Re-evaluating the Timing of Surgery following Isolated Orbital Floor Fracture

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Introduction

- Orbital floor fractures are among the most common facial injuries.
- Surgical repair indicated for:[1]
  - acute/delayed enophthalmos or hypoglobus (> 2 mm)
  - extraocular muscle entrapment
  - unresolving oculocardiac reflex
  - persistent diplopia
- Patients not requiring emergent surgery followed for several weeks.
- Traumatic edema may lead to certain symptoms (e.g., diplopia) while masking others (e.g., enophthalmos).
- Suggested that decision for surgery may be made within 2 weeks. However, this is not well supported by evidence.

Purpose:

Evaluate the timing of operative indications following isolated orbital floor fracture to refine treatment paradigms and guide peri-operative planning.

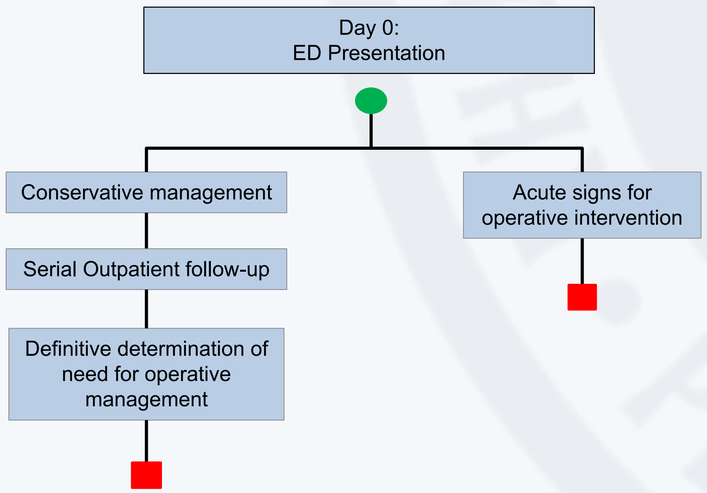
Methods

Study Design:

Retrospective study of all isolated orbital floor fractures at a tertiary academic medical center.

Primary Outcome:

Number of days following trauma to decision on operative management.



Results

Variable	Total
Operative patients, n (row %)	30
Decision for surgical intervention	
Urgent	18 (60)
On Follow-up	12 (40)
Prevalence of Indications	(n = 38)
Size of fracture	15 (50.0)
Persistent diplopia	8 (26.7)
Muscle entrapment	7 (23.3)
Significant delayed enophthalmos	3 (10)
Significant acute enophthalmos	3 (10)
Significant acute hypoglobus	2 (6.7)
Significant delayed hypoglobus	0 (0)

Table 1. Distribution of operative indications .

Variable	Total
Follow-up patients, (n)	137
Days to first follow-up visit	
Mean (SD)	12.4 (11.6)
Median (range)	9.0 (1-69)
Total days of follow-up	
Mean (SD)	20.6 (22.4)
Median (range)	13 (2-72)
Days from index visit to operative indication (n = 12)	
Mean (SD)	5.0 (2.9)
Median (range)	5.0 (1-9)

Table 2. Timing of visit and emergence of operative indication for all follow-up patients.

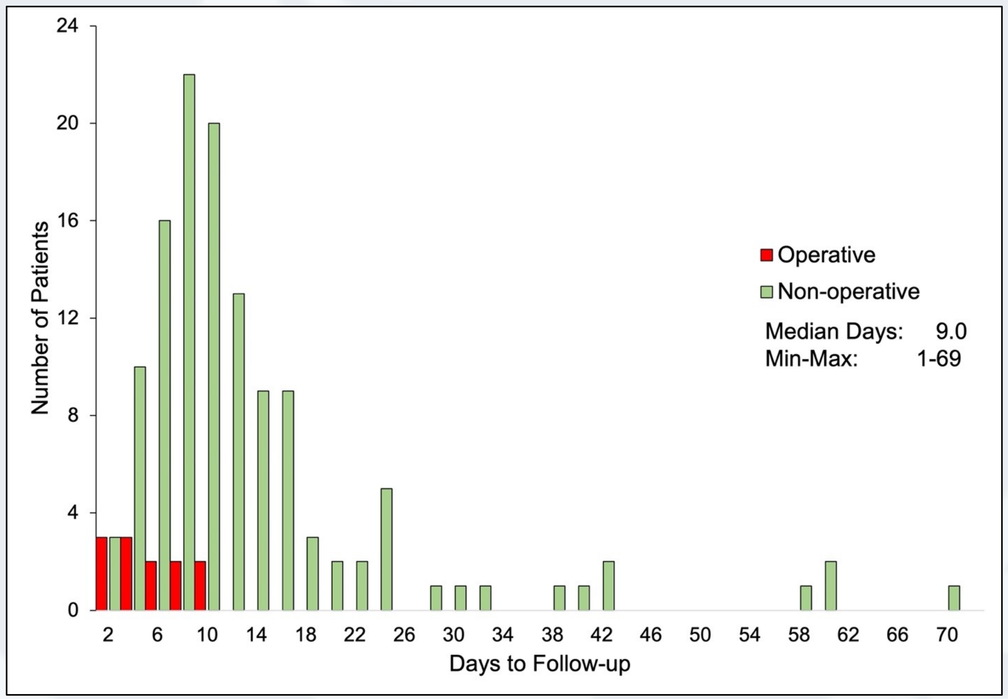


Figure 1. Bar chart demonstrating the distribution of days to first follow-up visit for operative (red) and non-operative (green) patients. No patients demonstrated an operative indication beyond 9 days after trauma.

Conclusions

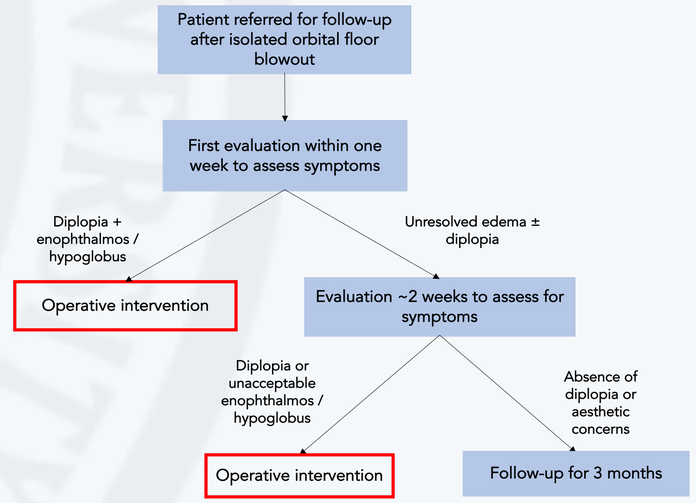
Takeaways:

- Less than 1 in 10 patients (9.8%) with isolated orbital floor blowout developed an indication for surgery.
- Symptoms emerged within 9 days of injury. On average, the decision to operate was made on day 5.
- Recommendation for surgery most often made in acute setting (60%)

Limitations:

- Includes only isolated injuries and excludes patients with concomitant facial fractures (e.g. NOE, ZMC).
- Limited sample size of operative cohort (n=30). While initial cohort of 307 floor fractures seemed robust, the number of surgical patients among this group was far fewer than anticipated.
- This small sample size, however, is a key finding in itself -- indicating that few patients with these injuries require surgery.
- Patient loss to follow-up (45.2%), a limitation of any trauma investigation.

Institutional Protocol:



References

1. Gart MS, Gosain AK. Evidence-based medicine: Orbital floor fractures. Plast Reconstr Surg. 2014. PMID: 25415098.