

PROPTOSIS: MANAGEMENT OUTCOMES AND COMPLICATIONS FOLLOWING ORBITOTOMY

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ABSTRACT

Background: Proptosis is one of the difficult to manage clinical entity faced by surgeons in emergency. **Objective:** To determine visual analysis following orbitotomy and complications in proptosis patients. **Methodology:** Study Design: Quasi-experimental, study. Study Settings and Duration: At the Ophthalmology Department, Jinnah Postgraduate Medical Center, Karachi, from 1st April 2014 to 30th October 2015. Total 30 patients of all age groups with proptosis were included. Preoperative assessment of the proptosis and the visual defects was done. Depending upon the provisional diagnosis, different surgical approaches of orbitotomy were performed. The diagnosis was further confirmed by histopathology of the excision biopsy specimens. Improvement in the proptosis and visual outcomes after the surgery was evaluated. Complications after the removal of tumors were also noted. **Results:** Out of 30 patients of proptosis, 25 (83.33%) were found to have decreased visual acuity, 7 (23.33%) had diplopia, 6 (20%) suffered from pain and there was a complete loss of vision in 2 cases (6.66%). After the intervention the size of proptosis reduced in all cases (100%) and improvement in the visual acuity in 21 (70 %). Complications observed were: Lateral rectus muscle damage 2 (6.66%) bleeding 2(6.66%), corneal abrasions 1 (13.33%) recurrent lesions 2(6.66%), restricted eye movements 2 (6.66%), diplopia 2 (6.66%) while keratitis, fibrosis and ptosis were all each observed in one patient (3.3%). **Conclusion:** Appropriate orbital surgery for proptosis provided a high degree of success, with a significant improvement of visual acuity. Moreover, life threatening conditions were eliminated, with fewer complications. **Keywords:** Proptosis, Orbitotomy, Vision, Complications, Outcome.

INTRODUCTION

Bulging of the eye ball out of orbit is called Proptosis/exorbitism or exophthalmos that may be unilateral or bilateral. Major cause behind may be infections, cystic or neoplastic lesion, vascular inflammation, fracture of the orbit, retro-bulbar hemorrhages and Cushing's disease.¹ Treatment is either medical or surgical according to the etiology.¹ Components of Orbit consists of different tissues from all three germinal layers origin and has a number of factors affecting all these different tissues including the retinal leading to blindness. Complications can be reduced greatly on earlier detection and proper management.^{2,3} Proptosis may result from inflammation, trauma, infections, neoplasm and vascular disease involving the eye.⁴ CT and MRI are the two main investigations in detecting the orbital lesions, as they accurately delineate the depth of the lesion from bony involvement to cranial structures. Blood Complete Picture, culture and ultrasound can easily rule out and detect other etiological factors of disease. Biopsy is required to confirm the diagnosis for definitive therapy and management of proptosis.⁵ The main surgical procedure for proptosis is Orbitotomy. Indications for the orbitotomy include: to remove orbital mass (dermoid cysts, hemangiomas, schwannomas, tumors of lacrimal glands) Lesion

biopsy purpose, de-bulking of the highly infiltrative lymphangiomas and to drain the orbital abscess and hemorrhage.⁶ Orbitotomy simply means to cut into the orbit it can be divided into superficial without disturbing the orbital wall to remove the superficial lesion and deep, partially removing the orbital bones to approach and remove the deeper lesions. The surgeon can approach the orbit through anterior, inferior, lateral, medial and superior orbitotomy.⁷ Goals of orbitotomy include : reducing the proptosis, Vision improvement and cosmetic outlook management. Complications of Orbitomy may be infections, vitreous hemorrhage, vision loss, ptosis, pupillary changes, hypohesia, retinal detachment, keratopathy, cerebrospinal fluid leak.⁸ Our study was a prospective assessment of the visual parameters among the patients undergoing orbitotomy due to proptosis including the outcomes and complications.

METHODOLOGY

This was a quasi experimental study. Patients diagnosed for proptosis 30 in number visiting Ophthalmology unit of Jinnah Postgraduate Medical Center, Karachi were registered after getting consent from 1st April 2014 to 30th October 2015. **Inclusion Criteria:** Patients of proptosis were with age more than 15years and without any comorbidity. **Exclusion Criteria:** Patients suffering from

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metastatic lesions and exophthalmos were excluded. Patients with history of previous orbital surgery were also excluded.

Ophthalmic Examination

Visual acuity, color vision, pupillary reaction, and visual field examination was conducted in all patients before and after surgery. Direction of the eyeball displacement and degree of proptosis were assessed by Hertel ex ophthalmometer while the cornea by Fluorescein test. Ocular muscles were checked for any abnormality, paralytic and restrictive causes were differentiated by forcedduction test. Examinations of the fundus, measuring of IOP (Intraocular pressure), blood and radiology tests were also performed to evaluate proptosis in details. Ethical approval was sought from hospital ethical committee.

Surgical Procedures

Appropriate surgical procedure was adopted for different locations of the orbital lesions. Almost all ways of orbitotomy i.e. superior, inferior, lateral, medial and anterior were adopted. General anesthesia was given by expert anaesthetist prior to surgeries. Postoperative care including analgesics, antibiotics and bandage was provided to every patient.

Statistical Analysis

Data collected during study was analyzed on SPSS version-21 using chi-square for comparison. Mean and S.D was calculated for age while percentage for gender, symptoms (Pre and post procedure). Significant level of 0.05 was taken.

RESULTS

Mean age of patients was 26 ± 16 years, 18(60%) of which were male while 12(40%) were females. Symptoms were found as reduced vision 25(83.33%), diplopia 7(23.33%) pain 6(20%) restricted movements 17(56%), choroid folds and defects of colour vision each were 7(23.33%) disc edema 6(20%), relative pupillary defects 2(6.66%).

Surgical options for approach were 60% lateral, 23% superior, 10% inferior and 6.66% medial orbitotomy. Vision status before surgery was 12(40%) between 6/60-6/24, 7(23.33%) has 1/60 to 3/60, 1(3.33%) between 4/60-5/60 while 7(23.33%) were having their eye sight 6/18 or improved, only 2(6.66%) were perceiving light

while 1(3.33%) hand movement alone. Table I shows the comparison of parameters 21(70%) has improved visual acuity with significant p-value 0.001, while 9(30%). Lateral rectus damage 2(6.66%) hemorrhage 2(6.66%), and corneal abrasion 1(3.33%) were the complication observed during surgery.(Table 2) Restriction of eye movements, Recurrent lesions and diplopia were 2(6.66%) each while muscle fibrosis, keratitis and ptosis 1(3.33%) each were post operatively observed.

Table I: Visual Acuity Before And After Surgery (n=30)

Best corrected visual acuity	Observations		P Value
	Before surgery	After Surgery	
Absence of Projection of light	2 (6.66%)	2 (6.67%)	0.001
Perception of hand movements	1 (3.33%)	0	
Between 1/60-3/60	7 (23.33%)	1 (3.33%)	
Between 4/60-5/60	1 (3.33%)	1 (3.33%)	
Between 6/60-6/24	12 (40%)	4 (13.33%)	
Between 6/18-6/9	7 (23.33%)	22 (73.33%)	

Table II: Complications during surgery (n=30)

Complications	Lateral orbitotomy	Superior orbitotomy	Total	Percentage
Bleeding	1	1	2	6.66%
Lateral rectus injury	2	-	2	6.66%
Abrasions of Cornea	1	-	1	3.33%

DISCUSSION

Forward displacement of globe (proptosis) is the common presentation of the orbital lesions and results in visual symptoms, or vision loss of irreversible nature from compression of optic nerve either due to mass effect or direct and globe indentation.⁹ Prashant K reported that out of his 40 patients malignancy of optic canal and orbit, proptosis was the major presentation 80% while 20% had benign masses resulting into visual deterioration.¹⁰

Zhang et al in his 22 patients based on tumors of optic nerve and orbit reported 77.27% presenting symptom that of visual impairment.¹¹ Our findings are consistent with that because 83.33% patients presented with visual defects of tumor origin. Scheuerle et al declared a 78.57% improvement in vision following orbitotomy.¹²

Consistent to that we found a 70% improvement. A 77.77% reduction in proptosis was described by Schick et al in orbital cavernomas at the end of treatment.¹³ while 100% reduction is observed by us

in the current study. Overall 30% complications were noted that is also mentioned in literature and can be overcome by improvement in surgical skills and prior assessment.^{12,13}

CONCLUSION

Proptosis is manageable through orbitotomy that has impressing outcomes as far as visual acuity and complications are concerned.

Conflict of interest: There is no conflict of interest among authors.

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