Chinese Journal of Traumatology xxx (2017) 1–6

Contents lists available at ScienceDirect

Chinese Journal of Traumatology

journal homepage: http://www.elsevier.com/locate/CJTEE

Original article

Orofacial trauma in rural India: A clinical study

Sunita Malik [a,*], Gurdarshan Singh [a], Gagandeep Kaur [b], Sunil Yadav [a], Hitesh C. Mittal [a]

[a] BPS Government Medical College for Women, Khanpur Kalan, Sonepat, Haryana, India
[b] Aadesh Institute of Dental Sciences and Research, Bathinda, Punjab, India

ARTICLE INFO

Article history:
Received 1 September 2016
Received in revised form
8 October 2016
Accepted 17 October 2016
Available online xxx

Keywords:
Incidence
Traffic accidents
Orofacial injuries

ABSTRACT

Purpose: Orofacial trauma is becoming a leading medical problem worldwide. Most of the studies pertaining to orofacial trauma have been done in urban areas but very little scientific literature is available for rural areas.

Methods: A prospective medical institute-based study of orofacial injury patients was carried out from May 2013 to April 2016 (36 Months). Data regarding incidence, age and sex distribution, causes, types and site of injury, treatment modalities and trauma associated complications were collected and analysed.

Results: A total of 784 patients were studied. Males outnumbered females by a ratio of 2.9:1. Age range was 9 months–75 years with the peak incidence in the age-group of 18–34 years. Most injuries were caused by road-side accidents (72.7%), followed by assault and falls in 11.6% and 8% respectively. Soft tissue injuries and mandibular fractures were the most common type of injuries. Head/neck (50.29%) and limb injuries (27.2%) were the most prevalent associated injuries. Surgical debridement and soft tissue suturing was the most common emergency procedure. Closed reduction was performed in 61% of patients and open reduction and internal fixation in 30% of cases and 9% were managed conservatively. Complications occurred in 6.88% of patients, mainly due to infection and malocclusion. The mean duration of hospital stay was (10.12 ± 6.24) days.

Conclusion: This study highlights the importance of department of dental surgery along with other disciplinaries in the management of orofacial injuries. Road-side accident remains the major etiological factor of orofacial injuries in our setting.

Introduction

Incidence of trauma is on upward trend all over the world. Orofacial injuries occur in a significant proportion of trauma patients and these are commonly encountered in the practice of emergency department. Orofacial injuries are often associated with high morbidity resulting from increased costs of care. These injuries have remained the topic of interest among researchers owing to varying degrees of physical, functional and cosmetic disfigurement.

Facial trauma is an important health issue because its incidence has repeatedly been shown to be associated with road traffic accident and assaults. The World Health Organization has estimated that more than 3000 people are killed every day on the road; at least 30,000 others are injured or disabled, so over 1.2 million people are killed and as many as 50 million injured each year.[1] According to an estimate more than 50% of patients with these injuries have multiple trauma requiring coordinated management among various disciplines of anaesthesiology, otolaryngology, trauma surgery, plastic surgery, ophthalmology, and oral and maxillofacial surgery.[2] These injuries can occur as an isolated injury or may be associated with multiple injuries to the head, chest, abdominal, spinal and extremities.

The causes of orofacial injuries vary widely from country to country owing to their specific social, cultural and environmental factors. The causes of orofacial injuries are multifaceted and have changed over the last four decades and they continue to do so. Traffic accident together with assault, falls, occupational trauma and sports injury are deemed to be the most common causes of

* Corresponding author.
E-mail address: drsunitamalikmds@gmail.com (S. Malik).

Peer review under responsibility of Daping Hospital and the Research Institute of Surgery of the Third Military Medical University.

http://dx.doi.org/10.1016/j.cjtee.2016.10.006

Please cite this article in press as: Malik S, et al., Orofacial trauma in rural India: A clinical study, Chinese Journal of Traumatology (2017), http://dx.doi.org/10.1016/j.cjtee.2016.10.006

such injuries.[3] The epidemiology of facial injuries varies in injury type, severity and depending upon the population studied.[4] Recent studies from India (Goa,[5] Bhopal,[6] Chennai,[7] Jammu,[8] Gujarat,[9] New Delhi[10]) and from across the globe (China,[11] Italy,[12] South America,[13] South Korea[14]) have shown that road traffic accidents are still the primary causes of facial trauma. The causes and pattern of orofacial injuries reflect trauma patterns within the community and, as such, can provide a guide to plan the programmes catered toward prevention and treatment.[15]

Orofacial injuries involve soft and hard tissue injuries of face extending from frontal bone superiorly to mandible inferiorly and vary from soft tissue lacerations to complex fractures of maxillofacial skeleton. The pattern of these injuries depends on the mechanism of injury, magnitude and direction of impact force and anatomical site.[1,16,17] The management of injuries to the maxillofacial complex remains a challenge for oral and maxillofacial surgeons, demanding both skill and a high level of expertise.[18]

Sonepat district is a part of the Eastern Haryana Plain with estimated population of 1,480,080 and area of 2260 sq km. The district has 328 villages and 6 towns. No elaborative studies have been done so far to find out the aetiological factors and to analyse the extent of various maxillofacial injury patterns in this rural arena. BPS Government Medical College for women, Khanpur kalan, Sonepat is the major maxillofacial trauma centre in the district. So a prospective study was conducted for a period of 36 months from May 2013 to April 2016 to assess the epidemiological characteristics and to describe our own experiences in the management of maxillofacial injuries outlining the incidence, age and sex distribution, causes, types and site of injury, treatment modalities and trauma associated complications of maxillofacial injuries as well as necessity of oral and maxillofacial services associated with multiple injuries of various maxillofacial trauma patients.

The study provides basis for establishment of treatment guideline and planning for preventive strategies.

Materials and methods

In this prospective medical institute-based study, all consecutive maxillofacial injury patients reporting to the accident & emergency department of the institute from May 2013 to April 2016 were included.

Trauma patients are first seen in the accident & emergency department where resuscitation is carried out according to Advanced Trauma Life Support (ATLS) principles. From the accident & emergency department these patients are admitted in their respective surgical wards or ICU after definitive treatment.

During this study, all orofacial injury patients seen at the accident & emergency department were, consecutively recruited into the study after well informed written consent. Patients who died before initial assessment and those without next of kin to consent were excluded from the study. Ethical approval to conduct the study was obtained from the Institutional Ethic Review Committee before the commencement of the study.

Information relevant to the study was obtained from the patient directly; when this was not possible, collateral history was obtained from either the police or relatives attending to the patients. Data were collected using a pre-tested questionnaire. Data collected included: patient's demographic data, cause of injury, type of injury, time of injury, place of injury, status of prehospital care, mode of arrival in the hospital, associated injuries, severity of injury (Glasgow Coma Scale, GCS), treatment modalities and outcome of treatment (i.e. postoperative complications, length of hospital stay and mortality).

Detailed clinical examination was done and soft tissue lacerations, tooth injuries, number and sites of fractures of maxillofacial skeleton, and associated injuries were recorded. The diagnosis was based on clinical and radiological findings. In relevant cases CT scan and ultrasonography were done to rule out foreign bodies.

The aetiological factors were divided into traffic accidents, assault and injury associated with fall, the injuries due to variety of causes including sports, occupational and other related injuries (animal bite, gun shot injuries etc). Injuries were grouped as soft tissue injuries, dental injuries, mandibular fractures, zygomatic fractures, orbital fractures, nasal fractures, maxillary fractures, combination fractures (frontal sinus fractures, nasoorbitoethmoid fractures, etc) and multiple injuries.

A detailed survey of these cases with complete data regarding age, gender, type of injuries, emergency management and definite management with different treatment modalities has been collected, reviewed and analysed in detail emphasizing the importance of early management of orofacial injuries to prevent functional as well as aesthetic deformities.

Results

In the present study, a total number of trauma patients reporting by the accident and emergency department were 784 during 36 months period from May 2013 to April 2016. Patient age at the time of injury ranges from 9 months to 75 years. In most cases, the patient was between 18 and 34 years old. Most of the patients were male (583:201) with the male female ratio of 2.9:1 (Fig. 1).

The vast majority of injuries ($n = 612$, 78.06%) were unintentional and the remaining 172 (21.94%) were intentional injuries mainly due to assault and interpersonal violence. There was no history of suicidal or indeterminate intent. The majority of patients (633, 80.74%) sustained blunt injuries and road traffic accident was the most common cause of injuries (570 cases) accounting for 72.7% of all injuries. Of these, 337 (59.1%) injuries were related to motorcycle accidents affecting motorcyclists, passengers and pedestrian.

The most common causes of maxillofacial injuries was traffic accidents involving 570 cases (72.7%) with 438 males and 132 females followed by assault involving 91 cases (11.6%) with 66 males and 25 females and injury associated with fall involving 63 cases (8%) with 39 males and 24 females; the remaining injuries were due to variety of causes including occupational (20 cases with 13 males and 7 females), sports (19 cases with 14 males and 5 females), and miscellaneous (21 cases with 13 males and 8 females) injuries. The data for causes of injuries distributed by gender shows that males of younger age group are more vulnerable.

The majority of patients ($n = 700$, 89.3%) arrived to the accident & emergency department and outdoor patient department within

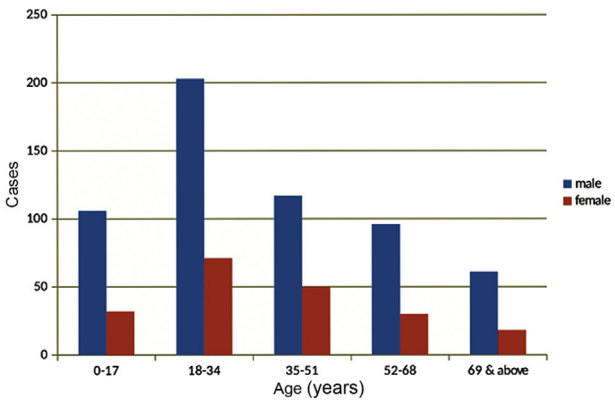

Fig. 1. Age and sex distribution of trauma patients.

Please cite this article in press as: Malik S, et al., Orofacial trauma in rural India: A clinical study, Chinese Journal of Traumatology (2017), http://dx.doi.org/10.1016/j.cjtee.2016.10.006