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Short Report

A Study Of Orbital Fractures In A Tertiary Health Care Center

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Abstract:
A retrospective study of patients with orbital fractures had 48% patients in the age group of 20 – 40 years with male : female ratio of 10:1. Road traffic accidents (71.43%) were the most common cause followed by injury due to fall (20%). Eighty five percent of patients had normal visual acuity at presentation and 65.57% patients had no ocular complaints. Diplopia was present in 14.2% of patients. Of the orbital fractures infraorbital rim was involved in 43.13%, floor in 19.6%, lateral wall in 13.7%, pure blow out in 14.28% and the roof in 2.9%. Important ocular findings were extraocular movements restriction in 9 (10.3%), infraorbital dysaesthesia in 3 (3.4%), enophthalmos in 2, RAPD and globe rupture in 1 patient each. 32 patients underwent surgical management. At the end of 4 months of follow up, 3 had restriction of EOM, 1 patient had vision loss due to globe rupture, 2 had RAPD (optic nerve compression), 1 had lagophthalmos, 1 had exotropia and 1 had atrophic bulbi.
Key Words: Orbital fracture, Blow out, Optic nerve compression

Aim

A retrospective study was done to know the incidence, presentation and visual outcome in patients with orbital fractures who presented to a tertiary care hospital during January 1995 to March 2005

Materials And Methods:

Our study includes 35 eyes of 35 patients who presented to the Out Patient Department of Ophthalmology.

Socio-demographic data and history regarding the cause of the injuries were obtained.

Data regarding the ocular examinations including gaze, extraocular movements, orbital margin palpation, slit lamp examination and fundus examination were collected.

Fracture site was noted from X – ray and CT scan done earlier. Cases were managed in accordance with their presentation by either conservative or surgical means.

Symptoms, findings and complications at 4 months of follow up were noted

Results

Out of 35 patients 32 (91.42%) were males and 3 (8.5%) were females.

Most common age group was between 20 - 40 years accounting for 13 cases (48%). Among causes of injury 25 (71.43%) patients had road traffic accidents, 7 (20%) patients had history of fall, 2 (5.7%) patients had injury with blunt object and one case had history of assault.

Thirty out 35 patients had normal vision, 1 had 6/12, 1 had 6/9, 2 had perception of light (PL) only and one case had no PL.

Among the orbital fractures, the infraorbital rim involvement was seen in 22 (43.13%) patients, floor in 10 (19.6%) patients, lateral wall in 4 (13.7 %) patients, medial wall in 6 (11.76%) patients, pure blow out in 5 (14.28%) patients and one case had roof fracture.

Twenty four (68.57%) patients had no ocular complaints. Among 11 patients with ocular complaints 7 had diplopia, 3 had diminution of vision and one had pain in infraorbital region.

Twenty five (71.4%) patients had periorbital edema and ecchymosis, restriction of extra ocular movements (EOM) in 9 (10.3%), infraorbital dysaesthesia in 3 (3.4%) patients, step deformity of infraorbital margin in 9 (10.3%), tenderness of inferior orbital rim 7 (8%), relative affarent pupillary defect (RAPD) in 1 patient (due to optic nerve compression at the optic foramina, the intracanalicular part), proptosis in 1 patient (fracture of the

orbital roof with air in the orbit causing proptosis consequent to road traffic accident), enophthalmos in 2 patients, lagophthalmos in 2 patients and globe rupture in one patient.

Of the various gaze restrictions, most common was supraduction (75%) followed by lateral gaze restriction (16.3%) and medial gaze restriction (8.3%).

Thirty two cases (91.42%) were managed surgically and the other 3 were treated conservatively. Patients with diplopia in primary gaze or upgaze with forced duction test after 10-14 days of the injury, enophthalmos more than 2 mm after 10-14 days of the injury and fractures involving more than 1/3 rd of the orbital floor as they can be cosmetically significant were treated surgically. None of those who underwent surgery incurred a visual loss due to surgery.

At the end of 4 months of follow up, 3 had restriction of EOM, 1 patient had vision loss due to globe rupture, 2 had RAPD (optic nerve compression), 1 had lag ophthalmos, 1 had exotropia, 1 had atrophic bulbi and 1 case was lost for follow up.

Most patients, (32; 91.42%) patients had normal visual acuity at the end of 4 months of follow up except 2 cases of optic nerve compression, 1 case of globe rupture and 1 who had a pre-existing vision of 6/24 (tilted disc syndrome).

Discussion

Orbital wall fractures can be divided into two sections; the anterior section consists of orbital rim and the posterior section consists of comparatively thinner lateral wall, roof and floor. These thin walls are prone to fracture either inwardly or outwardly.

The incidence of orbital wall fractures ranges from 4-70% among patients who sustain periorbital trauma. According to Luhrs,[1] isolated orbital wall fractures represent 5% of all midfacial fractures and medial wall fractures represent 20% of orbital wall fractures.[2-4] In our study midfacial fractures were present in 28.5% cases, medial wall fractures were present in 11.76%. Al-quarainy[5] reported incidence of blow out fractures to be 9.9%. Incidence of orbital roof fractures in patients suffering facial bone fractures has been reported at 5%.[6,7] In our study it was 1.96%.

According to Lester et al[8] periorbital ecchymosis was in seen 100% cases, inability to elevate globe in 90% cases, vertical diplopia in 90% cases, infraorbital hypoesthesia in 56% cases, depression of globe in 30% cases and enophthalmos in 5.75% cases. In our study 28.8% had periorbital swelling, 10.3% had restriction of extraocular movements, 13.5% had diplopia, 3.4% had infraorbital hypoesthesia, globe depression in 1.15% cases, enophthalmos in 5.75% cases.

In a retrospective study[5] of 363 patients with mid facial fractures caused by blunt facial trauma, 56 patients were found to have suffered transient or permanent loss of vision, varied from minor, self healing corneal injuries to optic nerve avulsion. Permanent loss of vision ensued in 5 cases and was due to traumatic optic neuropathy in each case. In this series road traffic accidents were the most common (29%) mode of injury. In our study 64.86% had no ocular complaints, 4 had permanent visual loss (2 had traumatic optic neuropathy, 1 had atrophic bulbi, 1 had globe rupture). In our study 71.42% cases were due to road traffic accidents.

The most common orbital fractures involve the medial wall and floor. Common associated findings include subcutaneous ecchymosis, chemosis, edema, limitation of abduction due to medial wall fractures. In cases of blow out fractures common findings were hypoesthesia of the cheek and upper

teeth on the side of the injury, diplopia and limitation of vertical gaze (caused by entrapment, edema or hemorrhage of inferior rectus). Blindness is extremely rare but has been reported after zygomatic and orbital floor fracture repair.[9]

Majority of blow out fractures or other orbital fractures do not require surgical intervention. Surgical intervention may be necessitated in cases of diplopia with limitation of upgaze and / or downgaze within 30 degree of primary position with positive traction test result 7-10 days after injury and with radiologic confirmation of a fracture of orbital floor, enophthalmos exceeding 2 mm that is cosmetically unacceptable to the patient and large fracture involving at least half of the orbital floor, particularly associated with large medial wall fracture. In our study, most cases (91.42%) needed surgical treatment.

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