

Prevalence and Pattern of Maxillofacial Trauma in a Tertiary Care Hospital in Coimbatore, India: A Retrospective Study

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Abstract: BACKGROUND: Mortality and injuries from road traffic accidents is a major public health problem in India and it is predicted to increase in the future. Various studies have been published in the literature about maxillofacial injuries from different parts of the world, but demographic data is difficult to analyze and interpret. The aim of this study was to analyze and tabulate the patterns of injuries to the maxillofacial region and the treatment provided in the region of Coimbatore, Tamil Nadu.

METHODS: The study employed a retrospective case record analysis. Medical case records of those patients who had met with road traffic accidents and undergone treatment for maxillo-facial trauma in the Department of Dental Surgery, Government Medical College, Coimbatore were analyzed retrospectively from January 2018 till December 2018.

RESULTS: Among the 209 patient records, it was observed that the age groups between 21-30 years experienced the majority of the maxilla-facial trauma. Under the injury type mandibular fractures (58.8%) were the most common whereas unilateral maxillary fracture was the least common (0.2%). Inter-maxillary fixation (71.2%) was the most common method used to treat the fractures.

CONCLUSIONS: This retrospective study has thrown light on the various trends of maxillofacial trauma occurring in the Coimbatore region. Common strategies needs to be evolved to reduce the number of road traffic accidents.

Key Words: Traffic Accidents, Maxillofacial Injuries, Jaw Fracture.

Date of Submission: 26-08-2019

Date of Acceptance: 10-09-2019

I. Background

The soft and hard tissues forming the face extending from frontal bone superiorly to the mandible inferiorly form the Maxillofacial region (MFR).^[1] This region plays an important role in the daily functions of sight, smell, nutrition, breathing and communication, which are severely affected in the event of trauma contributing to poor quality of life.^[2] Maxillofacial injuries present themselves frequently in an emergency department.^[3] Road traffic accidents are the leading cause of death for children and young adults aged 5-29 years and the economic impact to the individual and their families puts a considerable burden on the nation's economy, public health and welfare.^{[4], [5]} Maxillofacial injuries are common after road traffic accidents and is of particular importance due to proximity near critical organs. Due to rise in the road traffic and lack of preventive measures in the traffic, the maxillofacial injuries and fractures are expected to increase.^[2] Alcohol intoxication increases the risk of maxillofacial trauma as a result of inter-personal violence or motor vehicle accidents.^[6] The etiologic factors vary from country to country and also show variation between different regions.^[7] The severity of these injuries are directly proportional to the force applied.^[8] The management of patients with maxillofacial injuries is similar to that of head and other severe injuries but because of mechanical interference with breathing and swallowing special problems may arise.^[9] Mortality from road traffic accidents is a major public health problem in India and it is predicted to increase in the future.^[10] The management of trauma has progress rapidly and there is reduction in the mortality in the golden hours, but maxillofacial trauma poses a challenge in management. The challenges are mainly due to the close proximity of upper airway, cranial and cervical structures that may be involved.^[3] Various studies have been published in the literature about maxillofacial injuries from different parts of the world, but demographic data is difficult to analyze and interpret. Data from India is still limited and is of particular importance due to the different local and cultural factors.^{[1], [11]} The aim of this study was to analyze and tabulate the patterns of injuries to the maxillofacial region and the treatment provided in the region of Coimbatore, Tamil Nadu.

II. Methods

The study employed a retrospective case record analysis. Medical case records of those patients who had met with road traffic accidents and undergone treatment for maxillo-facial trauma in the Department of

Dental Surgery, Government Medical College, Coimbatore were analyzed retrospectively from January 2018 till December 2018. The records of 209 patients were retrieved and a structured proforma was used to extract the relevant data. The inclusion criteria were maxillofacial injuries caused due to road traffic accidents and patients aged upto 60 years undergone treatment for the injury. Records with incomplete data were excluded. The fractures of the maxillofacial region were classified as Unilateral – Maxillary Fracture, Bilateral – Maxillary Fracture, Zygomatic Complex fractures, Mandibular fractures and fractures of both Maxilla & Mandible. The treatment rendered were classified as Inter-maxillary Fixation, Open Reduction & Internal Fixation and both Inter-maxillary Fixation - Open Reduction & Internal Fixation.

Statistical Analysis

The data was collected from the medical records department by the principal investigator and was coded to maintain confidentiality of the data. The data was analyzed using the Statistical Package for the Social Sciences (SPSS, ver. 17.0; SPSS Inc, Chicago, IL, USA). Basic descriptive statistics like count, percentage and frequency were used to tabulate the results. No inferential statistical tests were applied.

III. Results

The gender distribution of the maxilla-facial injuries revealed that males were the most commonly affected. [Fig 1] Among the 209 patient records, it was observed that the age groups between 21-30 years experienced the majority of the maxilla-facial trauma followed by the 31-40 years age groups. It was noticed that the age groups of 0-10 years and 51-60 years experienced the least maxilla-facial injuries. [Table 1] Under the injury type mandibular fractures (58.8%) were the most common whereas unilateral maxillary fracture was the least common (0.2%). Intermaxillary fixation (71.2%) was the most common method used to treat the fractures. [Table 2]

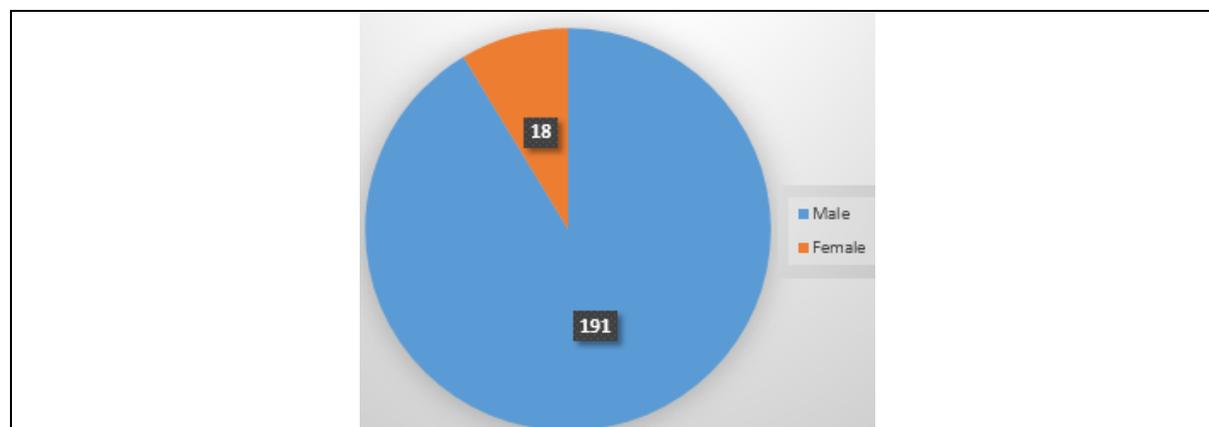


Figure 1. Gender Distribution of Maxillo-Facial Trauma Patients

Demographic Data	Frequency n = 209 (%)†
Age in years	
0-10	2 [0.9]
11-20	31 [14.8]
21-30	77 [36.9]
31-40	61 [29.2]
41-50	29 [13.9]
51-60	9 [4.3]
Gender	
Male	191 [91.4]
Female	18 [8.6]

Table 1. Demographic Data of Maxillo-Facial Trauma Patients
 † Numbers in parenthesis represents percentage

Data	Frequency n = 209 (%)†
Injury Type	
Unilateral – Maxillary Fracture	5 [2.4]
Bilateral – Maxillary Fracture	17 [8.1]
Zygomatic Complex fractures	28 [13.4]
Mandibular fractures	123 [58.9]
Fractures of both Maxilla & Mandible	36 [17.2]
Treatment	
Inter-maxillary Fixation	149 [71.3]

Open Reduction & Internal Fixation	2[0.9]
Both Inter-maxillary Fixation - Open Reduction & Internal Fixation	58[27.8]
Table 2. Types of Maxilla-Facial Injuries Suffered & Treatment Rendered	
† Numbers in parenthesis represents percentage	

IV. Discussion

Government Medical College, Coimbatore serves as the tertiary care center and referral center for the district of Coimbatore, Tamil Nadu and the surrounding districts. According to the data from the Tamil Nadu government, in the year 2017 the city of Coimbatore experience the second highest amount of deaths due to road traffic accidents next to Chennai.^[12] Road traffic accidents are the major cause of maxillofacial trauma.^[13] Alcohol consumption was one of the common reasons for road traffic accidents.^[14] Males were affected by road traffic accidents more compared to females. This may be attributed to the fact that males hold most driving licenses^[15] and other lifestyle factors. This findings can be compares to the studies done by Gupta A et al.^[16] in 2018, Prasad C et al. in 2018^[14] and Barbosa de Lima et al. in 2015^[17] where males were affected the most. Maxillofacial trauma classified according to the age groups revealed that the group between 21-40 years had the maximum injuries. Similar data was also reported from studies conducted in other parts of India.^{[16][14][18][5]} This may due to the fact the increased mobility of this age group in pursuit of education and employment. Among the maxillofacial injuries, the mandible is more commonly involved, which may be due to its mobility and less bony support. Literature also reports similar findings where mandibular fractures are widespread.^{[16][19][20]} But a study^[14] done in North Chennai revealed that the zygomatic and dento-alveolar fractures were more common. Septa D et al. in 2014^[18] also reported that zygomatic complex fractures were most common. In our study inter maxillary fixation was reported as the treatment done for 71.3% of the maxillofacial injuries. This is contrary to the reported findings of Gupta A et al. in 2018 where 54.4% of the cases were treated with open reduction. This may be because of the fact that open reduction allows immediate restoration of function.

The trends of maxillofacial injuries provide an important source to data to identify the risk factors associated. Preventive actions may be targeted towards the vulnerable age groups by means of road safety awareness, helmet awareness campaigns and anti-drink and drive campaigns. School and college students can be involved in the awareness training through social activities like Youth Red Cross and National Service Scheme.

V. Conclusions

This retrospective study has thrown light on the various trends of maxillofacial trauma occurring in the Coimbatore region. More focus on these trends are necessary because of the frequency of these injuries and the associated severity. It also helps policy makers and health care providers to develop preventive and interceptive measures. Common strategies needs to be evolved to reduce the number of road traffic accidents.

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Dr. D.Sivakumar " Prevalence and Pattern of Maxillofacial Trauma in a Tertiary Care Hospital in Coimbatore, India: A Retrospective Study" *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, vol. 18, no. 9, 2019, pp 37-40.