



Management and Outcomes of Various Faciomaxillary Injuries: Our Experience

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ABSTRACT

Background: Facial fractures are the result of various types of trauma to the face, and may occur in isolation or combined with other injuries. Overlooking a fracture may not have immediate consequences, but can result in disfigurement and permanent disability. Methodology: A study was conducted on 100 patients of facio-maxillary injuries at tertiary care hospital. In this study, 87 male patients and 13 female patients with a mean age of 29.92 years were included. In our study, number of patients having mid face fracture is 55, mandibular fracture is 38 and midface + mandible fracture/panfacial fracture is 7. Various methods used to treat these types of facial fractures have been discussed

KEYWORDS

INTRODUCTION:

Facial fractures are the result of various types of trauma to the face, and may occur in isolation or combined with other injuries¹. The epidemiological assessment of maxillofacial fractures represents a special interest to identify the potential trend of their frequency, age, gender, and anatomic distribution especially when comparison of these patterns is done over time periods. The diagnosis and treatment of maxillofacial fractures can be challenging, as haematoma and swelling can mask the extent of the underlying injury. Overlooking a fracture may not have immediate consequences, but can result in disfigurement and permanent disability. Contained within the face are systems that control specialized functions including seeing, hearing, smelling, breathing, eating, and talking. Also, the vital structures in the head and neck region are intimately associated. Lastly, the psychological impact of disfigurement can be devastating.

AIMS & OBJECTIVES:

To determine the demographic patterns in patients presenting with maxillofacial injuries and to assess the outcome of different treatment modalities.

MATERIAL AND METHODOLOGY:

The study was conducted at the plastic surgery department of the V.S. general hospital, Ahmedabad from Dec 2013 till Dec 2015. All patients presenting to the plastic surgery department and Emergency Medicine department with oral and maxillofacial injuries (fracture) and who consented for the study and who completed the follow-up were included in the study. We studied a total of 100 patients of facio-maxillary injuries. All patients underwent a series of routine as well as specific investigations. After stabilizing the patient's condition and after subsiding facial edema, further management was planned.

OBSERVATION AND DISCUSSION:

1) Age & sex distribution:

They ranged in age from 04-80 years with a mean age of 29.92 years, from which 87 were male and 13 female, with a male female ratio of 6.7: 1. In a study conducted by Kamath RA², the mean age of the patient was 31.7 years, which included 111 patients and had also a male predominance with the ratio of 10:1

2) Mode of injury:

We observed the commonest cause of injury to be Road Traffic Accidents (n=72, 72%), followed by fall from height (n=15, 15%), assault (n=12, 12%) and fall of heavy object (n=1, 1%). In a survey by Luce et al³ in the United States, 65% of injuries were caused by RTA and 35% by assaults, falls, or sports-related accidents.

3) DISTRIBUTION OF FRACTURES:

In our study number of patients having mid face fracture is 55 (55%), isolated mandibular fracture is 38 (38%) and midface + mandible fracture/panfacial fracture is 7 (7%).

a) Orbital fracture:

Of the 100 patients, 18 patients had orbit fracture, among them, four were having isolated fracture of floor of orbit and rest 14 were having complex orbito-zygomatico-maxillary fractures.

Nine patients had diplopia. Enophthalmos were present in two patients. Nine patients were treated conservatively and the remaining nine patients were operated. Among the nine patients who were treated conservatively.

Blindness associated with orbital fractures has been reported at 0.7%–10% in a study by Boyette JR et al⁴. In our study, two patients had lost their vision (11.1%).

Diplopia	Enophthalmos	Diplopia Enophthalmos	Visual acuity decreased/absent	No Diplopia No Enophthalmos	Total no. of patients
7 (38.8%)	0	2 (11.11%)	3 (16.6%)	6 (33.33%)	18

In our study, we used free iliac bone graft to reconstruct orbital floor in 9 patients. In a study reported by Kontio et al⁵ on 24 patients, a free iliac bone graft were used for orbital reconstruction and they considered that the technique was reliable, with a low rate of enophthalmos.

Boyette JR reported that incidence of persistent diplopia ranged from 8% to 42% in his study. In contrast to that, in our study, none of the patient had persistent diplopia postoperatively.



Bone graft fixed with wire

b) Nasal bone fracture:

In this study, 23 patients had nasal bone fracture. Out of them 16 (69.56%) patients were operated and seven were treated conservatively. All the patients were operated by close reduction followed by internal packing and external splinting. Pack was removed on 2nd post operative day and splint kept for two weeks. All the patients were satisfied with their post operative shape of nose. We preferred to operate on nasal bone fracture between 5 to 7 days.



L plate per op and in ct scan

c) Zygomatic arch fracture:

Twenty patients were diagnosed with zygomatic bone fracture. Among them, five were treated conservatively and 15 were operated. 13 patients were operated with temporal approach of Gillies for elevation and two required plating (one at the body of zygoma and other at F-Z region). Mouth opening of pre-operated patients were average 1-2 fingers and postoperative they had mouth opening of greater than 3 fingers.

Banks and Brown⁶ have summarized the the indications for treatment as follows: to restore the normal contour of the face both for cosmetic reasons and to establish skeletal protection for the globe of the eye, to correct diplopia and to remove any interference with the range of movement of the mandible.



depressed zygomatic arch follow up ct(after 1 year)

d) Maxilla fracture:

A total of 28 patients were diagnosed with maxilla fracture. Out of them, 8 patients had isolated maxilla fracture and other bone injuries (zygomatic, orbital, nasal bone and/or mandible) were present in the remaining 20 patients. Among them, 12 patients had abnormal occlusion and rest of them had normal occlusion.

Management of maxilla fracture	No. of patients
Conservative	07 (25%)
Arch bar alone	13 (46.42%)
Maxillary disimpaction+arch bar	03 (10.71%)
Open reduction and plating	05 (17.85%)
Total	28 (100%)

In our study, of the 28 patients of maxillary fracture, seven patients were managed conservatively (25%), and rest 21 patients were operated along with arch bar occlusion (75%). In our study, five patients had undergone maxillary plating (17.85%), in a study by Kileo B. F.⁷, 13.1% patients had to undergo open reduction and internal fixation (ORIF) and 12.4% underwent zygomatico-maxillary or craniofacial suspension. In contrast, none of our patients underwent zygomatico-maxillary or craniofacial suspension. But three of our patients required maxillary disimpaction followed by arch bar application.

e) Mandible Fracture: Out of 100 patients, a total of 45 patients were diagnosed with mandible fracture. The distribution of mandible fractures are presented in the below mentioned table:

Type of mandible fracture	Number of patients
Parasymphysis	12 (26.67%)
Body	05 (08.88%)
Angle	01 (02.22%)
Ramus	00 (00.00%)
Condyle	08 (17.77%)
Parasymphysis+ condyle	11 (24.44%)
Parasymphysis + body	03 (06.66%)
Angle + condyle	02 (04.44%)
Parasymphysis + angle	03 (06.66%)
Total	45(100%)

Of these 45 patients, two patients were managed conservatively with chin-strap application and regular follow-up.

For condylar fracture, arch bar application and rubber band occlusion for 6 weeks were the treatment of choice. One patient of subcondylar fracture required plating and two patients required condylotomy.

Four (8.89%) patients required introsseous wiring to fix the fracture. One patient of old fracture required osteotomy. 31(68.89%) patients were managed with open reduction and titanium plating followed by occlusion of 3 weeks. In contrast to our study, Hall SC et al⁸, observed that intermaxillary fixation with arch bars was the most frequent method of treatment (55%), followed by open reduction and internal fixation (33%). Intraoral as well as extraoral approach was used in fixation of all fractures; both have certain advantages like avoiding vital structures such as facial nerve and vessels, no external scar in Intra oral approach and better exposure in extraoral approach in difficult areas. Twenty five patients were operated extra-orally and six patients were operated intraorally.

For the management of open reduction and titanium plating, following implants were used:

Implant used for fixation in mandible fracture	No. of patients
Four hole with gap	17 (54. 83%)
Four hole without gap	5 (16.12%)
Six hole with gap	5 (16.12%)
Long plate (16 hole)	1 (03.22%)
3D plate	3 (09.67%)
Total	31 (100%)

Post-operatively, three patients had wound dehiscence and in one patient, there was persistent sinus at the operative site for 3 months which resulted in removal of implant. In our study complication rate observed was 12.9% and of which, one patient required removal of implant.



Ct of 3D platting

CONCLUSION

The patients in our study were ranged in age from 04-80 years with a mean age of 29.92 years with male predominance (male: female = 6.7:1). These injuries were more common with road traffic accidents.

Diplopia and enophthalmos were the most common indication for surgery in blow out fracture of orbit. Infraorbital approach followed by autologous iliac bone graft is the procedure performed by us for blow out fracture. All the patients resolved diplopia post operatively without any complications.

Patients having nasal bone fracture were operated for nasal bone reduction by close reduction and internal packing method within 5-7 days of injury.

Restricted mouth opening was the most common indication for surgery in patients having zygoma fracture, temporal approach (Gillies) was used for reduction of zygomatic arch fracture (86.67%) and few patients (13.33%) were treated with titanium plating.

Maxilla fracture was most commonly managed by arch bar application alone (61.9%). Arch bar application and rubber band occlusion was the most preferred method for treatment of condylar fractures (80.95%) while other types of Mandibular fractures were managed with ORIF+TP.

Hospital stay of the patient of faciomaxillary injuries under plastic surgery department was 7 to 12 days. Most of the patients resumed their duties after 3 weeks of surgery.

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