

Maxillofacial fractures: A retrospective study

Hanumakonda Soundarya^{1*}, Marri Swetha², Mallela Bhashitha³

¹⁻³Intern, Dept. of Oral Medicine and Radiology, Malla Reddy Institute of Dental Sciences, Hyderabad, Telangana, India

***Corresponding Author: Hanumakonda Soundarya**

Email: soundarya6666@gmail.com

Abstract

Introduction: Aim of the retrospective study is to determine the type and frequency of the maxillofacial fractures and to assess their sex, age, site distribution, and treatment accordingly.

Materials and Methods: Study was conducted based on year-wise data collected from 2015 to 2018, with 280 cases recorded.

Results: Study group consists of total 280 patients, out of which 28(10%) were females and rest 252(90%) were males. The most common maxillofacial fractures are mandibular fractures in which body of the mandible have the highest occurrence rate and among 280 cases, 187(66.78%) were treated by open reduction and fixation.

Conclusion: Results of the study shows the majority of injuries were in males and Mandible was the most commonly fractured bone with the body of the mandible region as the most frequent site. Open reduction and fixation remain the choice of treatment.

Keywords: Mandibular fractures, Maxillary fractures, Closed reduction, Open reduction, Fixation.

Introduction

Fracture is a break in bone or cartilage. Although fracture is a result of trauma but can also be as a result of an acquired disease of bone or abnormal formation of bone in a congenital disease. Maxillofacial injury simply means trauma to the middle third of facial skeleton and/or mandible including soft-tissue injury, the maxillofacial region is the most exposed part of the body and is prone to injury.¹

The pattern and etiology of maxillofacial trauma differ from one country to another and the prevailing socioeconomic and cultural factors.²

Periodic evaluation of patients helps us understand the demographics and epidemiology to increase awareness and to prevent such fractures.³

The aim of this study was to give a retrospective analysis of a number of maxillofacial trauma cases reported to our institute.

Materials and Methods

Retrospective study was conducted based on year-wise data on patients sustaining maxillofacial fractures during 2015 to 2018, and the information was collected from our hospital records, under categories of age, sex and site with its frequency, which were registered in the department of oral medicine and radiology at Malla Reddy institute of dental sciences in Telangana.

Results

Total number of cases collected from the hospital records during 2015 to 2018 under the category of maxillofacial fractures are 280 out of which 252(90%) are males patients and 28(10%) are female patients.

According to the anatomical locations, maxillofacial fractures are divided and represented in table 1, where the highest number of cases were record in mandible (59.64%) region, following it are zygomatic arch fractures (18.92%), maxilla fractures (9.28%), zygomaticomaxillary complex fractures (5.35%), nasal fractures shows frequency about 3.57% and the lowest number of cases were recorded under orbital fractures i.e. 9 cases (3.21%)

Table 1: Types of maxillofacial fractures and its frequency

Anatomical location	Number	Frequency
Nasal	10	3.57%
Zygomatic arch	53	18.92%
ZMC	15	5.35%
Maxilla	26	9.28%
Orbit	9	3.21%
Mandible	167	59.64%

Table 2 shows further division of mandibular fractures. Where mandibular fractures are seen mostly in body of the mandible with 40 cases (23.95%), followed by fractures in neck of the condyle (21.55%) and dentoalveolar fractures (21.55%). Later on the track comes

the subcondylar fractures (11.97%), parasymphysis fractures (11.37%), angle of the mandible fractures (5.38%), head of the condyle fractures (2.99%) and fracture of symphysis region with 2 cases (1.19%).

Table 2: Mandibular fractures and its frequency

Site of fracture	Number	Frequency
Symphysis	2	1.19%
Parasymphysis	19	11.37%
Angle of the mandible	9	5.38%
Body of the mandible	40	23.95%
Head of the condyle	5	2.99%
Neck of the condyle	36	21.55%
Subcondylar	20	11.97%
Dentoalveolar	36	21.55%

Gender distribution of the maxillofacial fractures are represented in table 3 and table 4. according to this study most of the maxillofacial fractures are seen in males rather than females. The most common fractures of maxillofacial region are mandibular fractures which are common in males with 148 cases (88.62%), and least number of cases are recorded under orbital fracture with 9 cases which are male patients.

Table 3: Gender distribution of maxillofacial fractures

Site of fracture	Male	Female	Total no.
Nasal	10(100%)	0	10(100%)
Zygomatic arch	47(88.67%)	6(11.32%)	53(100%)
ZMC	14(93.33%)	1(6.66%)	15(100%)
Orbit	9(100%)	0	9(100%)
Maxilla	24(92.30%)	2(7.69%)	26(100%)
Mandible	148(88.62%)	19(11.37%)	167(100%)

Table 4: Gender distribution of mandibular fractures

Fracture site	Males	Females	Total no.
Symphysis	2(100%)	0	2(100%)
Parasymphysis	17(89.47%)	2(10.52%)	19(100%)
Angle of the mandible	9(100%)	0	9(100%)
Body of the mandible	36(90%)	4(10%)	40(100%)
Head of the condyle	3(60%)	2(40%)	5(100%)
Neck of the condyle	34(94.44%)	2(5.55%)	36(100%)
Subcondylar	16(80%)	4(20%)	20(100%)
Dentoalveolar	31(86.11%)	5(13.88%)	36(100%)

According to table 5 and Fig. 1 more number of maxillofacial fractures are seen during third decade of life. Whereas fractures involving body of the mandible shows more during 31-40 years of age. According to the study least number of cases are seen in first decade of life i.e. fractures involving head of the condyle and neck of the condyle are seen.

Regarding treatment modalities as shown in Table 6. 66.78% of fractures cases are treated by open reduction and fixation process. Whereas 23.92% of cases where treated by closed reduction process and the rest of the cases where kept under observation i.e. 9.28% for healing process.

Table 5: Age distribution of maxillofacial fractures

Site of fracture	0-10 years	11-20 years	21-30 years	31-40 Years	41-50 Years	51-60 Years	Above 60 Years	Total no.
Nasal	0	0	8	2	0	0	0	10
Zygomatic arch	0	3	35	11	4	0	0	53
ZMC	0	0	10	5	0	0	0	15
Orbit	0	1	4	4	0	0	0	9
Maxilla	0	1	11	9	2	3	0	26
Mandible:-								
Symphysis	0	0	2	0	0	0	0	2
Parasymphysis	0	2	11	5	1	0	0	19
Angle of the mandible	0	2	4	2	1	0	0	9
Body of the mandible	0	8	11	13	5	2	1	40
Head of the condyle	1	1	2	0	1	0	0	5
Neck of the condyle	3	5	12	8	3	2	3	36
Subcondylar	0	2	8	6	4	0	0	20
Dentoalveolar	0	1	15	10	4	3	3	36

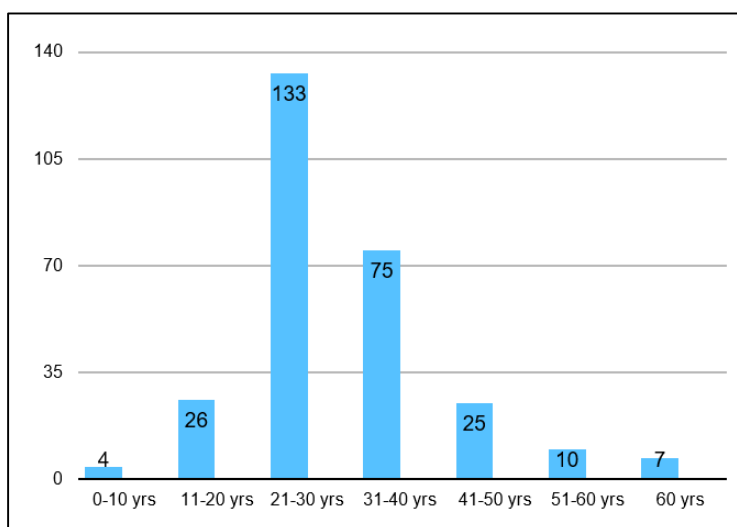


Fig. 1: Age groups of facial fractures

Table 6: Types of treatment for maxillofacial fractures

Surgical procedure	Number of patients
Open reduction and fixation	187(66.78%)
Closed reduction	67(23.92%)
Observation	26(9.28%)

Discussion

The present study was conducted to retrospectively assess the pattern of maxillofacial fractures in the department of oral medicine and radiology at Malla Reddy institute of dental sciences in Telangana.

Having taken site distribution into consideration, mandibular fractures are more common. Of which, fractures involving body of the mandible show higher frequency of occurrence which correlates with studies of Singh V et al.⁴ and differs from the studies of Shah A et al.,¹ Kaura S et al.,³ Samierad S et al.,⁵ Bali R et al.,⁶ Wherein more number of fractures have been recorded in parasymphysis region according to their studies. Chandra Shekar B R et al.⁷ in their study of five-year retrospective analysis of maxillofacial injuries in Mysore city shows more number of fracture cases in condylar region of the mandible.

In fractures of upper and middle 1/3, zygomatic arch region have higher number of cases which differs from the studies of Samierad S et al.,⁵ Chandra Shekar B R et al.,⁷ Ulusoy S et al.⁸ where majority of injuries are seen in nasal region.

Under gender distribution, more number of fractures are seen in males than females. Ratio between males and females in this study is 9:1. Which shows similarities with the studies of Shah A et al.,¹ Kaura S et al.,³ Kapoor P et al.,⁹ Bali R et al.,⁶ Chandra Shekar B R et al.⁷

In the present study under the age consideration, more number of fractures are seen during third decade of life which correlates with the studies of Ramdas S et al.,² Kaura S et al.,³ Kapoor P et al.,⁹ Samierad S et al.,⁵ Bali R et al.,⁶ Chandra Shekar B R et al.⁷

Open reduction and internal fixation may be preferable for some patients, particularly the elderly, to avoid the discomfort and hindrance of dental wiring. Indeed, more displaced fractures of the mandibular body will generally require open reduction and I interval fixation for optimal anatomical reduction.¹⁰

Non displaced and minimally displaced fractures of the mandibular body can often be managed closed.¹⁰

In this study most number of cases are treated by open reduction and fixation i.e. 66.78% and according to other studies like Shah A et al.,¹ Kaura S et al.,³ Singh V et al.,⁴ Bali R et al.,⁶ Chandra Shekar B R et al.,⁷ also shows highest number of cases are treated by open reduction and fixation procedure.

But surgeons mostly prefer plate osteosynthesis because it offers stable and precise anatomical reduction

of fragments, allows immediate recovery of function, shortens the period of bone healing and decreases the recovery period, despite the obvious advantages, it has not become popular in many developing countries mainly because of cost factors.⁶

Conclusion

Results of the study shows majority of injuries were in males and also in the third decade of life. Mandible was the most commonly fractured bone with body of the mandible region as the most frequent site. Open reduction and fixation remain the choice of treatment. Since most of the data are derived from hospital based institution which may show some biases while collecting information and reconstructing it.

Source of funding

None.

Conflict of interest

None.

References

1. Shah A, Nautiyal V, Gupta A, Ramola V. Trends of maxillofacial fractures in the Garhwal Himalayas at Government Medical College, Srinagar, Uttarakhand. *Natl J Maxillofac Surg*. 2016;7(1):80–5.
2. Ramdas S, Lingam PP, Sateesh S. Review of Maxillofacial Fractures in a Tertiary Care Centre in Puducherry, South East India. *Ann Trop Med Public Health* 2014;7:100-4.
3. Kaura S, Kaur P, Bahl R, Bansal S, Sangha P. Retrospective Study of Facial Fractures. *Ann Maxillofac Surg*. 2018;8(1).
4. Singh V, Malkunje L, Mohammad S, Singh N, Dhasmana S, Das SK. The maxillofacial injuries: A study. *Natl J Maxillofac Surg* 2012;3(2):166–71.
5. Samierad S, Tohidi E, Shahidi-Payam A, Hashemipour MA, Abedini A. Retrospective study maxillofacial fractures epidemiology and treatment plans in Southeast of Iran. *Med Oral Patol Oral Cir Bucal*. 2015;20(6):e729–e36.
6. Bali R, Sharma P, Garg A, Dhillon G. A comprehensive study on maxillofacial trauma conducted in Yamunanagar, India. *J Inj Violence Res* 2013;5(2).
7. Chandra Shekar B R, Reddy C. A five-year retrospective statistical analysis of maxillofacial injuries in patients admitted and treated at two hospitals of Mysore city. *Indian J Dent Res* 2008;19:304-8.
8. Ulusoy S, Kayiran O, Ozbaba N, Celebi S, Caglar E, Oghan F. Changing strategies in the treatment of maxillofacial fractures at Thrace region: Open vs. closed reduction. *Oral Health Dent Manag* 2014;13:8-13.

9. Kapoor P, Kalra N. A retrospective analysis of maxillofacial injuries in patients reporting to a tertiary care hospital in East Delhi. *Int J Crit Illn Inj Sci* 2012;2(1):6–10
10. Pickrell BB, Serebrakian AT, Maricevich RS. Mandible Fractures. *Semin Plast Surg.* 2017;31(2):100–107.
11. Malara, Piotr, Malara Beata, Drugacz Jan. Characteristics of maxillofacial injuries resulting from road traffic accidents - A 5 year review of the case records from Department of Maxillofacial Surgery in Katowice, Poland. *Head & face medicine.* 2006;2:27. 10.1186/1746-160X-2-27.
12. Adeyemo, Wasilu Lanre, Ladeinde, Akinola, Ogunlewe, Mobolanle, James, Olutayo. (2005). Trends and characteristics of oral and maxillofacial injuries in Nigeria: a review of the literature. *Head & face medicine.* 1. 7. 10.1186/1746-160X-1-7.
13. Chrcanovic, B.R. *Oral Maxillofac Surg* 2013;17:95.
14. Ibikunle AA, Taiwo AO, Braimah RO, Gbotolorun OM. Changing pattern in the treatment of mandibular fractures in North-Western Nigeria. *Afr J Trauma* 2016;5:36-42.

How to cite this article: Soundarya H, Swetha M, Bhashitha M. Maxillofacial fractures: A retrospective study. *Int Dent J Student Res* 2019;7(4):87-91.