

Original Research Article

Facial fractures at a tertiary health care facility vis a vis time of presentation: a pilot study

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ABSTRACT

Background: Facial trauma patients were analyzed to determine the time of presentation at the trauma unit following fractures of the naso-orbital and maxilla-mandibular region.

Methods: This prospective study was conducted at Dayanand medical college and hospital, Ludhiana, Punjab, for a period of two years from January 2015 to June 2017. 61 patients admitted in the maxillofacial trauma unit were analyzed.

Results: The males outnumbered the females in the ratio of 5: 1. The maximum numbers of patients 33 patients (54%) were seen in the age group 21-30 years and minimum at extremes of age. Vehicular trauma was the predominant etiology, noted in 44 cases (72.13%). Most of the patients, i.e., 85 cases (95.1%) of the fractures, were seen within 24 hours of sustaining trauma. Only 2 cases (2.4%) of fracture were admitted on the second day. The only case of orbital blow out fracture reported 4 1/2 months after injury.

Conclusions: Most (93.4%) of the patients with facial fractures presented on the same day of injury. 2 cases of zygomatic fracture presented on the 2nd day and one on the 3rd day.

Keywords: Time of presentation, Fracture, Naso-orbital, Maxillofacial

INTRODUCTION

A number of factors govern the management of maxillofacial fractures. These fractures may be accompanied by more serious other bodily injuries, management of which is to be undertaken on priority or patient may himself present later after sustaining trauma. Facial fractures as such are followed by facial edema which makes adequate reduction of these fractures and subsequent adequate immobilization extremely difficult and thus there is deliberate delay on part of the surgeon to reduce the fracture. Hofmann emphasized that orbital fractures should not be considered as middle of the night emergencies. They can be easily delayed until other more life-threatening injuries are resolved.¹ However; it is well

to plan surgery sometimes within the first week following injury as after two weeks they may be quite difficult to repair because healing in these progresses rapidly. He observed that repair of fracture maxilla should be delayed by 7-10 days. He further observed that fractures of the zygomatic arch should be delayed for a few days, awaiting for reduction of edema so that patient becomes settled occasionally one may have to wait for 2-3 weeks because of other serious bodily or intracranial injuries. But surgical repair at a later date is difficult, after 3 weeks, since facial bones would have completely healed by 3 weeks. In the Mayell et al series, out of 97 reductions of nasal fracture, 44 were undertaken within 24 hours, 33 within 1-5 days and 20 after 6 days or more. Longest post-injury period after which reduction was still

carried out was 54 days and average for this late group was 16.5 days.² Schultz et al suggested that closed reduction of nasal fractures should be scheduled for reduction 5-10 days following injury to permit resorption of edema. On the contrary due to prompt healing in children, reduction should be performed as soon as possible after injury.³ Apfelberg et al reported that their upper buccal sulcus approach for reduction of zygomatic complex fractures was possible within 3-4 days of post injury period only.⁴ Murray and Maran observed that time of reduction after sustaining fracture had a relation to the final outcome. In patients who were manipulated seven days after sustaining the fracture, the rate of unsuccessful manipulation was 30% and those undergoing manipulation within 9-14 days, it was 41%. There was a group in which manipulation was delayed to more than 2 weeks. Although the failure rate was smaller viz., 22% yet according to them, this could not be relied upon as number of patients in this group was small.⁵ Most zygomatic arch fractures cause solely a cosmetic deformity, not a functional one. Thus, the surgery to reduce an isolated arch fracture is usually elective and can be performed after the edema over the cheek has subsided.⁶ Manson et al elaborated that improved aesthetic results in major mid face fractures are obtained by immediate extended open reduction replacing unusable bone with bone grafts.⁷

According to McCollough et al if nasal fractures are seen prior to significant swelling, they can easily be reduced then only but if these present when edema has already set in or, if there are open wounds, these should be meticulously stitched and actual management of fracture may require postponement for 5-7 days.⁸ According to Maran, the timing of manipulation of fracture of nose does not matter until 2 weeks after injury after which osteotomy has to be done.⁹ Gleeson emphasized that the period of fixation is variable but ranges from 10 days for a condylar fracture to 6 weeks for angle or body fractures of the mandible and Le Fort fractures.¹⁰ White et al suggested that correction of nasal deformity should be ideally postponed for 3 to 5 days as swelling subsides. Nasal fracture reduction is optimally performed within 2 weeks of injury when the fracture is still mobile.¹¹ According to Wenig, it is desirable to provide definitive fracture treatment as soon as possible. Early reduction of fracture dislocations appears to facilitate correct occlusal positioning and reconstruction of facial configuration. Early stabilization of bony segments also reduces the risk of post operative infection. Frequently, the neurosurgeon prefers to wait until post traumatic edema has subsided. In contrast, the maxillofacial surgeon usually feels that definitive repair of facial fractures is best accomplished in the first few days following injury. It is well recognized that facial pain and edema subside rapidly following early rigid internal fixation and repair. Although a delay of two weeks in definitive repair could increase the difficulty in obtaining adequate reduction of fracture dislocations, a period of 7-10 days prior to intervention to permit cerebral edema to subside appears

reasonable.¹² The Greene et al 802 patient analysis of maxillofacial trauma, noted a statistically significant association between the time interval between injury and treatment of a mandible fracture and complication for mandible fractures, while no such relationship was evident in other fractures.¹³ Nicholoff et al documented that with the exception of Le Fort II and III, craniofacial fractures, most maxillofacial injuries are not life threatening by themselves and therefore treatment can be delayed until more serious cerebral or visceral, potentially life threatening injuries are addressed first.¹⁴

Aim and objectives

Aim and objective of current investigation was to study the time of presentation of naso orbital and maxillofacial trauma at a tertiary health care facility.

METHODS

During this prospective study at Dayanand medical college and hospital, Ludhiana, Punjab, in a period of two years from January 2015 to June 2017, 61 patients admitted in the maxillofacial trauma unit were analyzed. The patients were taken up for maxilla-facial intervention as and when medically fit for the same under general anesthesia. Plating and internal fixation of the fractured vertical and horizontal buttresses was carried wherever required after closed or open reduction. Conservative treatment was undertaken in undisplaced fractures.

Inclusion and exclusion criteria

Inclusion criteria for current study were; isolated fractures of naso-ethmoid region and associated fractures of naso ethmoid region. Exclusion criteria for current study were; patients with head injury and GCS less than 4, patients on ventilator support and patients declared dead on admission in the casualty.

Statistical analysis

All statistical calculations were done using Statistical Package of Social Sciences (SPSS) 17 Version statistical program for Microsoft windows (SPSS Inc. released 2008. SPSS statistic for windows, version 17.0, Chicago).

RESULTS

The males outnumbered the females in the ratio of 5:1. The maximum number of patients 33 patients (54%) was seen in the age group 21-30 years and minimum at extremes of age (Table 1).

Vehicular trauma was the predominant etiology, noted in 44 cases (72.13%). 9 cases (15%) were attributed to violence and assaults. 5 patients (8.19%) had a history of fall from height. 2 patients (3.2%) only, had injuries sustained during to sporting activities (Table 2).

Table 1: Age and sex distribution (n=61).

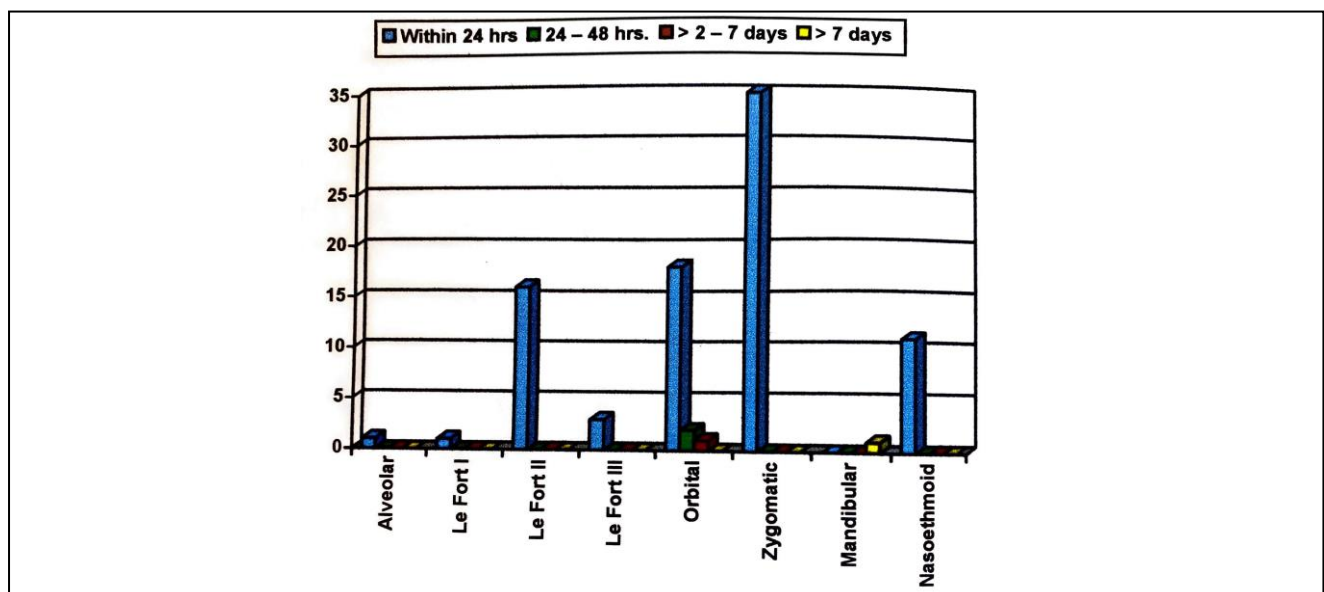
Age group (years)	Gender		Total	%
	Males (N)	Females (N)		
1-10	2	-	2	3.2
11-20	6	1	7	11.4
21-30	26	7	33	54.09
31-40	6	2	8	13.11
41-50	7	-	7	11.47
51-60	2	-	2	3.27
>60	2	-	2	3.2
Total N (%)	51 (83.6)	10 (16.3)	61	-

Table 2: Mode of trauma (n=61).

Etiology	Male N (%)	Female N (%)	Total	%
Vehicular trauma	37 (60.6)	7 (11.4)	44	72.13
Violence	7 (11.4)	2 (3.2)	9	14.75
Fall from height	4 (6.5)	1 (1.6)	5	8.19
Sporting activities	2 (3.2)	-	2	3.2
Miscellaneous	1 (1.6)	-	1	1.6
Total	51	10	61	-

Table 3: Time of presentation.

Type of fracture	Total cases	Time of presentation (hours)			
		Within 24 hrs	24-48 hrs	>2-7 days	>7 days
Alveolar	1	1	-	-	-
Le fort I	1	1	-	-	-
Le Fort II	16	16	-	-	-
Le Fort III	3	3	-	-	-
Zygomatic	21	18	2	1	-
Mandible	35	35	-	-	1
Orbital	1	-	-	-	-
Nasoethmoid	11	11	-	-	-
Total N (%)	-	85 (95.1)	2 (2.4)	1 (1.2)	1 (1.2)

**Figure 1: Time of presentation.**

Most of the patients, i.e., 85 cases (95.1%) of the fractures, were seen within 24 hours of sustaining trauma. Only 2 cases (2.4%) of fracture were admitted on the second day. The only case of orbital blow out fracture reported 4½ months after injury (Table 3, Figure 1).

DISCUSSION

Optimal timing of surgical intervention in maxillofacial trauma is still controversial as per global literature. Evidence exists to suggest early repair of fractures thereby to minimize late postoperative untoward sequel.^{7,15-18} Another school of thought documents that time of surgery does not affect the final outcome.¹⁹⁻²² Moreover even the definition of an early versus a late operative repair is different in different studies.

Frequently, studies have defined this based on different anecdotal criteria, specifics of surgeon experience, or wound healing principles. In our series, 59.01% patients were operated within 2-7 days, 29.5% on the same day and 9.8% within 7-15 days. The earlier the patient presents after sustaining maxillofacial trauma, the better the results a maxillofacial surgeon can offer. The reason for delay can be non-availability of proper medical facilities or patients may consider the injury as trivial or the facial deformity is camouflaged by the post injury swelling.

In our series, majority (95.1%) presented within 24 hours, 2.4% within 24-48 hours, and only one case each within 2-7 days and after 4 months (Probably treated elsewhere).

Our institution is situated in the city centre and hence is easily approachable by all accident victims. Facial fractures as such are followed by facial edema which makes adequate reduction of these fractures and subsequent adequate immobilization extremely difficult and there is deliberate delay on the part of the surgeon to reduce the fracture. According to Hoffman, it is well to plan surgery sometimes within the first week following injury, for after 2 weeks, they may be quite difficult to repair because healing progresses rapidly.¹ According to Wenig it is desirable to provide definitive fracture treatment as soon as possible. Early reduction of fracture dislocations appears to facilitate direct occlusal positioning and reconstruction of facial configuration.¹²

Limitations

It was a prospective study of a limited period of only one and a half year and thus the numbers of subjects included were less. Moreover, due to financial constraints many patients left the trauma centre against medical advice or were referred to government facility even before getting admitted and before any radiological work up. Logistical issues resulting in delay in access to a tertiary health facility too may remain have been under reported.

CONCLUSION

Most (93.4%) of the patients with facial fractures presented on the same day of injury. 2 cases of zygomatic fracture presented on the 2nd day and one on the 3rd day.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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