

# Orbital Floor Fracture: A Retrospective Analysis of the Timing of Presentation and Surgical Outcome. A Review of 25 Cases

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**Abstract-** The face is the index of man , eyes are index are index of soul .The face is intimately related to self image .Orbits are part of facial skeleton and skeletal component of orbital cavity is formed by the combination of seven different bones . Due to complex arrangement orbital fracture occurs in isolation or in concomitant with fracture of adjacent facial bones like in lefort II , le fort III and zygomatic complex fractures .Among the various clinical features associated with orbital floor fracture, the diplopia which is most distressing to the patient generally for which he/she seeks treatment. So far as orbital floor reconstruction is concerned, various materials starting from autologous to alloplastic materials have been used.

The aim of surgery is to fully correct diplopia or minimize diplopia and enophthalmos by repositioning or releasing displaced and entrapped orbital soft tissue. Most authors suggest that urgent surgery within days of injury is indicated to prevent soft tissue scarring and its long term sequelae. Several authors have associated poorer outcome, including slower recovery and a higher likelihood of persistent motility disturbance with delayed surgery<sup>1,2</sup>. **Van Streak** and **Storing** who first discussed the treatment of orbital floor fracture, when such injuries constitute part of treatment of the associated facial injuries. The prime goal in managing fracture of orbital floor is repositioning of displaced orbital tissue, restoration of previous orbital volume and shape, and provision of orbito-antral herniation

This retrospective study tries to evaluate amount of diplopia correction after orbital floor reconstruction from the time of injury.

## I. MATERIAL AND METHODS

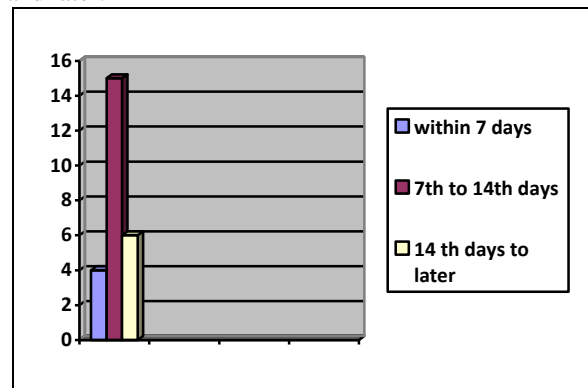
**T**otal no of patients reported with injury to orbital floor from August 01 to May 12 in our department was 25. Among 25 patient 12 was associated with lefort 3 fractures ,5 associated with le fort 2 fractures and 8 were isolated floor fractures. In view of the complex nature of orbital fracture the study was concerned with the management of diplopia in the blow out fracture of orbital floor.

The patients were grouped in three groups depending upon the time elapsed between the injury and surgery:

1)group A: time between injury and surgery is within 7 days.

2)group B: time between injury and surgery is between 7 days and 14 days

3)group C: time between injury and surgery is between 14 days and later.



**GRAPH 1: data showing the percent of patient operated in time period**

We recorded the diplopia in the various gaze :

- diplopia in extreme gaze
- diplopia in primary gaze & reading position
- could not be assessed due to poor vision.

**Table 1: Diplopia chart**

diplopia in extreme gaze	15 patients
diplopia in primary gaze & reading position	7 patients
could not be assessed due to poor vision	3 patients

As per surgical principle all the 25 patients underwent thorough pre-operative evaluation comprising of

- A detailed case history.
- Clinical examination including:

1) Pre – surgical ophthalmologic consultation including Hess chart, Diplopia chart (fig: 1), Visual acuity test, force duction test.

- 2) Radiological examination – PNS, Coronal CT Scan (fig: 2) (Evaluation of dimension of the defect from scan)
- (c) Pre- anaesthetic evaluation.

All patients were taken up for surgery under general anaesthesia. Naso endotracheal intubation with nitrous oxide and oxygen was done. Infra orbital incision was used to approach the floor of the orbit. For all patients with significant complain of diplopia, graft was taken from the anterior wall of maxillary sinus of the contra lateral side of fracture of the orbital floor (except in one patient, where the blow out was so extensive that it required graft from both sides of anterior wall of maxillary sinus). The periorbita was incised, prolapsed orbital contents were retrieved (fig: 3) and orbital floor was reconstructed (fig: 4). The skin incision was closed with 5 – 0 prolene subcutaneous suture.

## II. FOLLOW UP

The follow up period was taken from six to eleven months including post operative ophthalmologic consultation which included HESS chart and Force duction test .Post operative CT scan were obtained in all follow up patients in coronal and axial projections and sinus radiograph were taken.

**Table 2: Outcome of the surgery**

Number of patients	Preoperative diplopia	Post operative diplopia
Group A	4	None
Group B	15	None
Group C	6	4 (66%)

## III. RESULTS

The results of this study are consistent with prior reports<sup>3,4</sup>. The outcome of the surgical repair is also comparable to other studies and there is no statistically significant difference among the reconstruction materials with regards to complication<sup>5,6</sup>. Among the 25 patients included in the study 19 patients got the fracture repaired within 14 days of injury.

Out of 25 blowout fracture 18 were associated with zygomaticomaxillary and orbital rim fracture. The size of the defect (1.5 to 2.5cm) in the orbital floor was measured by Scannogram . Autogenous bone (anterior wall of maxillary sinus) was used for the reconstruction. Out of the 25 patients with diplopia and enophthalmos, 21 had complete resolution of their symptoms after surgery. However in 4 patients from group C had mild to moderate degree of diplopia persisted after surgery. No post operative surgical complication like infection, haemorrhage,

ectropion was seen. Post – operative coronal CT showed adequate integrity of orbital floor and no orbital fat/fibrotic tissue in the maxillary sinus.

## IV. DISCUSSION

Early diagnosis with the use of proper investigation tools and accurate description of the extent of injury is useful in planning the appropriate intervention .A period of 7 days observation allow for clearing of soft tissue edema and haemorrhage, which may temporally perpetuate abnormal motility ,and thus present unnecessary surgery<sup>7</sup>. Any visually handicapping diplopia or cosmetically unacceptable enophthalmos still present at this duration will require surgery .As in this study we have noted that though the signs and symptoms at the time of presentation had significantly higher incidence there was considerable recovery in post operative period with almost normal function or minimal residual deformity. Thus a proper intervention with correct timings will lead to beautiful seeing eyes.

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**FIGURE 1:** Lower Left Extremity There Is Diplopia

II	II	II
II	II	II
I	II	II
L	M	R

**FIGURE 2:** CT SCAN Showing blow out defect of orbital floor



**FIGURE 3:** orbital contents retrieved from maxillary sinus



**FIGURE 4:** Reconstruction of orbital floor by anterior wall of maxillary sinus

