Risk Factors of Maxillofacial Trauma

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Abstract
Maxillofacial trauma is any physical damage to the facial area that maxillofacial surgeons typically experience and is often associated with high morbidity. Maxillofacial injuries in other areas of the body may occur as a single injury or may be associated with multiple injuries. The aim of this study is to assess the etiology of maxillofacial trauma at hospital in Chennai, South India, over a period of 1 year. Maxillofacial injury cases have been reported using the Department database and clinical reports. A total of 74 patients details were taken by reviewing patient records.

Maxillofacial injury etiology varies with road traffic accident (RTA), which is the leading cause of maxillofacial fractures in developing countries, such as India. There is not much data available on the etiology and fracture patterns seen in the South Indian region. Dentistry involves practices related to oral cavity. Oral diseases are a big concern in the general population and numerous treatments are being done to prevent and treat them. Oral health has a direct effect on general health habits as it helps to communicate, eat and feel comfortable (Patturaja and Pradeep, 2016). Also, Most patients are not aware of surgical complications (Jesudasan et al., 2015). Most of the human pathogens have been isolated from oral secretions (Kumar and Rahman, 2017) thus, one needs to be conscious of the post-operative treatment.

Introduction
The occurrence of fracture is due to trauma in the maxillofacial area. External trigger trauma poses one of the problems for public health providers not only in India but worldwide. Maxillofacial trauma includes any physical damage to the facial area, is usually faced by maxillofacial surgeons, and is also associated with high morbidity (Peek-Asa et al., 1999; Abhinav et al., 2019a). Maxillofacial injury may occur as an acute injury or may be associated with multiple injuries to the patient's head, chest, abdomen, spine and extremities that cause both emotional and physical trauma (Angelopoulos, 2014; Akama, 2008).
MATERIALS AND METHODS

A retrospective hospital based study of maxillofacial injury patients carried out in a department of oral and maxillofacial surgery at saveetha dental college and hospital from June 2019 - March 2020. In patients with diagnosed and operated cases were collected and analysed by reviewing patient records. Patients with incomplete data were excluded from the study. Radiographic was used to conform the fracture sites.

Inclusive criteria

Patients who had complained with trauma in maxillofacial region reported to saveetha dental college and hospital. To minimise the sampling bias all the data were included.

Excluding criteria

The patients with pathological fractures or any fractures due to any systemic disorders were excluded from the study.

RESULTS AND DISCUSSION

Seventy four patients were identified with maxillofacial trauma from June 2019 to March 2020. The mean age group of 30±12 years minimum of 4 years and maximum of 67 years. A male predominance was observed in the study with 86.5% in the study.

From the results the aetiology of trauma is RTA 68.92% followed by assault 12.16%, self injured 10.81% and workplace injury of 8.1%.

Studies which deal with the pattern and etiology of trauma vary from place to place based on the region, laws enforced, and the attitude of the people in that region. Annually, our institute treats around 95–100 cases per year. In this study, only in-patient records were analyzed. It is important for dental students to improve their knowledge to enable diagnosis and management of patients to have a more positive attitude toward these patients (Abhinav et al., 2019b; Kumar and S, 2016). In the present study, the highest occurrence of maxillofacial trauma was observed in the third and fourth decades of life. This may be due to the fact that young adults have a higher social activity compared to the pediatric and geriatric population. The highest number of trauma occurred in the age group of 20–29 years constituting 44.5% of all trauma cases seen over a 9-year period (Weihsin et al., 2014). The male-to-female ratio in this study was found to be 6.2:1, which is lower compared to other studies (Shankar et al., 2012). However, a clear predominance of male patients was observed in this study, correlating with the reports published earlier. This can be related to the fact that young males are exposed more to contact sports, alcohol use, and vehicular travel. Excessive bleeding can be controlled by Tranexamic acid has been shown to be an effective method of reducing blood loss during surgical procedures (Christabel, 2016). Studies have shown that RTAs is the most common etiology for maxillofacial trauma in developing countries, (Ugboko et al., 1998) while interpersonal violence is the main cause in developed countries (Rojas, 2001). A similar finding has been observed in our study also, where RTA is the most common etiological factor (71.4%), followed by assault and falls. The reasons for higher frequency of RTAs in developing countries like India include inadequate road safety awareness, poor road conditions, violation of speed limit, not wearing seat belts or helmets, and use of alcohol or...
other intoxicating agents. Even though the use of helmets has been made compulsory for the rider and the pillion rider also, the strict adherence to the law is yet to be seen. Seat Belt usage in the vehicle is also less in this part of the world.

The type of helmets worn also plays a role in the etiology of trauma. Full-face helmets protect the rider from severe injuries when compared to open-face helmets (Peek-Asa et al., 1999). Non Helmet wearers were found to be four times more likely to sustain head injuries.[13] (Yu, 2011). Excessive consumption of alcohol is strongly associated with maxillofacial trauma. In the present study, alcohol consumption before the injury was recorded in 17.4% of cases which is in stark contrast to what Sirimaharaj and Pyung Tanas Up reported in their study (Zaleckas et al., 2013; Marimuthu, 2018; Patil, 2017). The mandible is more prone to injury than the zygomatic complex due to its mobility and lesser bony support compared with the maxilla (Subhashraj et al., 2007; Akama, 2008).

The major combination of fractures was the symphysis/parasympysis and condyle (16.4%). In some situations, the location of fracture site appears to be directly related to the cause of injury, which probably reflects the direction from which force was applied to the mandible (Peek-Asa et al., 1999). We did not encounter patients with any injuries to the limbs or head injuries in our analysis. This can be due to the fact that our institution is a dental hospital, and thus, patients prefer to go to the higher centers for treatment.

The limitations of the study include (i) only inpatient records were included for analysis and (ii) as this is a retrospective study, we were not able to gauge the impact the various patterns of fracture had on the patient’s social life. Surgical alterations in the position of the bony facial skeleton will inevitably affect the soft tissues (Jain, 2019; Packiri, 2017).

In Figure 1, Majority of the trauma is caused by RTA (blue) (68.92%) followed by assault (orange) (12.16%), self injury (green) (10.81%) and least caused in the workplace (red) (8.11%). In Figure 2, X-axis represents the gender and Y-axis represents the number of cases that got affected due to different types of aetiologies. From the above bar graph, it is evident that there is an association between gender and aetiology of the trauma with more male predilection compared to female in road trauma accidents (blue colour). Pearson chi-square value is 18.811, p-value 0.00 (<0.5) This value is statistically significant.

CONCLUSION
From this study, the RTA is the main cause for maxillofacial trauma. Awareness programs should be implemented on the road safety protocols and the correct use of head gear for safety. Strict enforcement of laws also has to be followed. Thus, the etiology of maxillofacial injuries reflect the trauma patterns within the community and can thus provide a guide to help design programs toward prevention and treatment.

Conflict of Interest
The authors declare that there is no conflict of interest for this study.

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