Post-operative patching of operated eye was done.

Patients were randomly divided in to two groups. In group A SICS with superior rectus suture and in group B SICS without superior rectus suture with use of self-retaining wire speculum to separate the lids were used.

Preoperative measurement for ptosis include MRD1, levator function test, preoperative photograph to compare it postoperatively on follow upand also recorded intra operative surgical time.

Our criteria for postoperative ptosis is no ptosis or > 2mm or more drooping of upper lid as ptosis on measuring margin reflex distance (MRD1). MRD1 is a distance between upper lid margin and central corneal light reflex when patient in primary gaze position.

Levator function is measured by (burke's method) lid excursion caused by LPS muscle, normal function if 15mm or more excursion, good 8mm or more, fair 5-7 mm and poor if 4mm or less and preoperative photograph is taken by camera when patient in primary gaze position.

All the preoperative measurements and photographs were compared with postoperative measurements at 1 month, 3 month and 6 month on follow up.

Statistical analysis: Statistical analysis was done using Microsoft Excel.

Results

In this prospective study we measured the occurrence of post-operative ptosis after cataract surgery and influence of bridal suture by comparison of two different groups. Study includes 260 patients with more than 6 months follow up post operatively,

Preoperative data of each patient was collected. Patients were from range of 35-75years. out of 260 operated eyes, 112 male and 148 female patients and 120 right eye and 140 left eyes.

Table-1: Preoperative patients characteristics

		Group A	Group B	Total
No of patients		130	130	260
Age		35-75	42-69	35-75
Sex	Male	50(38.5%)	62(47.7%)	112(43.1%)
	Female	80(61.5%)	68(52.3%)	148(56.9%)
Side	Right	56(43%)	64(49.2%)	120(46.1%)
	Left	74(57%)	66(50.8%)	140(53.8%)

The occurrence of postoperative ptosis was noted between group A with superior rectus suture and group B without Superior rectus suture. So, postoperative comparison of individual group's data as given in table 2

Table-2: Postoperative patient characteristic

		Normal Eyelid	Eyelid with Ptosis	Total
No of patients		235	25	260
Age		35-75	39-75	35-75
Sex	Male	110(91.7%)	10(8.3%)	120
	Female	125(89.3%)	15(10.7%)	140
Side	Right	100(89.3%)	12(10.7%)	112
	Left	135(91.2%)	13(8.8%)	148

Occurrence of ptosis was found to be 11.5% (15/130) in group A and 7.7% (10/130) in group B. It means that there was no significant difference between two groups, also in all 260 patients no measurable abnormal levator function observed and patients having significant ptosis compared with preoperative and postoperative photograph.

Table-3:Incidence of ptosis after cataract surgry

	Group A	Group B	Total
Eye lid with Ptosis	15(11.5%)	10(7.7%)	25
Normal Eye Lid	115(88.5%)	120(92.3%)	235

Intraoperative time of surgery was also noted in all enrolled patients. It was observed that shortest time is 12min and longest time of surgery is 32 min recorded. The incidence of postoperative ptosis was more in patients having long operative time.

Discussion

postoperative lid malposition is commonafter any intraocular surgery and surgeonsrarely informpatients about it and these complications resolve by its own slowly. Cataract surgery is major intraocular surgery and most commonly performed, so we decided to study postoperative ptosis after cataract surgery. In our prospective randomized comparative study, we defined postoperative ptosis as if margin reflex distance shows drooping of upper lid 2mm or more.

The incidence of postoperative ptosisranges from 7.3 to 21% in various studies [8,9,10] which is comparable to 7.7 -11.5% overall incidence of our study. We observed incidence is slightly more 11.5% in group A compared to group B is 7.7%, that may be because of additional traction over the speculum by bridal suture that shows influence of superior rectus in development of post op ptosis which is comparable with Singh et al found rate ofpostoperative ptosis becometwo times when speculum and bridal suture used simultaneously because speculum pulls the levator aponeurosis up where as bridal suture pulls down leads to dehiscence of LP Sprobably [6].

Kalpan et al and Alpar et al observed incidence of ptosis in 1256 cataract surgery under local anesthesia was 11.4% and after 184 cataract surgery under general anesthesia was 1.5%. They concludedSR suture is the precipitating factor including damage to levator complex weakning, large conjunctival flap and prolonged patching ascontributing factor [9,11]. It is possible that the high incidence of ptosis found in those patients who underwent a cataract surgery with superior rectus bridle suture in the Kaplan et al study was due to the relative lid swelling induced by the local anesthetic with the superior rectus bridle suture acting as an additional factor compounding the damage already inflicted by the anesthetic [12].

There are various factors identified for postoperative ptosis like lid speculum, Bridal suture, lid hematoma, myotoxicity after local anesthesia.

Paris suggested disinsertion of the LPS aponeurosis found from the epitarsus during post cataract surgery ptosis repair [4].

And same theory was postulated by other researchers. It has been proved that disinsertion of levator palpebrae superior is aponeuros is may be due to contraction of orbicularis against the speculum or lid which gets compressed on orbital rim which caused decreased blood supply and edema that resulting in weakened aponeurosis clinical and laboratory based study has shown that in postoperative ptosis there is disinsertion of the levator aponeurosis complex by lid edema, which is already weak by involutional changes [6,13].

So some other factors are responsible for development of lid edema. Peribulbaranesthesia with its initial myotoxic effect,8 and the eyelid speculum, which would compress the upper lid against the orbital bones and thereby reduce the blood flow to the levator muscle and so induce inflammation, would contribute to this oedema [3].

Such a combination of factors would inherently damage an already weakened levator complex due to involutional changes. Further compression with a pressure-lowering device would augment damage to the already weakened levator fibers. On the contrast Ropo and associates concluded development of post operative ptosis was not affected by using ocular compressive devices after doing 100 cataract surgery [6].

Linberget al, observed 10% incidence in 68 keratotomyoperated patients without using local anesthetic injections, bridal suture and conjunctival flap so they concluded wire speculum as a causative factor [10]. Cause of temporary ptosis are thought to include eyelid edema, indirect infiltration of the LPS by retro bulbar or peribulbar anesthesia and ocular surface anesthesia [14].

Feibel and colleagues reported that the incidence of post cataract surgery at 90 days was 5.8% in patients given peribulbar block and 5.5% in patient's given retrobulbar block, they concluded that incidence remains same irrespective of peribulbar vs retro bulbar block [3].

Rainin et al observed myotoxicity of local anesthesia as a critical factor for post operative ptosis in case study.13deady and associates reported incidence of ptosis, defined by them is 2mm or more decrease in palpabral fissure width of operated eye relative to other eye after6month post operatively was 6.2%by doing 146 cataract and glaucoma surgery [15].

Lower incidence of ptosis reported after cataract surgery by using general anesthesia compared to local anesthesia, due to no squeezing during general anesthesia whereas continues squeezing during local anesthesia also showed that inspite of superior rectus hematoma occur during taking bridal suture post operatively did not found development of postoperative ptosis [16].

In spiteof having all responsible factor for development of ptosis,arecent clinical study showsno clinical ptosis detected after 6 months in patients operated for cataract with clear corneal incision phacoemulsification [17].

Postoperative comparison of demographic factors does not show any significant influence on postoperative ptosis but surprisingly ptosis is more recorded in female patient. Which may be due to levator complex weakening is more in female patient. It gives a gray area for research with large female participants.

Until now no one has observed that incidence of ptosis was more in patients who undergone surgery with longer operative time compared to lesser operative time. That is thought to be because of traction over the levator complex for longer interval and occlusion of blood vessels supplying LPSdue continuous pressure over the orbital rim by speculum [6,13].

Conclusion

By our prospective studyweconcluded that chances of occurrence ofpostoperative ptosis is slightly on higher side in patientsoperated with superior rectus suture than in whom it is not used, role of demographic factors provedno any significance, but longer operative time leads to more chances of occurrence of ptosis. In spite of above factors other factors also responsible for the postoperative ptosis and majority of ptosis gradually resolves it's own over a period of one year.

Recommendations- Postoperative ptosis is one of the major lid malposition after anterior segment surgeries like cataract, so surgeons can decrease the risk of ptosis following cataract surgery by avoiding bridle suture, using small, suture less temporal incisions and reducing operative time to complete surgery if possible.

Add to existing knowledge- Postoperative ptosis is major concern to anterior segment surgeons, so in spite of having many contributing factors, ptosis is influenced by bridal suture and longer operative time so avoiding use of superior rectus suture, decreasing surgical time during cataract surgeryandusing novel form of approach helps in reducing chances of development of postoperative ptosis.

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References

1. Finsterer J. Ptosis: causes, presentation, and management. Aesthetic Plast Surg. 2003 May-Jun;27 (3):193-204. Epub 2003 Aug 21.

2. Huo L, Cui D, Yang X, et al. Etiology and treatment of post-surgical blepharoptosis. Eye Sci. 2013 Sep;28 (3):134-9.

3. Feibel RM, Custer PL, Gordon MO. Postcataract ptosis. A randomized, double-masked comparison of peribulbar and retrobulbar anesthesia. Ophthalmology. 1993 May;100 (5):660-5.

4. Paris GL, Quickert MH. Disinsertion of the aponeurosis of the levator palpebrae superioris muscle after cataract extraction. Am J Ophthalmol. 1976 Mar;81(3):337-40.

5. Shahinian L Jr., Brown SI. Postoperative complications with protruding monofilament nylon sutures. Am J Ophthalmol1977;83:546-8.

6. Rao VA, Kawatra VK. Ocular myotoxic effects of local anesthetics. Can J Ophthalmol. 1988 Jun;23 (4): 171-3

7. Loeffler M, Solomon LD, Renaud M. Postcataract extraction ptosis: effect of the bridle suture. J Cataract Refract Surg. 1990 Jul;16(4):501-4.

8. Hosal BM, Tekeli O, Gürsel E. Eyelid malpositions after cataract surgery. Eur J Ophthalmol. 1998 Jan-Mar;8(1):12-5.

9. Kaplan LJ, Jaffe NS, Clayman HM. Ptosis and cataract surgery. A multivariant computer analysis of a pros-pective study. Ophthalmology. 1985 Feb; 92 (2):237-42.

10. Linberg JV, McDonald MB, Safir A, Googe JM. Ptosis following radial keratotomy: performed using a rigid eyelid speculum. Ophthalmology. 1986;93:1509–1512. [PubMed]

11. Alpar JJ: Acquired ptosis following cataract and glaucoma surgery. Glaucoma 1982;4:66.

12. Shiue O, Ko L-S. the study of blepheroptosis after cataract surgery. J Formosan Med.Assoc.1987;86:1227-1231.Finsterer, J. Aesth. Plast. Surg. (2003) 27: 193. https://doi.org/10.1007/s00266-003-0127-5

13. Parsa FD, Wolff DR, Parsa NN, Elahi aE E. Upper eyelid ptosis repair after cataract extraction and the importance of Hering's test. Plast Reconstr Surg. 2001 Nov;108(6):1527-36; discussion 1537-8.

14. Bernardino CR, Rubin PA.Ptosis after cataract surgery.SeminOphthalmol.2002Sep-Dec;17 (3-4) 144-8

15. Rainin EA, Carlson BM. Postoperative diplopia and ptosis. A clinical hypothesis based on the myotoxicity of local anesthetics. Arch Ophthalmol. 1985 Sep; 103 (9) :1337-9.

16. Deady JP, Price NJ, Sutton GA. Ptosis following cataract and Trabeculectomy surgery. Glaucoma, 1982; 4:66-68.

17. Chua CN, Ahad M, Jones CA. ptosis following phacoemulsification. Presented as a free paper at the europian society of oculoplastic and reconstructive surgery. Meeting in june 2001 in Santiago spain.

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