

Pattern of Maxillofacial Trauma- Our Experience

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ABSTRACT

Introduction: Maxillofacial trauma is not new to science of traumatology, with treatment of mandibular fracture described since the time of Hippocrates. Few studies provide detailed information on the varied presentations of such injuries in the Indian set-up. This study aims to study the patterns of maxillofacial injuries presenting to a referral hospital of Jammu, including broadly the anatomical regions, types, causes and demographic and non-demographic risk factors in this setup. **Material and methods:** Our study was conducted on 67 cases in the Department of Otorhinolaryngology, SMGS Hospital Government Medical College, Jammu for a period of one year from November 2012 to October 2013. Patients with trauma to face of all age groups including mid and lower third of face were included in the study. Fractures of the upper third face were excluded from the study because of its association with brain injury which required immediate attention and management necessitating transfer to the neurosurgical centre. A detailed history was taken, particularly regarding type of injury, and alcohol intake. Routine hematological and biochemical tests were done. X ray and CT scan were done only when indicated or for medicolegal purposes.

Observations: In our study, maxillofacial injuries were more common in urban areas and in males. Alcohol intake was found in 21 cases, found to be significant ($P < 0.0001$). Road traffic accidents (RTA) was the major cause of these fractures in 47 cases ($>70\%$) which was significant ($P < 0.0001$) followed by assault observed in 9 cases. Nasal bone fracture was the most common MFI seen in all age groups and the ages between 21-30 years were vulnerable to any type of fractures. **Conclusion:** RTAs are the leading cause for maxillofacial injuries and alcohol is a major risk factor. The youth has been found to be the most affected. The Government of India has to apply stricter laws for alcohol specifically targeting this vulnerable age group to reduce long term morbidity and burden of disease.

KEYWORDS: Alcohol, Maxillofacial injuries, Road traffic accidents

INTRODUCTION

The Maxillofacial bony complex includes maxilla, zygoma and nose. Face because of its conspicuous position is the most frequently traumatized site of the body. Victims of facial injuries may have scars or disfigurements, which results in emotional and psychological impact. Psychological impairment such as posttraumatic stress syndrome and depression are common after sustaining facial injuries.¹

Earliest records of facial fractures have been recorded 25 to 30 centuries before Christ.² Numerous studies conducted worldwide describe the patterns of maxillofacial injuries, but the demographical data are difficult to evaluate because of many variables.³ These comprise environmental, societal, cultural, and legislative differences.⁴

About 10 percent of all accidents and emergencies consist of maxillofacial trauma.⁵ Jammu and Kashmir is the Northern most state of India with a unique geographical climate. The present study aims to report the various etiological factors causing maxillofacial traumas and analyze the pattern of maxillofacial injuries (MFI) in Jammu. This will be a useful tool not only to identify the

trauma burden but also to assist health care providers in planning resource allocation.

MATERIALS AND METHODS

Our study was conducted on 67 cases in the Department of Otorhinolaryngology, Shri Maharaja Ghulab Singh Hospital Government Medical College, Jammu for a period of one year from November 2014 to October 2015. Patients with trauma to face of all age groups including mid and lower third of face were included in the study; fractures of the upper third face were excluded from the study because of its association with brain injury which required immediate attention and management necessitating transfer to the neurosurgical centre. A detailed history was taken, particularly regarding type of injury, and alcohol intake. Routine haematological and biochemical tests were done. X ray and CT scan were done only when indicated or for medicolegal purposes. The data was tabulated and analysed in Microsoft Excel spreadsheet (version 2007) and statistical significance was calculated using appropriate tests in MedCalc (2014) and Excel software. P value was set at 0.05 as described by standard statistical tests.

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MATERIALS AND METHODS

In our study, we found that majority of the injuries occurred in urban areas (Jammu – 44.78%) and the least from Rural areas (Reasi 2.99%)

The facial fractures were found to occur more commonly in males (84%), the females (16%) being five times less at risk.

Alcohol intake was found in 21 cases out of the total 67 patients. This was found to be significant using the test for proportion ($P < 0.0001$) and was within 95% confidence Interval (CI). (Fig 2)

Road traffic accidents (RTA) was the major cause of these fractures in 47 cases (>70%) which was a significant finding ($P < 0.0001$) followed by assault observed in 9 cases (13.43%) (Fig 1). Out of the 47 patients of RTA 18 patients were under the influence of alcohol. This was also found to be significant using the test for proportion ($p < 0.0001$) and was within 95% confidence Interval (CI). (Fig 2)

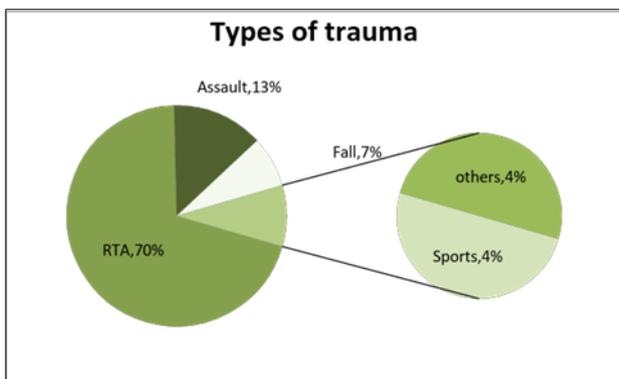


Fig 1. Pie diagram of the types of trauma sustained

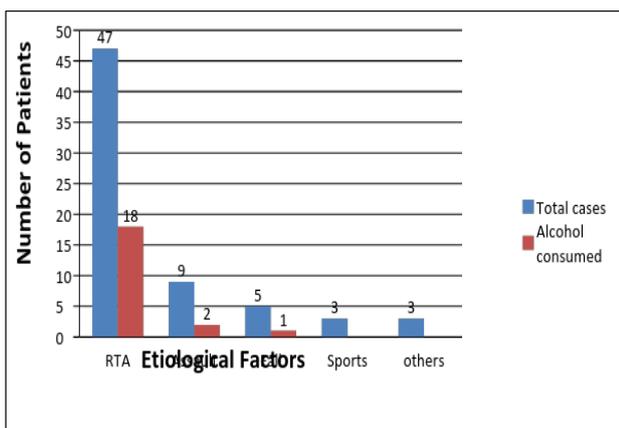


Fig 2. Comparison of influence of alcohol on different types of injuries sustained

Nasal fractures were seen in 35 cases (39.32%) followed by Zygomatic fractures in 21 (23.59%) and Maxillary fractures in 18 (20%). Mandibular fractures were the least common found in 15 patients (16.85%). (Fig 3)

RTA was most commonly associated with nasal bone fractures in 23, Lefort II in 16 (16) and zygomatic fractures in 15 cases while mandibular fracture was seen

in 9 victims of RTA. Nasal bones were most vulnerable to assault with 7 victims of assault having nasal bone fracture. Zygomatic fracture was seen in 3 and mandibular fractures in 2 cases of assault. (Fig 4)

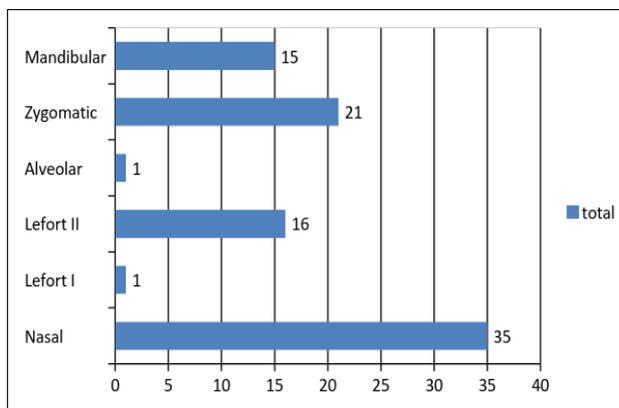


Fig 3. Table showing different types of fractures

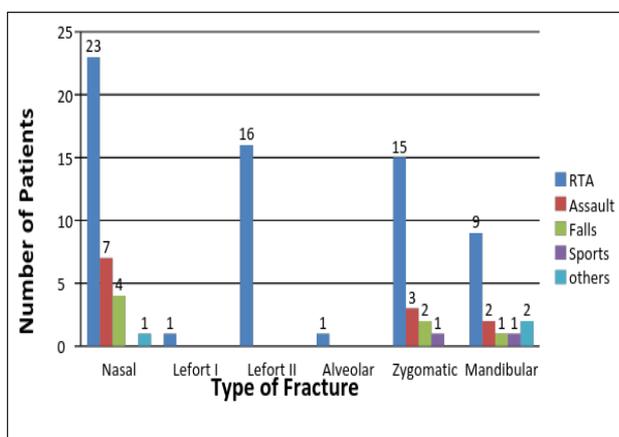


Fig 4. Comparison of type of fracture to type of injury

Nasal bone fracture was the most common MFI seen in all age groups and the age range of 21-30 years was found the most vulnerable to any type of fracture (33 cases). Patients aged between 31-40 years were second most vulnerable group (18 cases) and those between 11-20 years were third most vulnerable (17 cases). Patients aged more than 60 years were found to have the least incidence of MFI, overall (1 case). Among nasal bone fractures, the age group 21-30 had the highest incidence of nasal fractures (26 cases), followed by patients between 11-20 years (12 cases) and then 31-40 years (11 cases). (Fig 5)

Road traffic accidents were seen to be the most common cause of trauma in all age groups more commonly 17 patients were seen in age group of 21-30 years, followed by assault seen in 10 cases in age group of 21-30. Domestic violence was found in 3 patients in the age group 31-40 years (2 cases) and 11-20 years (1 case). Out of this, all were males. (Fig 6)

Amongst the fractures of the nasal bones Class II fractures were seen most common (18 cases) (51.42%) In this group not only the nasal bones are fractured, but the underlying frontonasal process of the maxilla is also

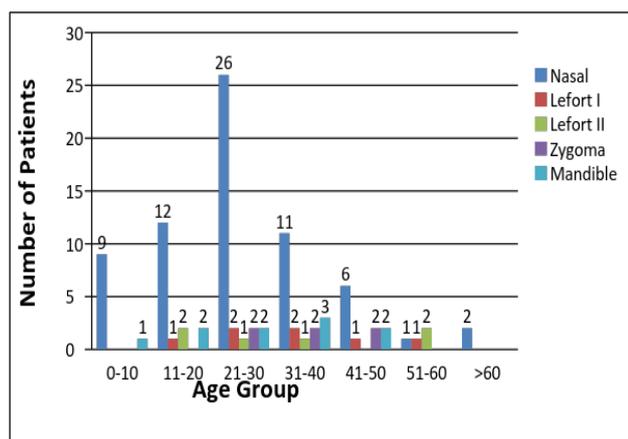


Fig 5. Comparison of age with type of fracture

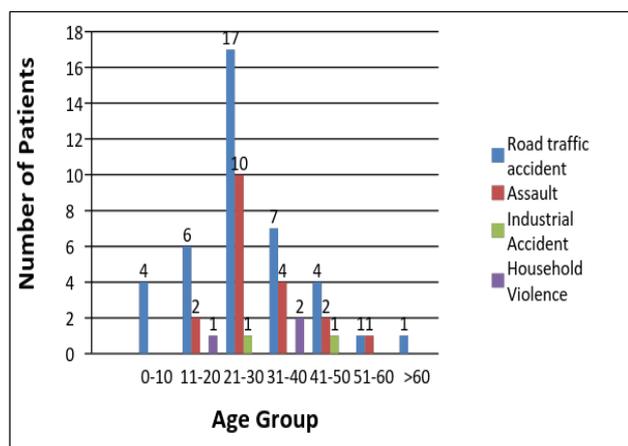


Fig 6. Comparison of age to type of trauma

fractured. The fracture line also involves the nasal septum. This condition must be recognized clinically because for a successful result both the nasal bones as well as the septum will have to be reduced followed by Class I fractures found in 15 (42.85%) Class I fractures are mostly depressed fractures of nasal bones. The fracture line runs parallel to the dorsum of the nose and nasomaxillary suture and joins at a point where the nasal bone becomes thicker. Clinically this fracture will present as a depression over the nasal bone area. There may be tenderness and crepitus over the affected nasal bone. Radiological evidence may or may not be present. Infact, class I fracture of nasal bone is purely a clinical diagnosis. Only 2 cases of Class III fractures were seen. It is also known as naso orbital fracture / naso ethmoidal fracture. Recent term to describe this class (Naso orbito ethmoid fracture) indicates the clinical importance of orbital component in these injuries. These fractures are always associated with Le Fort fracture of the upper face involving the maxilla also. In these fractures the nasal bone along with the buttressing fronto nasal process of maxilla fractures, telescoping into the ethmoidal labyrinth. In mandibular injuries, the body of mandible was most commonly fractured, found in 7(46.67%) of the cases. Fracture of angle of mandible was involved in the fractures in 4 (26.66%) followed by symphyseal fracture in 2 cases (13.33%).

DISCUSSION

Maximum numbers of MFI were found to be from Jammu district (44.78 %) as compared to the rural area of Reasi (2.99%). This could be because Jammu being an urban area had more chances of RTA and also better access to medical services. A Nigerian study similarly attributed the late presentation for treatment in the rural and semiurban areas to the attendant transportation and economic difficulties.⁶

In the present study, there were 56 males (83.58%) and 11 females (16.42%) in a ratio of 5.09:1. Some earlier studies reported a similar ratio of 5:1^{7,8} and some reported an incidence of 3.7:1 and 3.1:1.^{9,10} All types of fractures were seen to occur more commonly in males due to more outdoor activities and physical assaults among men as compared to women.

Etiological aspects are of concern to everyone engaged in the field of trauma. RTAs were the leading cause in our series responsible for 70.15% cases followed by assault and falls in 13.43 % and 7.46% respectively. This was found to be significant. Road traffic accidents are now considered a public health hazard of primary magnitude and are supposed to increase in future owing to rapid increase in automobile users.¹¹ This alarming trend has often been reported in numerous national as well as international articles.^{12,13} A Chennai based study on MFI in 2007 have reported 62% cases to be due to road crashes. They further reported that the accidents most often occurred on Saturdays.¹⁴ Incidence and pattern of MFI due to RTAs was studied in which they found that two-wheelers were the most involved (53.71 %) vehicle type and negligence of traffic rules (24 %) was the most common etiological factor. A male predominance was observed as was an increased occurrence of RTAs during weekends.¹⁵ In India, 8 people get killed for every 100 vehicles, where as in developed countries like Britain, France, Germany, Italy and USA 1 person gets killed for every 1000 vehicles. Our findings stress the need for stringent laws to prevent morbidity and mortality due to RTAs.

In our study, 34.42% patients were under the influence of alcohol. Alcohol intake was found maximally in MFI due to RTA and was also seen in injuries due to assault and falls. These associations were also found to be significant though higher figures of 50% and 70% have been reported earlier.^{16,17} 28.2% of male victims were found to be intoxicated at the scene compared with 1.5% women.¹⁸ Involvement of alcohol with interpersonal violence was observed in 72% of the patients.¹⁹ Lowering of legal drinking age has been associated with an increase in youth alcohol-related traffic crash trauma.²⁰ Alcohol has not only been associated as a cofactor in interpersonal violence but also in the incidence or severity of mandible fracture. Such strong associations of alcohol and MFI emphasize the requirement of stricter laws with effective implementation to reduce these effects of alcohol consumption, in general, public.²¹

In our study, the fracture of nasal bones was the most commonly seen midface fracture (39.32%) followed by Zygomatic fractures (23.59%) while mandibular fractures were seen in 16.85% of the patients. These findings were in accordance with some studies in which they showed that nasal bones are the most common fracture in the body.^{22,23,24} According to a study in 1997, mandibular fractures were the most common (57%) fractures, 38% involved midface structures, 12% were zygomaticomaxillary complex fractures, 9% were orbital blowout, 7% nasal and 4% LeFort. These findings were also similar to ours.¹⁸ 1436 cases of maxillofacial injuries were observed, and distribution of fractures were enumerated as mandibular 32%, nasal bones 14%, midfacial fractures 5%, frontal sinus and supraorbital in 9 cases.²⁵ Our study shows that nasal bones may be most vulnerable due to inherent architecture of the nose as protruding from the body. Nose because of its prominent central position, lies exposed without protection, and this could make it the most frequently fractured site in the face

RTA was associated to cause 23 (34.32%) of nasal bone fractures while mandibular fractures were seen in 9 (13.43%) of the cases.

13% of the cases were due to assault including domestic violence. In a study of 230 cases of MFI, this incidence was reported to be 8%.²⁶ Another study reported a lower incidence of 5.6% in their seven year study on maxillofacial trauma in Yamunanagar.²⁷ However, in a 10 year study on maxillofacial traumas, interpersonal violence was found to be the most important cause of maxillofacial fractures (up to 45% of cases).²⁸ We found a low incidence of MFI due to assault and domestic violence. In fact, the three reported cases of domestic violence were males. In a study of intimate partner related violence on chinese women, it was found that chinese abused women were typically reluctant to disclose abuse because of fear and shame.²⁹ Social stigma and lesser freedom of women in India perhaps led to underreporting of domestic violence in our study also.

In our study, the most common age group was seen to be 21-30 which was associated most commonly with nasal bone fracture and cause of trauma in this age group was seen to be RTA. This correlates with the observations made by other authors with the commonest age group for facial fractures as 20-30 years.^{9,30}

CONCLUSION

Maxillofacial trauma is very common in recent times with increase in a number of road traffic accidents. In almost all these situations, males are more prone because they are more exposed to outdoor activities and violent interactions. Abuse of alcohol adds fuel to fire in most of the maxillofacial trauma cases. The second decade of life is the most vulnerable to such injuries due to their nature of activities and physical nature of job. RTA was the most common cause of MFI with alcohol intake being an important cofactor. Nasal bone was the most injured

bone. The present scenario calls for stringent rules and regulations against people who are under the effect of alcohol while driving. Laws should be made to discourage drunken driving and checking of blood alcohol levels done routinely to avoid unfavorable consequences in people who are under the effect of alcohol

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