

Fracture of Orbital Wall in Road Traffic Accident



Medical Science

KEYWORDS : RTA, ocular trauma, orbital wall, fracture

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ABSTRACT

Introduction: Beware of black eye orbital fracture are often missed at or misdiagnosed. The underlying bony injury and or globe injury are often more serious than initial examination suggests.

Aim: Aim of this study to incidence of Orbital Wall Fracture in Road Traffic Accident.

Methods: Observational study, 144 cases of ocular trauma cases were evaluated to find the incidence of orbital wall fracture

Results: Out of 144 ocular trauma cases, 32 cases had orbital wall fracture.

Conclusion: Injury to orbital wall and failure to treat, risks cosmetic deformity or limited mandibular movement. We should suspect orbital wall fracture when the patients present with periorbital edema, ecchymosis and subconjunctival hemorrhage.

INTRODUCTION

Orbital fractures are commonly seen with mid facial trauma. Fracture severity ranges from minimally displaced fractures of an isolated wall that require no surgical intervention to major disruption of the orbit¹. Assessing injury to the soft tissues and the globe as well as orbital and peri-orbital bony injury. The management of orbital trauma and fractures is aimed at minimizing and preventing early and late sequelae and complications. The goal of intervention is to prevent vision loss and to minimize late problems such as persistent diplopia and disfiguring globe malposition². Motor vehicle accidents are usually the most common cause of orbital fractures³. The malar complex place key role in the structure and function of the facial skeleton in addition to providing support for the globe, it is the insertion of the site for the masseter muscle and protects temporalis muscle and coronoid process. The malar complex is commonly fractured in isolation by the blow to that area. The incidents and causes maxillofacial trauma and facial fracture vary widely in different regions of the world due to social, economical and cultural consequences⁴.

AIM

Aim of this study to incidence of Orbital Wall Fracture in Road Traffic Accident.

MATERIALS AND METHODS

This was a Observational study conducted on 144 cases of ocular trauma in road traffic accident attending tertiary care hospital were studied. Institutional Ethics committee and Informed consent from selected patients were obtained. Patients with ocular injury were randomly included in the study. Patients of all ages, both males and females irrespective of economic status, who are co-operative, were included in the study. Patients who were unconscious, not co-operative and terminally ill were excluded. Patients with ocular injuries other than road traffic accidents are excluded from the study. Detailed work up was done of the patients with ocular trauma in road traffic accidents, which included a detailed trauma history, whenever possible from the patient himself and if necessary from the relatives. History of preexisting ocular and medical trauma was also recorded. Proforma was drawn up and following details were recorded for each patient with ocular trauma; age and sex, type of vehicle the patient was travelling in, presence or absence of protective eye wear and sign and symptom

following the injury. CT facial bones with orbital cuts were taken for all the patients.

RESULTS

In 144 cases, maximum number of RTA cases in 21 to 30 age group 34.02% followed by 43 cases 29.84% in 31 to 40 age group. Out of 144 patients, 130 patients (90.3%) who sustained ocular injury were males and 14 patients (9.7%) were females.

Table 1 Type of Vehicle involved in ocular injuries

| Type of vehicle | Number of Cases | Percentage |
|-----------------|-----------------|------------|
| 2 Wheeler | 123 | 85.4 |
| 3 Wheeler | 4 | 2.8 |
| 4 Wheeler | 13 | 9.0 |
| Pedestrians | 4 | 2.8 |

Maximum incidence of ocular injuries was seen among those traveling by two wheelers, 123 patients (85.4%) sustained injuries while traveling in 2 wheelers, 4 patients (2.8%) in 3 wheelers, 13 patients (9.0%) in 4 wheelers and 4 patients (2.8%) were pedestrians. (Table 1)

Type 2 Eye Involved

| Eye involved | Number of Cases | Percentage |
|--------------|-----------------|------------|
| Unilateral | 130 | 90.2 |
| Bilateral | 14 | 9.72 |

130 patients (90.2%) had unilateral involvement and 14 patients (9.72%) had bilateral involvement. In our study unilateral injuries were seen in 90.3% and bilateral in 9.7%. In the study done by Kriedl et al (2003)³, unilateral injuries were seen in 95.1% of patients and bilateral in 4.9%. (Table 2)

Type 3 Ocular Involvement

| Ocular involvement | Number of Cases | Percentage (%) |
|--------------------|-----------------|----------------|
| Orbital | 33 | 22.91% |
| Lids | 117 | 81.25% |
| Conjunctiva | 92 | 63.8% |
| Cornea | 12 | 8.33% |

| | | |
|-------------------|----|--------|
| Sclera | 5 | 3.47% |
| Anterior chamber | 8 | 5.55% |
| Pupil | 31 | 21.52% |
| Lens | 6 | 4.16% |
| Posterior segment | 15 | 10.41% |
| Cranial nerves | 25 | 17.36% |

Out of 144 patients many patients had multiple ocular structure involvement, orbital lesions were seen in 33 patients (22.91%), lids were involved in 117 patients (81.25%), conjunctiva in 92 patients (63.8%), cornea in 13 patients (8.33%), sclera in 5 patients (3.47%), pupil was involved in 31 patients, lens in 6 patients, (4.16%) Posterior segment was involved in 15 patients (10.41%) and cranial nerves were involved in 25 patients (17.36%). (Table 3)

Table 4 Orbital Involvement

| Orbital fracture | Number of cases | Percentage (%) |
|------------------|-----------------|----------------|
| Roof | 6 | 4.16% |
| Lateral wall | 20 | 13.88% |
| Medial wall | 4 | 2.77% |
| Floor | 2 | 1.38% |

Out of 144 patients, 32 patients (22.22%) had fracture of orbit and out of which 6 patients had fracture of roof(4.16%), 20 patients had fracture of lateral wall(13.88%), 4 patients had fracture of medial wall (2.77%) and 2 patients had fracture of floor (1.38%). (Table 4)

Table 5 Lid Involvement

| Lid | Number of cases | Percentage (%) |
|------------|-----------------|----------------|
| Ecchymosis | 93 | 64.58% |
| Edema | 92 | 65.88% |
| Laceration | 21 | 14.58% |

Out of 144 patients, lids were involved in 117 (81.25%), 93 patients (64.58%) had ecchymosis, 92 patients (63.88%) had edema and 21 patients (14.58%) had lacerations. Out of 144 patients conjunctival lesions were seen in 92 patients (63.88%) (Table 5). Of these 84 patients (58.33%) had subconjunctival hemorrhage, 5 patients (3.47%) had chemosis, 3 patients (2.08%) had laceration. Out of 32 patients, 18 patients had lid ecchymosis.

DISCUSSION

A retrospective study by Jung H et al indicated that in pure orbital blow out fractures, delayed orbital tissue atrophy resulting from soft tissue injury greatly contributes to the development of late enophthalmos⁵. Injury to globe has been reported in as many as 30% of orbital fractures, stressing the importance of an ocular examination. A study by Boffano et al indicated that the characteristics of diplopia vary according to the type of orbital fractures⁶. The report, in which just over 50% of 447 patients with pure blow-out fractures presented with evidence of diplopia, found statistically significant associations between orbital floor fractures and diplopia on eye elevation, and between medial wall fractures and horizontal diplopia. A 10 year retrospective study by Buttner et al indicated the presence of black eye in patients with minor head injuries predicts the existence of orbital fracture. The investigators found that out of 1676 patients with minor head trauma who presented with one or two black eyes, computed tomography scanning showed a maxillofacial fracture in 1144 (68.3%) of them⁷. Fracture lateral wall of orbit can be overlooked easily and if displaced require treating with in 10 days⁸. We should sus-

pect lateral wall fracture when there is periorbital edema, ecchymosis of lid and lateral Subconjunctival hemorrhage. Evaluation regarding facial fracture and concomitant injuries is important for the evaluation of existing preventive measures and useful in the development of new method of injury prevention and treatment.

CONCLUSION

The relatively thick CT sections used to examine the brain in trauma patients are often insufficient to detect orbital fractures or to distinguish intracranial fat from air; thus, thin-section imaging in the coronal plane may be appropriate in certain cases to identify fracture sites and their associated complications. We should suspect orbital wall fracture when the patients present with periorbital edema, ecchymosis and subconjunctival hemorrhage.

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