

A Retrospective Analysis of 2 Years of Faciomaxillary Injuries in Patients Treated at Various Regional Centers in Gujarat

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Abstract

Introduction: The incidence of faciomaxillary 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 faciomaxillary 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 1087 patients who suffered trauma and were managed in the Department of Burns and Plastic Surgery in three regional centers in Gujarat over a period of 2 years was carried out.

Results: Road traffic accident (RTA) was the common cause of faciomaxillary 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 most common cause for the faciomaxillary injuries.

Key words: Faciomaxillary fractures, Pre-designed questionnaire, Road traffic accidents

INTRODUCTION

Faciomaxillary trauma represents one of the greatest challenges to public health services worldwide, because of their high incidence and significant financial cost. The road traffic accidents (RTAs) are major public health hazard of primary magnitude because of rapid increase in the automobile users.^[1] They are often associated with morbidity and varying degrees of physical, functional, and esthetic damage.^[2,3] Accidents are definitely on the increase in India. Our country has world's highest fatality rate in RTAs, 20 times that of developed countries. In India, mortality rate is 8% whereas, in developed countries

such as UK, USA, and France; mortality rate is 0.1%.^[4,5] Faciomaxillary injuries occur in significant number of trauma patients^[6] and management includes treatment of facial bone fractures, dentoalveolar fractures, and soft-tissue injuries, as well as concomitant injuries.^[7]

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 faciomaxillary traumas have been carried out in countries such as Austria,^[8] Germany,^[9] New Zealand,^[10] and United Arab Emirates.^[11] Very less number studies from India are found in the literature.^[12,13] There is lack of population based data on faciomaxillary 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 faciomaxillary injuries and to determine the factors responsible for facial fractures, the age and sex distribution, and the type of fracture.

Access this article online



www.ijss-sn.com

Month of Submission : 05-2023
Month of Peer Review : 06-2023
Month of Acceptance : 06-2023
Month of Publishing : 07-2023

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MATERIALS AND METHODS

A predesigned questionnaire was used to collect the data for the purpose of retrospective analysis a predesigned. After obtaining permission from the concerned hospital authorities, the hospital records of all the patients treated for faciomaxillary injuries in the department during the year 2017 and 2018 (January 2017–December 2018) 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 were then computerized and subject to statistical analysis, using Statistical Package for the Social Sciences windows version 10.0.

RESULTS

A total of 1087 patients were treated for faciomaxillary injuries from January 2017 to December 2018. Men sustained significantly more faciomaxillary injuries as compared to females, with an overall ratio of 4.5:1 [Figure 1]. Majority of faciomaxillary injuries were seen in 2nd–4th decade of life constituting a major proportion (76.49%) of these faciomaxillary injuries [Figure 2]. Of the eight causes for sustaining faciomaxillary injuries, RTAs were the most common (74%) followed by interpersonal violence (15%) [Figure 3]. The fracture of the mandible was most common faciomaxillary injury (44.34%) followed by mid face fractures (18.42) [Figure 4]. 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

In comparison to females, males have higher prevalence of faciomaxillary injuries in our study is well-documented in

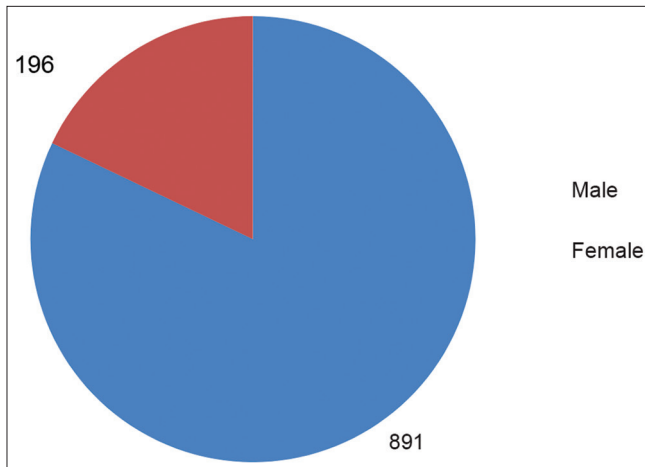


Figure 1: Sex distribution of faciomaxillary injuries

the literature.^[3,14,15] Males are at greater risk because of their greater participation in activities such as driving vehicles, sports, working at height that involve physical contact, an active social life, and drug use, including alcohol.^[16,17] However, over the past 4 decades, prevalence of trauma is increasing reported among females, mainly in the under-40

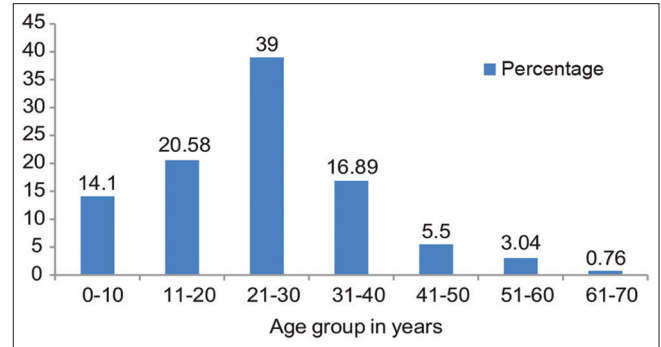


Figure 2: Age distribution of faciomaxillary injuries

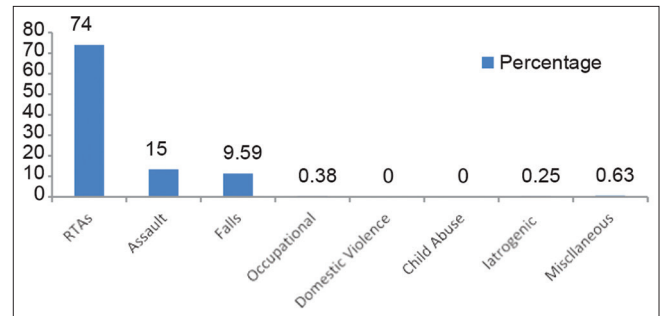


Figure 3: Etiology of faciomaxillary injuries

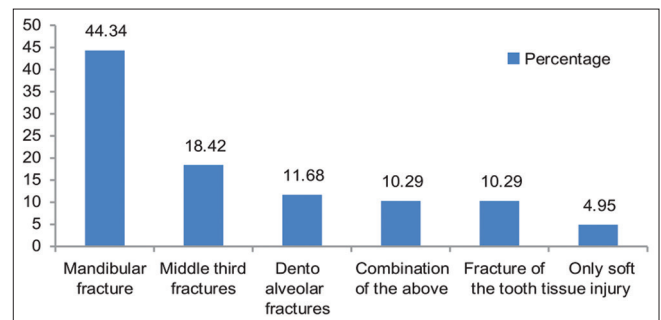


Figure 4: Type of faciomaxillary injuries

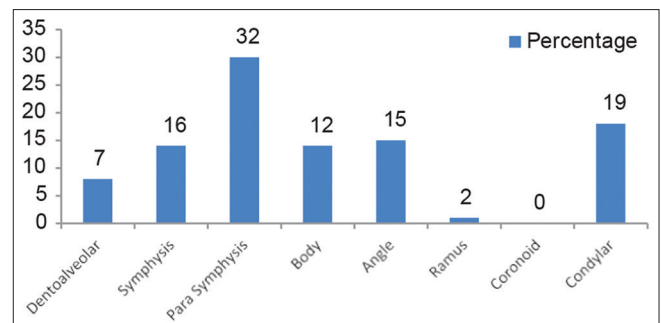


Figure 5: Distribution of mandibular fractures

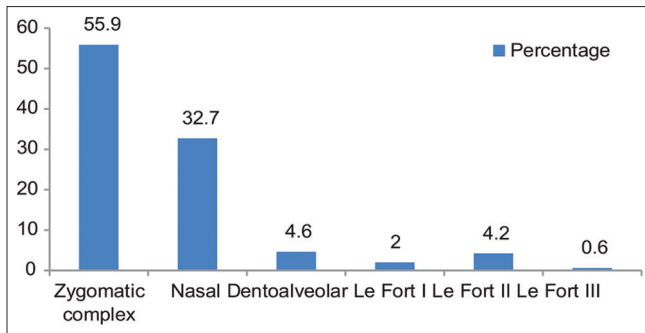


Figure 6: Distribution of middle third fractures

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.^[17,18]

The fact that majority of the victims were in the 21–30 years age group (39%) is also in accordance with other studies.^[2,7,13,19,20] 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 active age group with great personal independence, social excitement, intense mobility, careless driving on the roads, and exposure to urban violence.^[10,13,21,22]

Children and individuals over 40 years are less involved in faciomaxillary injuries.^[8,19,23,24] 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.^[23,24]

RTAs were the main cause of faciomaxillary injuries (75%), corroborating other Indian and international studies.^[2,3,12-16,18] The increasing number of RTAs in developing countries like India may be attributed to many factors like sharing of roadways 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.^[4] Drivers using mobile phones are 4 times more likely to be involved in crash.^[25] 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 such as longer reaction time, inability to keep correct lane. 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 past 3 decades.^[17,20] 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.^[25]

In the present study, assaults were the second most prevalent etiological factor (15%), 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. Physical violence is another increasingly important etiological factor for faciomaxillary injuries. In countries such as United States, Finland, and Switzerland assaults have been reported as the main cause of faciomaxillary injuries.^[10,26] The studies conducted by Veerasha and Shankararadhya,^[3] Motamedi,^[21] Ortakoglu *et al.*,^[27] and Qudah and Bataineh,^[28] have also found mandibular fracture to be the most common faciomaxillary injury. 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 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. As found in the studies by Veerasha and Shankararadhya,^[3] Motamedi,^[21] and Orkatoglu *et al.*^[27] Parasymphysis was the most common site involved in our study. 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

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.^[10,20,22] However, few cases of nasal fractures are reported in faciomaxillary trauma studies as patients are usually referred to ear, nose, and throat (ENT) and plastic surgeons.^[10,20,21] The studies by Al-Khateeb and Abdullah^[29] 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 faciomaxillary injury and its effects.

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How to cite this article: Kachadia N, Prajapati C, Soni SK, Guguloth D, Gothwal S, Vanzara D, Kadia R. A Retrospective Analysis of 2 Years of Faciomaxillary Injuries in Patients Treated at Various Regional Centers in Gujarat. *Int J Sci Stud* 2023;11(4):26-29.

Source of Support: Nil, **Conflicts of Interest:** None declared.