

Prevalence, Pattern, Etiology And Treatment Of Maxillofacial Trauma Cases Reported From 2020-21 In Government Dental College And Hospital, Vijayawada – A Retrospective Study.

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Abstract:

Background: Trauma was the one of the major leading causes of death among the individuals below 40 years of age. Maxillofacial fractures were common among the trauma patients. These injuries may include minor and major injuries of the soft tissues, bone, blood vessel, nerves or any other tissues. The aim of the study was to assess the prevalence, pattern, etiology and treatment of maxillofacial trauma cases in Government Dental College and Hospital, Vijayawada over a period of 2 years.

Materials and Methods: A total of 596 patients with maxillofacial trauma were reported to the Department of Oral and Maxillofacial Surgery from January 2020 to December 2021. All the patients were assessed with clinical history, examination and radiographic examinations.

Results: The mean age of the patients with maxillofacial was 34.5 years. Among the 596 patients 541 were male and 55 were female patients. Adults in the age group of 21- 30 years were more commonly injured. Road traffic accidents was the most common etiology in about 71% of cases. Mandibular fractures were the most common fractures seen in 234 cases, followed by zygomaticomaxillary complex fracture seen in 88 cases. Open reduction was done in 43% cases, closed reduction and conservative management were the treatment for 57% cases.

Conclusion: Maxillofacial injuries were more common among the adults within 21 to 30 years of age. Road traffic accidents were the major causative factor. Mandible was the more commonly fractured region. Open reduction with internal fixation or closed reduction or conservative management were the treatment for fracture patients based on their indications.

Key Word: Maxillofacial trauma, Road traffic accidents, Closed and Open reduction.

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I. Introduction

Trauma is one of the major leading causes of death among the individuals of age group below 40 years^{1,2}. Maxillofacial fractures are common in trauma patients³. Among the cases in ER, approximately 10 % of cases have been maxillofacial trauma⁴. The maxillofacial region includes upper face, midface and lower face which extend from frontal bone to the inferior border of the mandible^{4,5}. Maxillofacial injuries may be an isolated injury or combined with the fractures and injuries of other regions of the body³. These injuries may include minor and major injuries of the soft tissues, bone, blood vessel, nerves or any other tissues². Maxillofacial injuries will have a long -term complications. May be associated with neurological or

ophthalmological complications⁶. The incidence and etiology of maxillofacial injuries vary among the different populations, geographic regions and socio economic status^{4,7}. Road traffic accidents and assaults are the two main causes for the maxillofacial injuries^{1,8,6}. Other etiological factors are sports related trauma, occupational injuries, falls, gunshot wounds, stabbing and explosion⁹. The aim of this retrospective study is to analyze the prevalence, etiology, pattern of maxillofacial injuries and their management

II. Material And Methods

The retrospective study was conducted in the Department of Oral and Maxillofacial Surgery, Government Dental College and Hospital, Vijayawada. All the maxillofacial trauma patients reported from the period of January 1, 2020 to December 31, 2021 were included in the study. A total of 596 patients with the history of trauma were analysed. The history, clinical examination, radiographic examinations were used for the diagnosis. The data such as patient age, gender, cause of fracture, type of fracture and treatment done were collected and assessed.

III. Result

A total of 596 patients were reported to the Department of Oral and Maxillofacial Surgery with the history of maxillofacial trauma. Among the 596 patients, most of the patients were males (541 males; 91 %) and female patients were 9 % (55 patients). Table 1 and Figure 1 shows the gender distribution among the patients with maxillofacial trauma. The age of the patients in the study range from 5 to 64 years. Majority of the maxillofacial patients were under the age groups of 21-30 years (39 %) followed by 31- 40 years of age (28 %) and 41-50 years (14 %). Table 2 and Figure 2 shows the age distribution of patients. Road traffic accident was the major causative factor for the maxillofacial trauma in about 431 patients which was about 71 % of total patients. Assault was the etiological factor in about 64 patients (11 %). Figure 3 shows the etiological factor percentage among the maxillofacial trauma patients. Mandibular fractures were more prevalent among the study group, which was about 234 patients, with symphysis, parasymphysis, body, angle, ramus, condyle, coronoid or combination fractures. Zygomaticomaxillary complex fractures were seen in about 88 cases (14.8%). Table 3 and Figure 4 shows the different patterns of fracture distribution. About 257 patients were treated by open reduction and 339 patients managed by conservative treatments and closed reduction. Figure 5 shows the percentage distribution of various treatments for maxillofacial injuries.

Table No 1: Gender Distribution

Sex	Numbers	Percentage
Male	541	91 %
Female	55	9%

FIGURE 1: Gender Distribution

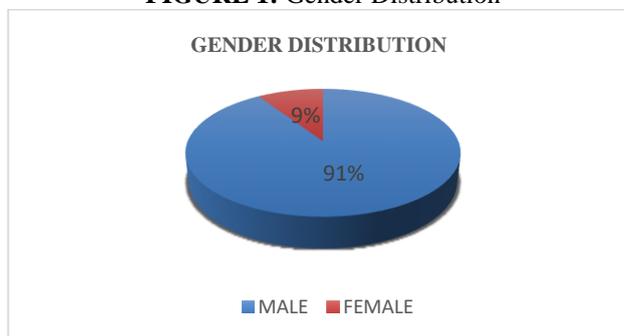


TABLE 2: Age Distribution

Age	Number	Percentage
<10 years	8	1%
11-20 years	51	9%
21-30 years	233	39%
31-40 years	166	28%
41-50 years	86	14%
51-60 years	34	6%
>60 years	18	3%

FIGURE 2: Age Distribution

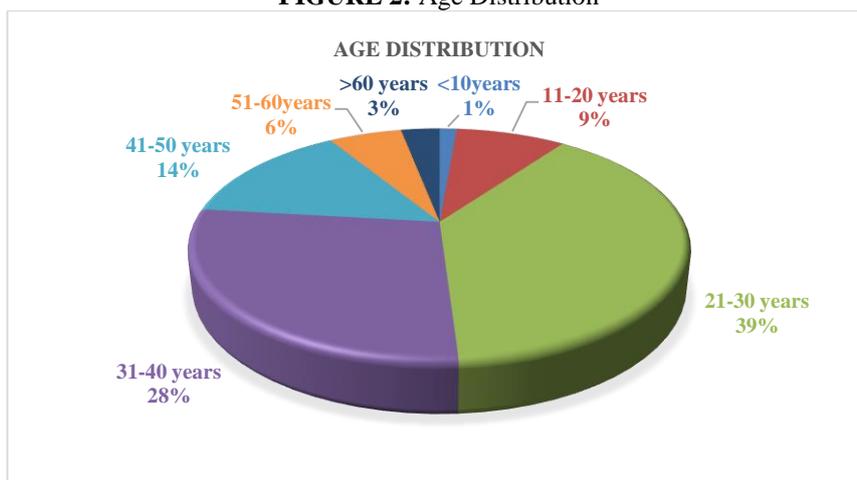


FIGURE 3: Etiological Factors For Maxillofacial Trauma

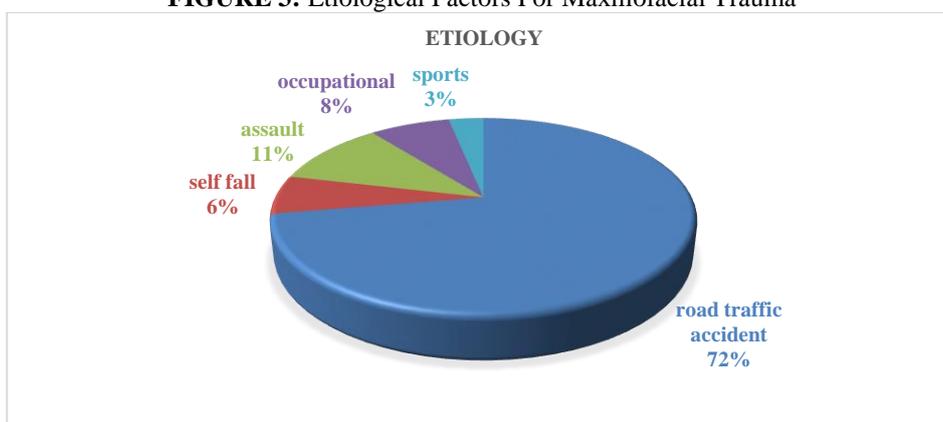


TABLE 3: Distribution Of Fracture Patterns

PATTERN OF MAXILLOFACIAL INJURY	NUMBER OF CASES	PERCENTAGE
FRONTAL BONE	1	0.2
MAXILLA	31	5.2
ZYGOMA	38	6.4
NASAL	5	0.8
ZYGOMATICOMAXILLARY COMPLEX	88	14.8
LEFORT 1	5	0.8
LEFORT 2	2	0.3
LEFORT 3	2	0.3
MANDIBLE		
SYMPHYSIS	16	2.7
PARASYMPHYSIS	63	10.6
BODY	21	3.5
CONDYLE	23	3.9
RAMUS	1	0.2
CORONOID	5	0.8
ANGLE	18	3.0
COMBINATION OF MANDIBLE FRACTURES	94	15.8
DENTAL	57	9.6
DENTOALVEOLAR	33	5.5
PANFACIAL	72	12.1

SOFT TISSUE INJURIES	21	3.5
TOTAL	596	100

FIGURE 4: Distribution Of Fracture Pattern

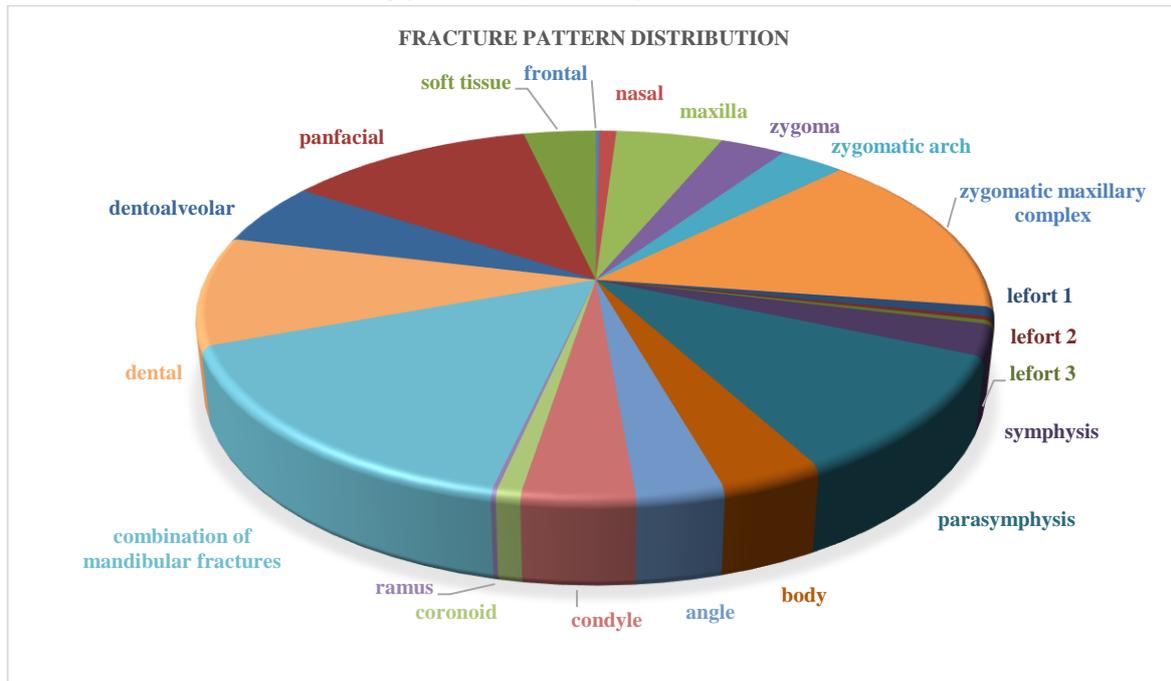
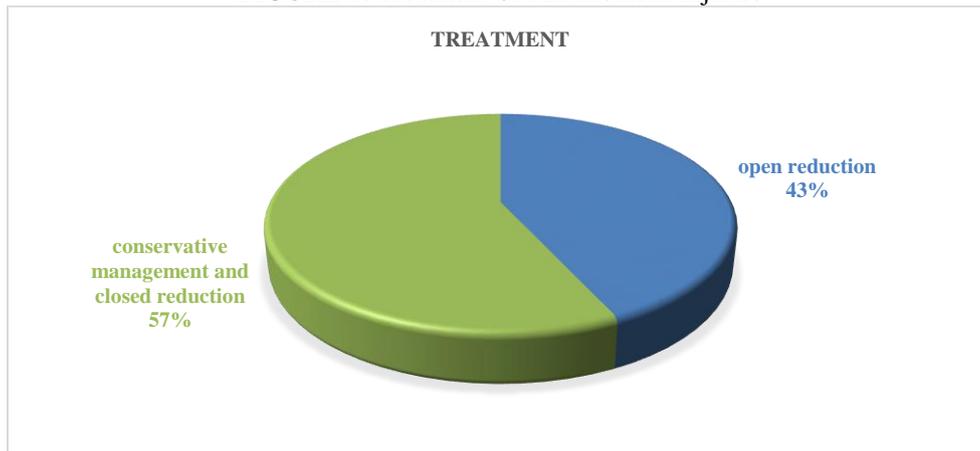


FIGURE 5: Treatment Of Maxillofacial Injuries



IV. Discussion

The maxillofacial injury ranges from small laceration to multiple and life threatening fractures of facial bone. These injuries may cause mortality, severe morbidity, esthetic and functional limitations [2]. In the present study, among the 596 patients reported with maxillofacial fractures, 541(91%) patients were male patients and 55 (9%) patients were female patients. The ratio of male to female was 9:1. This was due to the fact that men were more involved in social works, sports activities, accidents or violence in the working area. The habit of alcoholism, improper driving, lack of driving skills leads to more road traffic accidents which may cause maxillofacial injuries. These outcomes were similar to the study result of Karaikal Aravind et al [10], Chee Wei Lee et al [7], Mashail Mahmoud Hamid et al [11]. Majority of trauma were reported in the patients within the age group of 21- 30 years. This group constitute 233 patients which was around 39% of total population. The second most predominant age group was 31- 40 years with 166 patients (28%). This was in accordance with the study of Rajendra et al [8], Vibra singh et al [12]. Road traffic accidents (RTA) were the most common etiologic factor for maxillofacial injury. In our study about 72% of the injuries were due to RTA and 11 % due to assaults and 8% injuries due to occupational hazards. The study result of Lokesh et al [4] revealed that RTA and assault were

the major etiology for maxillofacial injuries in Delhi- NCR regions. They reported in their study that 80.5 % of cases were due to road traffic accidents. Similar results were reported by Mohanavalli singaram et al ^[1], Chee Wei Lee et al ^[7], Ananda Padmanaban et al ^[9]. Mandibular fractures were more common fractures in which parasymphysis fractures were more common single fracture of mandible which constitutes about 10.6% of total number of cases. Combination of various mandibular fractures were seen in 94 cases (15.8%). Followed by parasymphysis, condyle fracture seen among 3.9% of cases, body fracture in 3.5% of cases, symphysis fracture in 2.7% of cases. This was due less support for the mandible and its mobile nature. Followed by mandibular fracture, midface face fracture were second most common in which zygomaticomaxillary complex fracture were more common which constitute about 88 cases (14.8%). This was due to the prominence of malar region in the facial skeleton. Isolated zygoma fracture were reported in 6.4% of cases, isolated maxilla fractures in 5.2% of cases. A total of 9 Lefort fractures cases were reported in which 5 (0.8%) Lefort I, 2 (0.3%) Lefort II, 2 (0.3) Lefort III fractures. The study by Fouad AN Alharbi et al ^[6], Jayesh rai et al ^[2], Chee Wei Lee et al ^[7] showed higher incidence of mandibular fractures. We treated around 257 cases (43%) with open reduction and internal fixation with stainless steel or titanium miniplates and screws. Conservative management and closed reduction were done in 339 (57 %) cases. Condylar fractures were treated with closed reduction except those which were indicated for open reduction. Dentoalveolar fracture were treated by splinting. The zygomatic maxillary complex fractures were in indicated for open reduction only when there was a presence of diplopia, poor esthetics, enophthalmus and limited mouth opening. The study conducted by Bernardo Ferreira Brasileiro et al ^[13] reported that 48 % of their study population were treated by conservative methods, open reduction was done in 48 % cases.

V. Conclusion

The present study reported that the maxillofacial injuries were more common among the age group of 21-30 with male predominance. The major etiology for the maxillofacial trauma was the road traffic accidents. Among the maxillofacial fractures mandibular fractures were more common followed by midface fractures. Preventive measures for the road traffic accidents, following the traffic rules may reduce the incidence of maxillofacial fractures.

References

- [1]. Singaram M, Udhayakumar RK. Prevalence, Pattern, Etiology, And Management Of Maxillofacial Trauma In A Developing Country: A Retrospective Study. *Journal Of The Korean Association Of Oral And Maxillofacial Surgeons*. 2016 Aug 1;42(4):174-81.
- [2]. Rai J, Markam HS, Waskle R, Chokotiya H, Shrivastava S. Prevalence And Pattern Of Maxillofacial Trauma: A Retrospective Study. *Journal Of Advanced Medical And Dental Sciences Research*. 2020 Feb;8(2).
- [3]. Pungrasmi P, Haetanurak S. Incidence And Etiology Of Maxillofacial Trauma: A Retrospective Analysis Of King Chulalongkorn Memorial Hospital In The Past Decade. *Asian Biomedicine*. 2017 Aug 1;11(4):353-8.
- [4]. Chandra L, Deepa D, Atri M, Pandey SM, Passi D, Goyal J, Sharma A, Gupta U. A Retrospective Cross-Sectional Study Of Maxillofacial Trauma In Delhi-NCR Region. *Journal Of Family Medicine And Primary Care*. 2019 Apr;8(4):1453.
- [5]. Devakumari S, Thanasekar V, Biradar N, Dominic N. Patterns Of Maxillofacial Fractures Treated In A Tertiary Care Government Hospital Of Puducherry—A Descriptive Cross-Sectional Study. *Asian Journal Of Medical Sciences*. 2021 Apr 1;12(4):92-7.
- [6]. Alharbi FA, Makrami AM, Ali FM, Maghdi AA. Patterns And Etiology Of Maxillofacial Fractures: A 5-Year Retrospective Study. *J Contemp Dent Pract*. 2020 Apr 1;21(4):445-52.
- [7]. Lee C, Foo Q, Wong L, Leung Y. An Overview Of Maxillofacial Trauma In Oral And Maxillofacial Tertiary Trauma Centre, Queen Elizabeth Hospital, Kota Kinabalu, Sabah. *Craniofacial Trauma & Reconstruction*. 2017 Feb;10(1):16-21.
- [8]. Abhinav RP, Selvarasu K, Maheswari GU, Taltia AA. The Patterns And Etiology Of Maxillofacial Trauma In South India. *Annals Of Maxillofacial Surgery*. 2019 Jan;9(1):114.
- [9]. Padmanaban SA, Suresh D, Saravanan R, Kavitha PS. Incidence And Prevalence Of Maxillofacial Injuries In Government Theni Medical College—Two Years Retrospective Study. *International Journal Of Scientific Study*. 2017;4(12):137-42.
- [10]. Arvind K, Priyank K. Incidence And Etiology Of Midface Fractures: A 10 Year Institutional Retrospective Study. *Nitte University Journal Of Health Science* 2016 Dec, 6(4).
- [11]. Hamid MM, Jabir A, Fathi A, Mohieeldin A, Hamid MM. Pattern And Etiology Of Maxillofacial Trauma Among Sudanese Population. *Journal Of Head & Neck Physicians And Surgeons*. 2020 Jul 1;8(2):87.
- [12]. Singh V, Malkunje L, Mohammad S, Singh N, Dhasmana S, Das SK. The Maxillofacial Injuries: A Study. *National Journal Of Maxillofacial Surgery*. 2012 Jul;3(2):166.
- [13]. Brasileiro BF, Passeri LA. Epidemiological Analysis Of Maxillofacial Fractures In Brazil: A 5-Year Prospective Study. *Oral Surgery, Oral Medicine, Oral Pathology, Oral Radiology, And Endodontology*. 2006 Jul 1;102(1):28-34.