EVALUATION OF OCULAR DEVIATIONS AND PTOSIS AFTER CATARACT SURGERY

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ABSTRACT

There is a paucity in world literature of a prospective study on post cataract strabismus and in Indian literature on post cataract ptosis. 150 cataract patients without pre-existing strabismus or ptosis were subjected to standard extracapsular cataract extraction with posterior chamber intraocular lens implantation under 2 point peribulbar anaesthesia and were post-operatively evaluated for strabismus and ptosis. At the end of first week, there were 10/150 (6.67%) cases of strabismus, 13/150 (8.67%) cases of ptosis and 5/150 (3.33%) of both combined, which reduced to 2% each (3/150) at the twelfth week. The probable factors for causation and recovery are being discussed.

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KEY WORDS: Post-cataract surgery; Ptosis; Strabismus.

Introduction

Planned extracapsular cataract extraction (ECCE) with posterior chamber intraocular lens implantation (PCIOL) is now the rule rather than the exception for the surgical treatment of cataract. The wide acceptance of this procedure has largely been due to restoration of better quality vision and less complications associated with the procedure. Despite the fact that abundant literature is available on common complications and measures for their prevention, less attention is paid to complications like ptosis and ocular deviations. IOL implantation is based on the principle of providing as near a normal vision as possible with full functional recovery including a high grade binocular vision. That being so, complications like ptosis and ocular deviations do limit the success of an otherwise uncomplicated surgery.

Dehiscence or disinsertion of levator palpebrae superioris (LPS), trauma to superior rectus muscle (SR) complex, large conjunctival flaps, post-operative patching, anaesthetic techniques, myotoxicity of local anaesthetics have all been implicated in the multifactorial causation of ptosis [1-3]. Sensory deviation due to presence of dense cataract, central disruption of fusion, pre-existing concurrent disorders masked by cataract, optical factors associated with pseudophakia and surgical trauma to extraocular muscles, myotoxicity of local anaesthetics have all been implicated in the causation of strabismus after cataract surgery [3,4]. As

there are common aetiologies for both these entities, it is but expected that both would occur together. Though literature abounds on post-cataract ptosis [1,2,5], ocular deviations have been less studied. These are few studies, that prospectively deal with both these complications.

Material and Methods

A study was undertaken at Command Hospital (Southern Command) and AFMC, Pune to study the post-operative occurrence of ptosis and ocular deviations at the end of 1 week and at the end of 12 weeks following cataract surgery. Only patients operated under local anaesthesia were enrolled in the study. The following patients were excluded:

- a. Patients with history of significant refractive anisometropia (3D)
- b. History of myopathic conditions especially thyroid eye disease and myasthenia gravis.
- c. Patients with gross retinal pathology which could lead to subnormal visual acuity.
- d. Past history of retinal detachment surgery.
- e. Patients with traumatic cataract.
- f. Those with pre-existing ptosis/strabismus.
- g. Patients with dense unilateral cataract in order to obviate sensory deviations.

A total of 150 patients were found to be eligible for the study.

The local anaesthetic technique employed was a 2-point peribulbar with 3/4 inch 27 G fine needle. Anaesthetic mixture was a equal mixture of 2% lignocaine without epinephrine and 0.5% bupivacaine with hyaluronidase (1500 IU in 30 ml of lignocaine) and total anaesthetic mixture injected was 7 ml. Ocular compression with balanced weights was given for 20 minutes after

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TABLE 1
Occurrence of ptosis/deviation or both

Time (weeks)	Ptosis alone	Number of patients												Total (%)
		Ptosis with deviations						Deviation alone						
		Horizontal		Vertical		Combined		Horizontal		Vertical		Combined		
		ESO	EXO	Hyper	Hypo	ESO Vert	EXO Vert	ESO	EXO	Hyper	Hypo	ESO Vert	EXO Vert	
1	13	1	—	—	1	1	2	2	5	1	2	—	—	28 (18.67%)
6	6	—	—	—	1	1	1	1	2	1	1 (9.33%)	—	—	14
1	2	3	—	—	—	1	1	1	—	1	1	—	—	9 (6%)

TABLE 2
Incidence of Ptosis

Name of author	Duration of study	Incidence (% age)
Alpar JJ	12 months	12.9
Kaplan CJ	6 months	13
Deady et al	6 months	6.2
Schiue and Ko	6 months	2.8
Loeffler et al	12 weeks	10
Fiebel et al	12 weeks	5.7
Present study	12 weeks	4

the block. Patients were subjected to standard ECCE and PCIOI implantation with a 1 mm superior fornix based conjunctival flap and a post procedure subconjunctival injection of 0.25 cc of gentamicin and 0.25 cc of steroid in the inferionasal quadrant. Post-operative ptosis was defined as the drop of the upper eye lid in mm from the pre-operative level in the same eye.

Results

Age range of 150 patients enrolled in the study was from 31 years to 78 years; mean being 63.5 years. 93 patients (62%) had a pre-operative visual acuity of less than or equal to 6/60; while post-operatively 72 (48%) had visual acuity of more than or equal to 6/12 and 71 (47.33%) had from 6/36 to 6/18. The incidence of ptosis at the end of 1 week was 13/150 (8.67%), while that of ocular deviation was 10/150 (6.67%) and 5/150 (3.33%) of both combined, which reduced to 3/150 (2%) each at the end of the 12 weeks (Fig 1). Only 1/150 (0.67%) with ptosis had LPS dysfunction at the end of 12 weeks.

The horizontal deviations at the end of one week were 8/150 (5.33%) while there was only 1/150 (0.67%) at the end of 12 weeks. Vertical deviations were 4/150 (2.66%) at end of one week, of which 3/150 (2%) were still present at 12 weeks. There were 3/150 (2%) with combined deviations at the end of one week, of which 2/150 (1.33%) still persisted at end of 12 weeks. 5/150 (3.33%) had both ptosis and deviations at end of 1 week of which 3/5 (60%) still persisted at end of 12 weeks (Table 1). The incidence of diplopia was 3/150 (2%) at the end of 12 weeks.

On statistical analysis using student t-test, we find that the above stated results are significant.

Discussion

In the immediate post-operative period the incidence of ptosis is expected to be slightly higher which usually disappears by end of first week [6]. Hence

COMPARATIVE IMPROVEMENT OF PTOSIS AND DEVIATIONS

Fig. 1 : Comparative improvement of ptosis and deviations

ptosis was not evaluated in the immediate post-operative period. All pre-operative ptosis and deviations were excluded. Fornix based conjunctival flap of 1 mm distance from limbus was made as larger conjunctival flaps could lead to post-operative ptosis [1]. Prolonged patching is also known to be a factor and hence bandages were removed after first post-operative day [1]. Levator dysfunction was noted in only one patient. Pre-operative deviations were excluded and also patients with significant anisometropia (3D). Repeat blocks were given in 12 patients (8.1%) in our study of which 2/12 (16.67%) and 1/16 (8.33%) developed ptosis and ocular deviation respectively which had resolved by the end of 12 weeks.

By limiting these factors, the effect of anaesthetic myotoxicity seems to be the probable causative factor. The volume as well as the concentration of the local anaesthetic used (0.50% Bupivacaine to 0.75% Bupivacaine) is the least when compared to other studies. Hence the incidence of ptosis is also one of the least of all studies evaluated so far (Table 2).

Conclusion

The present study implies that myotoxic effects of local anaesthesia on the extra ocular muscles is ines-

capable and the incidence though slightly higher in first and sixth weeks decreases by the end of 12 weeks (Fig 1). However, this can be reduced by judicious and appropriate usage of anaesthetic agents as well as meticulous surgical techniques.

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