Original Research Paper

Volume - 12 | Issue - 03 | March - 2022 | PRINT ISSN No. 2249 - 555X | DOI : 10.36106/ijar

Oral and maxillofacial surgery

HOW ETIOLOGY AFFECTS PATTERN OF MAXILLOFACIAL FRACTURES. A RETROSPECTIVE STUDY AT TERTIARY CARE CENTER IN NORTH INDIA

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ABSTRACT Pattern and etiology of maxillofacial injures varies from one country to another and even within the same country depending on prevailing socio-economic, cultural and environmental factors. Aim and objective of this study was to analyse retrospectively how various factors and etiology affects pattern of facial fractures and management at maxillofacial department and research center of tertiary care college and hospital. Out of 8715 patients who were reported to our center between years 2017 to 2021. 82% had mandibular fracture, 17% mid third fracture and around 1% had facial fractures involving cranial bones. Most patients with mid face fracture had fractures of zygomaticomaxillary region78%, while fracture of parasymphysis region were more common in mandible39%. Most patients were in the 21–30 year old age group, Road traffic accidents were more common around 76%.

KEYWORDS : Mandibular, Maxillofacial, trauma, Road traffic accidents

INTRODUCTION

Trauma is the leading cause of death in the first 40 years of life[1] (Bither et al., 2008). WHO Statistics indicate that 4.4 million injury related deaths in march 2021, Unintentional injuries take the lives of 3.16 million people every year and violence-related injuries kill 1.25 million people every year, Roughly around 1 in 3 of these deaths result from road traffic crashes, 1 in 6 from suicide, 1 in 10 from homicide and 1 in 61 from war and conflict. Many epidemiological studies have been published from different countries about the pattern of maxillofacial injuries but demographic data are difficult to evaluate because of the many variables. Most statistical analyses about maxillofacial injuries have been retrospective[2] (Bakardjiev and Pechalova, 2007). The information is as diverse as the countries and their people, and among the causes road crashes were the most common in developing countries[3] (Bormann et al., 2009). Their incidence and aetiology are influenced by social, cultural, and environmental factors[4] (Subhashraj et al., 2007). The purpose of the study was to analyse the pattern of maxillofacial injuries in our tertiary institution maxillofacial research center in Jammu and Kashmir region of northern India and examine how various factors and etiology affects pattern of maxillofacial fractures.

MATERIALS AND METHODS

This was a retrospective study review of patients treated for facial fractures in tertiary maxillofacial surgery care center in Jammu and Kashmir region of northern India, covering a population of approx. 6.2 million inhabitants. To minimize selection bias all patients treated in the center between 2017 and 2021 were included. Variables recorded included were age, gender, Etiology, pattern of facial fracture, treatment modality like maxillomandibular fixation (MMF) or rigid internal fixation (RIF) received.

RESULTS

Adult age group of about 21 to 30 years was most commonly involved of about 34% and least commonly involved was about 0-10 years <2%. Road traffic accident was most common etiological factor and animal bite was least common. Mandible is commonly involved then maxilla. All results are shown in Tables 1–5.Out of the 8715 patients with facial fractures, 4714 were treated by closed reduction.2492 were treated by open reduction and internal fixation, and 1529 by conservative management only.

Table No.1: Age group distribution among maxillofacial injury patients

Age group (years)	Sex		Total (%)
	Male	female	
0–10	115	76	191(2)
11–20	1188	217	1405 (16)
21–30	2479	525	3004(34)
31–40	1469	347	1816(21)
41–50	832	217	1049(12)
51–60	523	230	753(9)
>61	370	127	497(6)
Total	6976	1739	8715

Table No. 2: Cause of injury

Aetiology	Sex		Total (%)
	Male	female	
RTA road traffic accident	5929	728	6657 (76)
Domestic violence	25	51	76(.9)
Fall	1073	332	1405(16)
Assault	383	102	485(6)
Sports-related	25	04	29(.3)
Missile/Gun shot injury	38	00	38(.5)
Animal bite	25	00	25(.3)
Total	7498	1217	8715

Table No. 3: Number of patients with mandibular fractures

Site	Sex		Total (%)
	Male	female	
Parasymphysis	2133	447	2580(39)
Condyle	1175	293	1468(22)
Angle	932	178	1110(17)
Symphysis	421	89	510(7)
Body	741	191	932(14)
Ramus	25	12	37(.5)
Coronoid	25	08	33(.5)
Total	5452	1218	6670

Table No. 4: Number of patients with middle third fracture

Site	Sex		Total (%)
	Male	female	
Le Fort I	60	04	64 (4)
Le Fort II	170	21	191(13)
Le Fort Ill	02	00	02(1)
Zygomaticomaxillary	1047	89	1136(78)
Nasoethmoid	38	25	63(4)
Total	1317	189	1456

Table No. 5: Treatment modalities received

Site	Sex		Total (%)
	Male	female	
Close reduction MMF	3897	817	4714(54)
Open reduction and internal fixation	2173	319	2492(29)
Conservative treatment.	1125	384	1509 (17)
Total	7195	1520	8715

DISCUSSION

Various factors such as geographical location, culture, and socioeconomic status influence the causes and incidence of maxillofacial fractures. Some consistent findings are the predominance of men and people in the age group of 20–29 years. The male to female ratio was 3:1, but the incidence of fractures among men is consistently higher than among women.[5-7]

It is well established that common causes of facial trauma are road traffic accidents, assaults, sports, occupational related injuries, falls, gun shot and missile injuries because of various conflicts and terrorism activities happing some regions of world. In our study we found that 76% of the patients were injured in road traffic accidents,[10] followed by fall and assault. Similar studies have shown that the incidence of motorcycle accidents in developing countries is about 45–65%.[8,9]

In maxillofacial injury, the mandible is more vulnerable than the zygomaticomaxillary complex, probably because the mandible is mobile and has less bony support than the maxilla.[11] we found that 17% had associated mid-face fractures, which is a similar number to those reported by Hussain et al, who reported that the overall number of middle third fractures in road crashes was 20%.[6] Most of the our patients had fractures of the zygomaticomaxillary complex 78%, which confirms the study by Rowe and Killey.[12] Of 1456 patients with fractures of the mid face, 54% were treated by open reduction and internal fixation, 29% by closed reduction, and 17% conservatively.

The parasymphyseal region was more commonly involved in patients with mandibular fractures (39%) followed by condyle (22%), angle (17%), body (14%) and least involved was coronoid less then (1%). Several different approaches to reduction and fixation were used. Of 6670 patients, open reduction and internal fixation was used in(37%), closed reduction maxillomandibular fixation MMF in (58%) which included arch bars, Ivy loops, and intermaxillary fixation, and (5%) were treated conservatively.

The highest incidence of maxillofacial fractures has been attributed to weather that is monsoon season, Reduced visibility, bad maintenance of vehicles, poor roads, bad driving, reluctant to use helmets with blind belief that wearing helmets causes hair loss, changed lifestyle, increase in employment and mean annual income particularly among young professionals, active nightlife all results in an increase in traffic and that may be contributing to the increased number of injuries.[4]

CONCLUSION

Exceeding speed limits, lack of tolerance, and increasing competition among young men could explain the increased incidence of facial injuries. Heavy traffic jams in city, all Himalayan mountains terrain in the region with narrow roads and reluctant to use helmets could cost people their lives. These statistics highlight the importance of road crashes in this part of India. But other studies with more data from other parts of country and all over the world may help us to understand pattern more.

Role Of Funding Source
None declared.

Conflict Of Interest
None declared.

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