

# A 2-year retrospective analysis of facial injuries in patients treated at department of oral and maxillofacial surgery, IGGDC, Jammu, India

Department of Oral and Maxillofacial Surgery, Indira Gandhi Government Dental College, Jammu, Jammu and Kashmir, India

Parveen Lone, Amrit Pal Singh, Indumeet Kour, Misha Kumar

## ABSTRACT

**Introduction:** The incidence of maxillofacial injuries is on the rise due to motor vehicle accidents and increased incidence of violence in recent times. The aim of this retrospective study was to determine the incidence, etiology, and the pattern of fractures in the maxillofacial region. **Materials and Methods:** After obtaining permission from the concerned authorities, a predesigned questionnaire was used to collect the necessary data from the department. A retrospective analysis of 787 patients, who suffered trauma and were managed in the Department of Oral and Maxillofacial Surgery, Indira Gandhi Government Dental College (IGGDC), Jammu over a period of 2 years was carried out. **Results:** Road traffic accident (RTA) was the common cause of maxillofacial injuries. Men sustained more injuries as compared to women. Injuries were most commonly sustained in the age group of 11-40 years, constituting about 76% of all injuries, mandibular fractures were the most common. **Conclusion:** RTAs were the commonest cause for the maxillofacial injuries.

**Key words:** Indira Gandhi Government Dental College, maxillofacial injuries, pre-designed questionnaire, road traffic accidents

### Address for correspondence:

Dr. Parveen Lone,  
Department of Oral and Maxillofacial Surgery, Indira Gandhi Government Dental College, Jammu - 180 001, Jammu and Kashmir, India.  
E-mail: parveenlone@gmail.com

## INTRODUCTION

Maxillofacial trauma represents one of the greatest challenges to public health services worldwide, because of their high incidence and significant financial cost. They are often associated with morbidity and varying degrees of physical, functional, and esthetic damage.<sup>[1,2]</sup> The road traffic accidents (RTAs) are now considered a public health hazard of primary magnitude and are likely to increase in the coming years owing to rapid increase in the automobile users.<sup>[3]</sup> Accidents are definitely on

the increase in India. The country has world's highest fatality rate in RTAs, 20 times that of developed countries. In India, eight people get killed for every 100 vehicles; whereas, in developed countries like UK, USA, and France; one person gets killed for every 1,000 vehicles.<sup>[4,5]</sup> Maxillofacial injuries occur in significant number of trauma patients<sup>[6]</sup> and management includes treatment of facial bone fractures, dentoalveolar fractures, and soft tissue injuries, as well as concomitant injuries.<sup>[7]</sup>

Epidemiological assessments of these injuries are essential to reaffirm patterns, identify new trends, plan and evaluate preventive measures and health policies, and develop priority goals for research. Several studies of the incidence and etiology of maxillofacial traumas have been carried out in countries such as Austria,<sup>[8]</sup> Germany,<sup>[9]</sup> New Zealand,<sup>[10]</sup> and United Arab Emirates.<sup>[11]</sup> Few studies from India are found in literature.<sup>[12,13]</sup> There is lack of population based data

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on maxillofacial injuries due to RTAs in this part of the country. This is an important research agenda; hence, the present study was taken up as an attempt to provide a retrospective analysis of patients treated for maxillofacial injuries and to determine the factors responsible for facial fractures, the age and sex distribution and the type of fracture.

## MATERIALS AND METHODS

A predesigned questionnaire was used to collect the data for this retrospective analysis. After obtaining permission from the concerned hospital authorities, the hospital records of all the patients treated for maxillofacial injuries in the department during the year 2011 and 2012 (January 2011–December 2012) were checked. The information pertaining to age and sex, distribution, etiology of fracture, type of fracture, and associated injuries was entered in the pro forma. The data was then computerized and subject to statistical analysis, using Statistical Package for Social Sciences (SPSS) windows version 10.0.

## RESULTS

A total of 787 patients were treated for maxillofacial injuries from January 2011 to December 2012. Men sustained significantly more maxillofacial injuries as compared to females, with an overall ratio of 4.5:1 [Figure 1]. Majority of maxillofacial injuries were seen in 2<sup>nd</sup>-4<sup>th</sup> decade of life constituting a major proportion (76.49%) of these maxillofacial injuries [Figure 2]. Of the eight causes for sustaining maxillofacial injuries, RTAs were the most common (73.95%) followed by interpersonal violence (13.34%) [Figure 3]. The fracture of the mandible was most common maxillofacial injury (44.34%) followed by mid face fractures (18.42) [Figure 4].

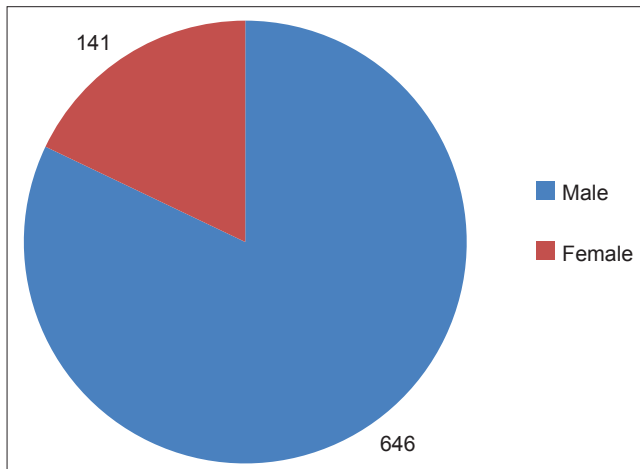


Figure 1: Sex distribution of maxillofacial injuries

Parasymphysis fracture was the most common (38%) lower third fractures [Figure 5] and zygomatic complex fractures were the most common of the middle third fracture (55.9%) [Figure 6].

## DISCUSSION

The higher prevalence of maxillofacial injuries in males as in our study is well-documented in the literature.<sup>[3,14,15]</sup> Males are at greater risk due to their greater participation in activities such as driving vehicles, sports that involve physical contact, an active social life and drug use, including alcohol.<sup>[16,17]</sup> However over the past 3 decades, an increasing prevalence of trauma has been reported among females, mainly in the under-40 age group, probably due to change in women’s social behavior, including their involvement in non-domestic work, a greater active social life, participation in vehicular traffic, and sports as a leisure and health activity.<sup>[17,18]</sup>

The fact that majority of the victims were in the 21-30 years age group (39%) is also in accordance with other studies.<sup>[2,7,13,19,20]</sup> This is possibly due to behavioral changes and socioeconomic and emotional conflicts to which these young adults are exposed. This age group is recognized as a phase of great personal independence, social excitement, intense mobility, careless driving on the roads, and exposure to urban violence.<sup>[10,13,21,22]</sup>

Children and individuals over 40 years are less involved in maxillofacial injuries.<sup>[8,19,23,24]</sup> However, the considerable number of patients in the age group of 0–10 years (14%) underline the importance of the development and adoption of specific strategies for the prevention of trauma during the childhood, mainly the prevention of falls, traffic accidents, and domestic violence.<sup>[23,24]</sup>

RTAs were the main cause of maxillofacial injuries (74%), corroborating other Indian and international studies.<sup>[2,3,12-16,18]</sup> The increasing number of RTAs in developing countries like India may be attributed to many factors like sharing of roadways

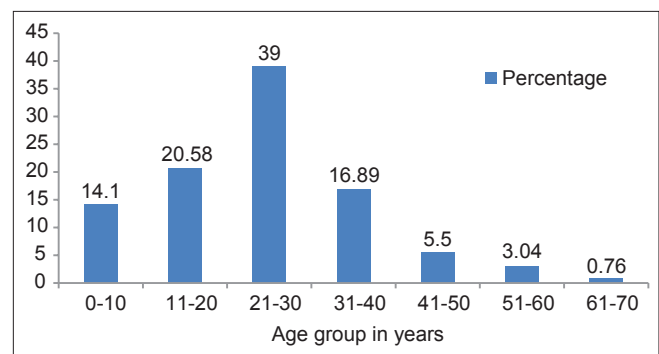


Figure 2: Age distribution of maxillofacial injuries

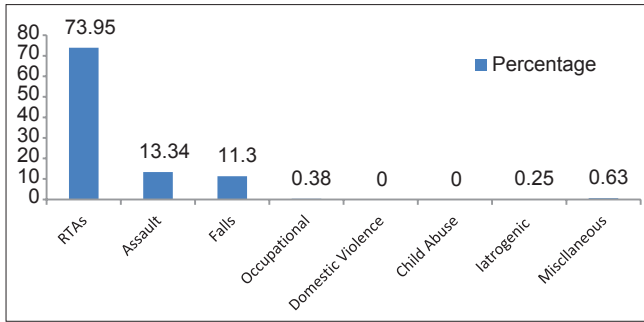


Figure 3: Etiology of maxillofacial injuries

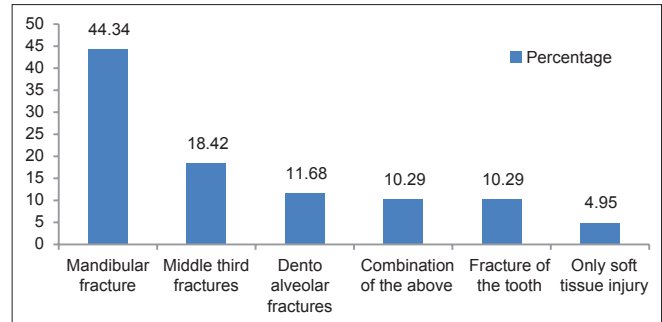


Figure 4: Type of maxillofacial injuries

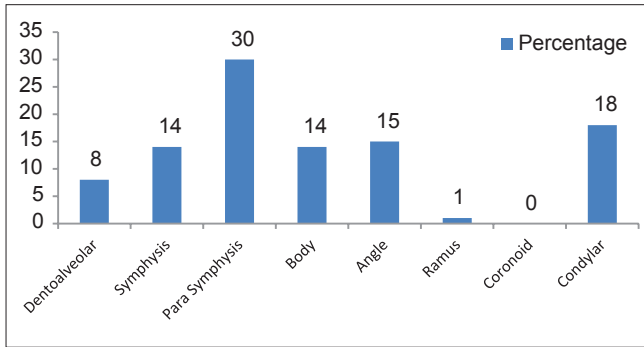


Figure 5: Distribution of mandibular fractures

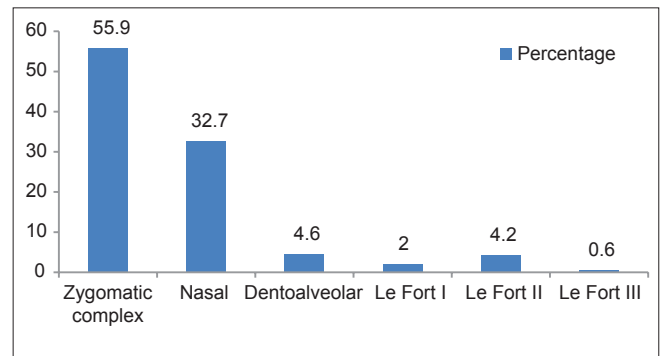


Figure 6: Distribution of middle third fractures

by pedestrians and animals with vehicular traffic, low driving standards, large number of old and poorly maintained vehicles on road, large number of two wheelers, defective roads, and widespread disregard for traffic rules.<sup>[4]</sup> The increasing use of mobile phones and drunken driving is becoming a growing concern for road safety. The disturbance caused by mobile phone usage can impair driving performance in number of ways like longer reaction time, inability to keep correct lane. Drivers using mobile phones are four times more likely to be involved in crash.<sup>[25]</sup> Safer roads, effective law enforcement, and public transport policies contributed to a significant decrease in the occurrence of traffic accidents in developed countries over the last 3 decades.<sup>[17,20]</sup> Vehicle accident statistics indicate that the best protection against injury includes safety awareness courses, defensive riding skills and a personal commitment to ride safely at all times.<sup>[25]</sup>

Physical violence is another increasingly important etiological factor for maxillofacial injuries. In countries like United States, Finland, and Switzerland assaults have been reported as the main cause of maxillofacial injuries.<sup>[10,26]</sup> In the present study, assaults were the second most prevalent etiological factor (13.34%), which reinforces the need for the development of preventive programs, aiming to help individuals, organizations, and communities; and government agencies plan proactively for the successful mitigation of unexpected violence.

The higher involvement of mandible may be attributed to its prominence and also to its exposed anatomical position on the face. Most of the victims of RTAs will try to avoid their head against injury at the time of accidents. Thus, in the process of avoiding their head, may receive maximum impact to the mandible. The studies conducted by Veerasha and Shankararadhya,<sup>[3]</sup> Motamedi,<sup>[21]</sup> Ortakoglu *et al.*,<sup>[27]</sup> and Qudah and Bataineh,<sup>[28]</sup> have also found mandibular fracture to be the most common maxillofacial injury. The force of the blow is transferred from the chin along the mandible to the condyle causing fractures in the neck, which is one of the weak anatomical locations within the mandible. The long roots of canines, presence of third molars, and also the abrupt change in the direction between the large, strong body of the mandible, and the thin ascending ramus make the parasymphysis and the angle region, the other two weak anatomical sites susceptible for fractures as found in the studies by Veerasha and Shankararadhya,<sup>[3]</sup> Motamedi,<sup>[21]</sup> and Orkatoglu *et al.*<sup>[27]</sup> Parasymphysis was the most common site involved in our study.

The observed high incidence of nasal and zygomatic complex in most of the middle third fractures is obviously related to the prominent position of these anatomic structures within the facial skeleton, and their greater exposure to external trauma.<sup>[10,20,22]</sup> However, few cases of nasal fractures are reported in maxillofacial

trauma studies as patients are usually referred to ear, nose, and throat (ENT) and plastic surgeons.<sup>[10,20,21]</sup> The studies by Al Khateeb and Abdullah<sup>[29]</sup> have found zygomatic complex as the most common middle third fracture which is coinciding with the results of this study.

## CONCLUSION

The findings of this study indicate the need for development of emergency protocols, effective educational and preventive strategies, and the implementation of policies aimed at preventing and reducing maxillofacial injury and its effects.

## REFERENCES

- Alvi A, Doherty T, Lewen G. Facial fractures and concomitant injuries in trauma patients. *Laryngoscope* 2003;113:102-6.
- Brasileiro BF, Passeri LA. Epidemiological analysis of maxillofacial fractures in Brazil: A 5-year prospective study. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2006;102:28-34.
- Veerasha KL, Shankaradhy MR. Analysis of fractured mandible and fractured middle third of the face in road traffic accidents. *J Indian Dent Assoc* 1987;59:150-3.
- Park K. Epidemiology of chronic non-communicable diseases. *Textbook of Preventive and Social Medicine*. 17<sup>th</sup> ed. Banarsidas Bhanot publishers, Jabalpur; 2005. p. 303-7.
- World Health Organization. World health day theme – 2004. Available from: <http://www.worldhealthorganization> [Last cited on 2004].
- Gassner R, Tuli T, Hachi O, Rudisch A, Ulmer H. Craniofacial trauma: A 10 year review of 9,543 cases with 21,067 injuries. *J Craniomaxillofac Surg* 2003;31:51-61.
- Al Ahmed HE, Jaber MA, Abu Fanas SH, Karas M. The pattern of maxillofacial fractures in Sharjah, United Arab Emirates: A review of 230 cases. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2004;98:166-70.
- Gassner R, Tuli T, Hachi O, Morelra R, Ulmer H. Craniofacial trauma in children: A review of 3,385 cases with 6,060 injuries in 10 years. *J Oral Maxillofac Surg* 2004;62:399-407.
- Iida S, Hassfeld S, Reuther T, Schwelgert HG, Haag C, Klein J, et al. Maxillofacial fractures resulting from falls. *J Craniomaxillofac Surg* 2003;31:278-83.
- Lee KH, Snape L, Steenberg LJ, Worthington J. Comparison between interpersonal violence and motor vehicle accidents in the aetiology of maxillofacial fractures. *ANZ J Surg* 2007;77:695-8.
- Klenk G, Kovacs A. Etiology and patterns of facial fractures in the United Arab Emirates. *J Craniofac Surg* 2003;14:78-84.
- Subashraj K, Nandakumar N, Ravindran C. Review of maxillofacial injuries in Chennai, India: A study of 2748 cases. *Br J Oral Maxillofac Surg* 2007;45:637-9.
- Chandra Shekar BR, 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.
- El-Sheikh MH, Bhojar SC, Emsalam RA. Mandibular fractures in Benghazi Libya: A retrospective analysis. *J Indian Dent Assoc* 1992;63:367-70.
- Kieser J, Stephenson S, Liston PN, Tong DC, Langley JD. Serious facial fractures in New Zealand from 1979 to 1998. *Int J Oral Maxillofac Surg* 2002;31:206-9.
- Gomes PP, Passeri LA, Barbosa JR. A 5-year retrospective study of zygomatico-orbital complex and zygomatic arch fractures in Sao Paulo State, Brazil. *J Oral Maxillofac Surg* 2006;64:63-7.
- Montovani JC, de Campos LM, Gomes MA, de Moraes VR, Ferreira FD, Nogueira EA. Etiology and Incidence facial fractures in children and adults. *Bras J Otorhinolaryngol* 2006;72:235-41.
- Adebayo ET, Ajike OS, Adekeye EO. Analysis of the pattern of maxillofacial fractures in Kaduna, Nigeria. *Br J Oral Maxillofac Surg* 2003;41:396-400.
- Bakardjlev A, Pechalova R. Maxillofacial fractures in Southern Bulgaria - A retrospective study of 1706 cases. *J Craniomaxillofac Surg* 2007;35:147-50.
- Erol B, Tanrikulu R, Gorgun B. Maxillofacial fractures. Analysis of demographic distribution and treatment in 2901 patients (23-year experience). *J Craniomaxillofac Surg* 2004;32:308-13.
- Motamedi MH. An assessment of maxillofacial fractures: A 5-year study of 237 patients. *J Oral Maxillofac Surg* 2003;61:61-4.
- Bataineh AB. Etiology and incidence of maxillofacial fractures in the north of Jordan. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 1998;86:31-5.
- Iida S, Matsuya T. Paediatric maxillofacial fractures: Their aetiological characters and fracture patterns. *J Craniomaxillofac Surg* 2002;30:237-41.
- Ogunlewe MO, James O, Ladeinde AL, Adeyemo WL. Pattern of paediatric maxillofacial fractures in Lagos, Nigeria. *Int J Paediatr Dent* 2006;16:358-62.
- Rodrigues EM, Concha-Eastman A. Pan-American Conference on Security in Transit-Health Sector Responses to challenge for a transit insurance in the Americas (in Portuguese). *Brasilia: Pan American Health Organization*; 2005. p. 1-31.
- Eggensperger N, Smolka K, Scheidegger B, Zimmermann H, Iizuka T. A 3-year survey of assault-related maxillofacial fractures in central Switzerland. *J Craniomaxillofac Surg* 2007;35:161-7.
- Ortaoğlu K, Günaydin Y, Aydintuğ YS, Bayar GR. An analysis of maxillofacial fractures: A 5 year survey of 157 patients. *Mil Med* 2004;169:723-7.
- Qudah MA, Bataineh AB. A retrospective study of selected oral and maxillofacial fractures in a group of Jordanian children. *Oral Surg Oral Med Oral Pathol Oral Radiol Endod* 2002;94:310-4.
- Al-Khateeb T, Abdullah FM. Craniofacial injuries in the United Arab Emirates: A retrospective study. *J Oral Maxillofac Surg* 2007;65:1094-101.

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