International Journal of Otorhinolaryngology and Head and Neck Surgery
Gangadhara KS et al. Int J Otorhinolaryngol Head Neck Surg. 2019 May;5(3):657-660
http://www.ijorl.com
pISSN 2454-5929 | eISSN 2454-5937

Original Research Article

DOI: http://dx.doi.org/10.18203/issn.2454-5929.ijohns20191724

Evaluation of facial skeleton fractures

K. S. Gangadhara, Ramesh Sannappa*, T. D. Thimmappa, Chaithra B. G.

Department of ENT, Shimoga Institute of Medical Sciences, Shimoga, Karnataka, India

Received: 02 December 2018
Revised: 02 February 2019
Accepted: 04 February 2019

***Correspondence:**
Dr. Ramesh Sannappa,
E-mail: rameshsannappa24@gmail.com

ABSTRACT

Background: Fracture of facial bone is most common fracture in humans because of its upper and prominent position. Facial skeleton fractures are classified in to various types, nasal bone fractures, maxillary fractures. It affects all age groups and both sexes. The cause to the injury is due to RTA, assault, accidental fall etc. Majority of the times it is associated with the other fractures. Facial skeleton fractures should not be considered as minor injury. They may preclude to serious complications like septal haematoma, orbital injury, brain injury and CSF leak. Majority of them require conservative management. The aim of the study was to assess the prevalence and types of facial skeleton fractures in trauma cases for appropriate investigation and treatment for better outcome and to reduce morbidity.
Methods: Prospective clinical study of patients who attend to casualty and ENT department and referred by other departments with facial skeleton fractures are evaluated for the period of 6 months.
Results: Of 100 patients, 90% were male and 10% female. According to age 1-9 yr: 3%, 10-19 yr: 12%, 30-39 yr: 19%, 40-49 yr: 20%, 50-59 yr: 10%, 60-69 yr: 5% were noted. The most common cause was the road traffic accident (58%) followed by self fall (38%).The most common fracture involved is the nasal bone (54%) in isolation, followed by maxilla (23%) and mandible (12%).
Conclusions: The patients were mostly males in third decade of life, victims of the RTA being the most commonly affected. The most commonly fractured bone being nose.

Keywords: Epidemiology, Maxillofacial injuries, Nasal bone

INTRODUCTION

Facial skeleton injuries occur in a significant proportion of trauma patients requiring prompt diagnosis of fractures and soft tissue injuries, with possible emergency interventions.[1] Every year, increasing numbers of both adult and paediatric patients are admitted to the hospital with facial trauma.[1] Many studies in the literature have analysed the demographic distribution and factors associated with facial trauma according to various criteria.[2-4] The epidemiology survey of facial fractures varies according to injury type, facial bones, severity and cause, depending on the population studied.[5] The differences in the populations with regard to the causes of facial fractures may be the result of differences in culture, socioeconomic factors and a variety of risk factors.

The maxilla facial injuries pose serious problem in the clinical setting because of the specificity of its anatomy. Due to the anatomical proximity to important structures like brain, eye, upper aerodigestive tract, injuries to these regions can lead to severe dysfunction and morbidity affecting the quality of life.[6] Great emphasis need to be given to the aesthetic disability affecting psychological aspects in the patient.[7] That is why special attention is focused on etiological factors and trauma mechanisms for the successful outcome of management of facial trauma.[8]

A thorough understanding of the cause, severity and temporal distribution of facial trauma can aid in establishing clinical and research priorities for effective treatment and prevention of these injuries.[5] Majority of facial skeleton injuries require conservative management and others requiring intervention. Continuous collection of data regarding the epidemiology of facial fractures are of great interest as to the knowledge of the occurrence and quantity and severity of presentation allowing the adoption of preventive measure that might help reduce the incidence of facial injuries and its management of patients.[5]

In this study, we have investigated the etiology, demographic characteristics, symptoms, type of fractures and severity of injuries in polytrauma patients.

METHODS

It is a prospective clinical study who attended the casualty and ENT department and referred by other departments between January 2018 and June 2018 in Shimogga Institute of Medical Sciences. In radiological evaluation by CT scan, type of fracture is detected. Patient's age, sex, severity, type of trauma was collected by the case notes. The causes of fractures were studied according to: road traffic accident, self fall, assault, sports injuries. The site of the injuries was classified into: fractures of nasal bone, maxilla, mandible, zygomatic complex, frontal bone, septum, orbital rim and sphenoid. The data were analyzed with the aid of Microsoft office excel 2007

The research project was approved by the ethics committee of the hospital.

RESULTS

During 6 month period 100 patients were treated with maxillofacial injuries with different etiological factors.

It was found that facial fractures were more common in males (90%) compared to females (10%) with peak incidence in the age group of 20-29 yr (31%) followed by males in 40-49 yr (20%).

In 100 patients enrolled into the study, 50% of the patients have isolated fracture. The most affected area is the nasal region. The most common fractures were seen in nasal bone (54%) followed by maxillary bone (23%). The other bones mandible (12%), zygomatic (10%), frontal bone (15%) were also involved.

During the epidemiological survey, the most common cause of maxillofacial fractures were road traffic accidents (54%) followed by self fall (38%), assault (04%). In females the most common was self fall (n=6).

The distribution of facial fractures according to age shows that the nasal bone, maxillary and mandible is most commonly involved in age above 30 yr. Frontal bone is most commonly involved in age between 20-30 yr. Orbital and sphenoid fractures are seen in patients above 30 yr.

Nasal bone fracture is the most commonly involved craniofacial trauma involved in road traffic accident, followed by maxilla and mandible.

Table 1: Distribution of facial fractures according to gender.

Gender	No of patients	Percentage (%)
Male	90	90
Female	10	10
Total	100	100

Table 2: Distribution of facial fractures according to age.

Age (yrs)	No of patients	Percentage (%)
0–9	3	3
10-19	12	12
20-29	31	31
30-39	19	19
40–49	20	20
50–59	10	10
60-69	5	5

Table 3: Etiology of facial trauma.

Cause	No of patients	Percentage (%)
RTA	58	58
Self fall	38	38
Assault	04	4
total	100	100

Table 4: Types of fractures.

Types of fracture	Left side	Right side	Both	Total
Nasal bone	11	03	40	54
Maxillary	03	09	11	23
Mandible	02	05	05	12
Zygomatic	07	04	04	15
Frontal	00	00	10	10
Multiple bones	-	-	-	-
Lamina papyracea	-	-	-	-
Septum	??	??	??	05
Sphenoid	00	00	02	02
NOE complex	-	-	-	-

Table 5: Distribution of facial fractures based on age group.

Type of facial fracture	<10 yr	10–20 yr	20–30 yr	>30 yr
Nasalbone fracture	02	09	12	21
Maxilla	-	03	06	13
Mandible	-	01	04	12
Zygomatic complex	-	-	04	11
Frontal bone	02	-	10	03
Orbital	01	-	-	06
Septum	-	01	01	03
Sphenoid	02	-	-	06

Table 6: Occurrence of maxillofacial fractures based on type of injury.

Type of fracture	RTA	Assault	Self fall
Nasal bone	28	03	17
Maxilla	18	-	10
Mandible	09	-	08
Frontal bone	05	-	03
Orbit	05	01	03
Zygomatic	13	01	05
sphenoid	07	-	-
Septum	04	-	01

DISCUSSION

The face is a very susceptible to variety of possible trauma.

Our study revealed a predominance of male patients with facial fractures corresponding to 90%, compatible with the literature including Palma et al, 78%, Falcao et al, 84%, and Macedo et al, 72.8%.[9-11] This higher incidence in males may be linked to cultural and socio-economic factors, considering that the males represent most of the economically active population, exhibit more abuse of alcohol and drugs, practice more contact sports, are involved in the majority in traffic and thus are more exposed to the factors responsible for facial injuries. The most common cause in women is self fall in our study,

The patients in the study range from 5-79 yr. Most common age group involved is 20-29 yr. This is in concurrence with other studies like Silva et al study the most common reason attributed is the use of motor vehicular accident, drunken driving. There is less incidence of facial trauma in paediatric population due to the attention of the family. However the reason is either the self fall or sports injury

The most common reason for the maxilla facial fractures is the road traffic accident mainly seen in males which is in concurrence with other studies done in India.[13] There are various causative factors like alcohol abuse, fast driving. The next common cause is the self fall followed by assault which is not in agreement with other studies wherein interpersonal violence and assault is the reason. The possible cause for self fall is alcohol abuse.

The frequent cause associated with females is self fall.

The most common area involved in the facial fractures is the nasal bone, midface fratures like maxilla and zygomatic complex involvement. Fifty percent of the patient showed isolated nasal bone fracture. The patient mainly presented with swelling over the dorsum of the nose, bleeding from the nose, periorbital swelling, and inability to open the mouth, laceration over the face, dental malocclusion and disfigurement. The possible explanation for involvement of nose could be its prominent position on the face.

CONCLUSION

Unfortunately the head and face is the most damaged organ in road traffic accident after limbs in multiple trauma. They are major causes of morbidity and socioeconomic loss. The study of epidemiology of facial trauma is important for the studying the cause and effects of facial trauma, assist the initial evaluation and care, and publishing preventive policies.

The most common age of maxillofacial injury is the third decade of life. Regarding the type of trauma the most common region involved is nasal region.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Erol B, Tanrikulu R, Görgün B. Maxillofacial fractures: Analysis of demographic distribution and treatment in 2901 patients (25-year experience) J Craniomaxillofac Surg. 2004;32:30.
2. 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.
3. Iida S, Matsuya T. Paediatric maxillofacial fractures: Their aetiological characters and fracture patterns. J Craniomaxillofac Surg. 2002;30:237–41.
4. van Hoof RF, Merkx CA, Stekelenburg EC. The different patterns of fractures of the facial skeleton in four European countries. Int J Oral Surg. 1977;6:3–11.
5. Hogg NJ, Stewart TC, Armstrong JE, Girotti MJ. Epidemiology of maxillofacial injuries at trauma hospitals in Ontario, Canada, between 1992 and 1997. J Trauma. 2000;49:425–32.
6. Klotch DW. Frontal sinus fractures: anterior skull base. Facial Plast Surg. 2000;16:127-34.

7. Hull AM, Lowe T, Finaly PM. The psychological impact of maxillofacial trauma: an overview to reaction to trauma. Oral Surg Oral Med Oral Pathol Oral Radiol Endod. 2003;95:515-20.
8. Malara P, Malara B, Drugacz J. Characteristics of maxillofacial injuries resulting from road traffic accidents – a 5year review of case records from department of maxillofacial surgery in Katowice, Poland. Head and face Med. 2006;2:27.
9. Palma VC, Luz JGC, Correia FAS. Frequency of facial fractures in patients treated at a hospital service. Rev Odontol Univ São Paulo. 1995;9(2):121-6.
10. Falcão MFL, Segundo AVL, Silveira MMF. Epidemiological study of 1758 facial fractures treated at restaurant hospital, Recife/PE. Rev Bras Cir Traumatol Buco- Maxilo-Fac. 2005;5(3):65-72.
11. Macedo JLS, Camargo LM, Almeida PF, Rosa SC. Epidemiological profile of face trauma of patients seen at a emergency room in public hospital. Rev Col Bras Cir. 2008;35(1):9-13.
12. Pereira MD, Kreniski T, Santos RA, Ferreira LM. Craniofacial trauma: epidemiological profile of 1223 fractures treated between 1999 and 2005 in Hospital São Paulo – UNIFESP-EPM. Rev Soc Bras Cir Craniomaxilofac. 2008;11(2):47-50
13. Susbhraj K, Nandakumar N, Ravindran C. Review of maxillofacial injuries in Chennai, in India: a study of 2748 cases. Br J Oral Maxillofac Surg. 2007;45(8):637-9.

Cite this article as: Gangadhara KS, Sannappa R, Thimmappa TD, Chaithra BG. Evaluation of facial skeleton fractures. Int J Otorhinolaryngol Head Neck Surg 2019;5:657-60.