

A Clinical Study of Orbital Fractures Following Road Traffic Accident (RTA) In a Tertiary Care Centre

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Abstract

Background: Purpose: To analyze the pattern of orbital fracture following road traffic accident and to study the pattern of ocular injuries associated with it. **Subjects and Methods:** A prospective observational study of 50 patients with orbital fractures who had come to ophthalmology outpatient department and casualty over a period of 6 months in a tertiary care centre. **Results:** The average age of the patient is 45 years, ranging from 15 to 75 years. More than 90% of the patients were male. Motor vehicle accidents were the most commonly documented mechanism of injury accounting for 70% of the fractures. 60 % of the patients had complex fracture involving two or more walls of the orbit. Among the orbital fracture 75% had floor, 70% had lateral wall, 33% medial wall and 25% had roof fracture. **Conclusion:** Males most commonly in their third decade of life are affected in RTA's. Complex fractures involving two or more walls are more common in RTA's. Floor is the most common wall to be involved.

Keywords: Orbit, Orbital Fracture, Road Traffic Accident.

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Introduction

The orbit consists of the bones surrounding the eye. An orbital fracture is a traumatic injury to the bony eye socket. These injuries are usually the result of blunt trauma to the eye. The incidence and causes of orbital fractures vary widely in different regions of the world due to social, economical and cultural consequences, awareness of traffic regulations and alcohol consumption.

The average age of the patient is 45 years, ranging from 15 to 75 years; more than 90% of the patients were male. Motor vehicle accidents were the most commonly documented mechanism of injury accounting for 30% of the fractures.^[1]

Trauma can result in fracture of one or more wall of the orbit, floor being the most commonly affected, followed by combined floor and medial wall fracture, followed by combined floor and lateral wall fracture, combination floor, lateral wall and medial wall together, isolated lateral wall and isolated medial wall in decreasing frequency.^[2]

Subjects and Methods

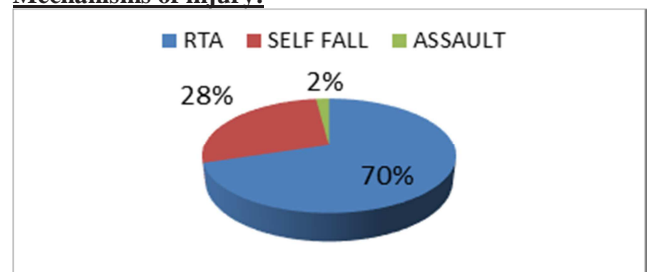
A prospective observational study of 50 patients with 65 eyes of orbital fractures who had come to ophthalmology outpatient department and casualty over a period of 6 months. Ethical committee clearance is taken from the institution. Informed consent was obtained from each participant. A detailed general information about the patient, history of trauma was collected. Slit lamp

examination was done for all fit patients. Detailed orbital examination including inspection, palpation was carried out. Intraocular pressure measurement, fundus examination was done to rule out any abnormalities secondary to trauma. Diagnosis was confirmed by Computed Tomography scan and x-ray of orbit.

Results

Demographics and mechanism of injury: The average age of the patients was 45 years, more than 90% were male

Mechanisms of injury:

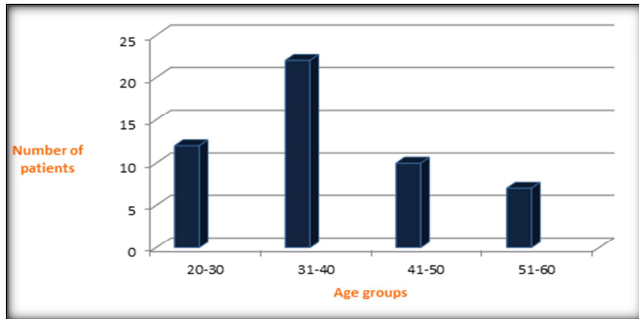


Motor vehicle accidents (MVAs) were the most commonly documented mechanism of injury, accounting for 70% of the fractures, followed by self falls (28%) and assault (2%).

Age of the Patients

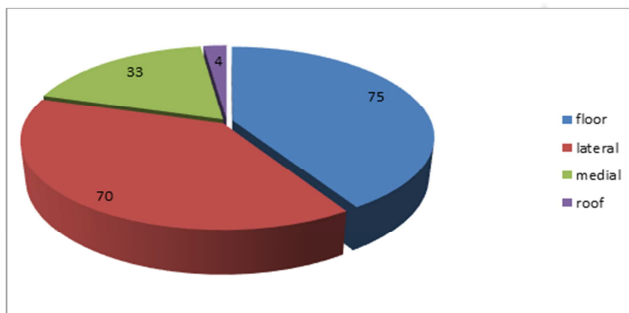
Average age of patients range from 20-60 years of age of which most common age group of presentation was 31-40 years accounting for 22(44%) of the patients.

Age range	Number of patients
20-30	12
31-40	22
41-50	12
51-60	7



The most common wall to be fractured was the Floor of the orbit 37(75%) followed by Lateral wall 35(70%), medial wall 16(33%) and roof 13(25%)

Wall fractured	Number of cases
Floor	37
Lateral	35
Medial	16
Roof	13



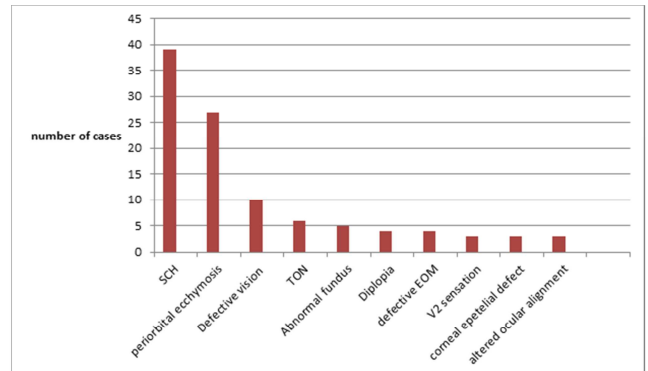
60 % of the patients had complex fracture involving two or more walls of the orbit

Wall fractured	Number of cases(50)
Isolated Floor	12 (6%)
Isolated Lateral	8(4%)
Isolated Medial	5(3%)
Isolated Roof	1(0.5%)
complex fracture involving two or more walls of the orbit	30 (60%)

Presenting Signs and Symptoms: Most common presentation was subconjunctival haemorrhage (78%) and periorbital ecchymosis (54%)

Presenting signs and symptoms	Number of cases (50)
Sub conjunctival haemorrhage (SCH)	39(78%)
Periorbital ecchymosis	27(54%)
Defective vision	10(5%)
Traumatic optic neuropathy(TON)	6(3%)
Abnormal fundus	5(3%)
Diplopia	4(2%)
Defective extraocular movement(EOM)	4(2%)
V2 sensation	3(1.5%)
Corneal Abrasion	3(1.5%)
Altered ocular alignment	3(1.5%)

Presenting signs and symptoms



Discussion

The age of the patients ranged from 20-60 years of age with a mean age of 45 years. There was a male predominance (90%) for orbital fractures. A similar pattern was seen in studies conducted by other authors: Jayamanne et al,^[3] (89%) and Jamal BT et al,^[4] (88%). Most of the patients who reported with orbital fractures were in their third decade of life. Similar observations were also made by Al-Qurainy et al.^[5]

The most common wall to be fractured was the Floor of the orbit 37(75%) followed by Lateral wall 35(70%), medial wall 16(33%) and roof 13(25%)

Our study found that the most common wall to be fractures was the Floor 37(75%) followed by lateral wall 35(70%), medial wall fracture 16(33%) and 13(25%) had roof fracture. In contrast to our study, results reported by studies by Chen et al⁶ which reports a incidence of (55.2%) medial orbital wall fracture, 3(39.5%), which had inferior wall fracture, 3 cases (4.0%), which had lateral wall fracture Karabekir Hs et al,^[7] who reported that most common wall to be fracture was the lateral wall followed by floor and medial wall and the least common to be fracture was the roof of the orbit similar to the incidence reported in our study. In our study minor ocular complications like subconjunctival haemorrhage was present in 78% of the cases, periorbital ecchymosis in 54% of the cases, corneal epithelial defect

Each of these results are comparable to studies done by other authors like Jamal BT et al who reported most patients (66.6%) sustained minor ocular injuries such as subconjunctival haemorrhage and corneal abrasion⁴. Kamth SJ et al reported (71.4%) patients had periorbital oedema and ecchymosis in their study.^[8]

Conclusion

Most common presenting signs of orbital fractures include subconjunctival haemorrhage and periocular ecchymosis. Complex (ZMC) fracture involving two or more walls are more common in RTAs compared to isolated wall fracture. Floor of the orbit is the most common wall to be involved.

Males are more commonly affected than females and most common age group is from 30-40 years of age.

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