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A STUDY ON INCIDENCE OF MANDIBULAR FRACTURES IN CASES OF FACIOMAXILLARY TRAUMA IN KUMAON REGION

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ABSTRACT: OBJECTIVE: To Calculate the incidence of mandibular fractures in faciomaxillary trauma and to study the pattern of fracture and the commonest site of fractures in population in kumaon region between the periods of October 2012 to October 2014. **MATERIALS AND METHODS:** This is a descriptive study of the patients with alleged isolated maxillofacial injury presenting in the Emergency, ENT &HNS OPD and Dentistry OPD of Dr. Susheela Tiwari Memorial Hospital, Haldwani. **RESULTS:** Out of 78 patients with faciomaxillary trauma, 24 patients had mandibular fractures; highest percentage was found in 21–30 years of age with male predominance. Road traffic accidents were the most common cause of fracture with body being commonest site. **CONCLUSIONS:** The incidence and causes of mandibular fracture reflect trauma patterns within the community and can provide a guide to the design of programs geared toward prevention and treatment.

KEYWORDS: MPR.

INTRODUCTION: The sheer pace of modern life with high-speed travel as well as an increasingly violent and intolerant society has made facial trauma a form of social disease from which no one is immune. There are changes in patterns of facial injuries, extent, clinical features, and so forth resulting in mild-to-massive disfigurement of maxillofacial skeleton along with functional loss.

Besides road traffic accident and violence, direct/indirect trauma may also occur due to sport activities, falls, and firearms. Occasionally, it may also be secondary to certain disease entities like cystic lesion, neoplasms, and metabolic diseases.

The fracture is defined as "breach in the continuity of bone".^[1] Facial area is one of the most frequently injured area of the body, accounting for 23–97% of all facial fractures.^[2] Mandible is the only mobile bone of facial skeleton and there has been a significant increase in number of cases in recent years. It is embryologically a membrane bone and is more commonly fractured than the other bones of face. Mandibular fractures occur twice as often as midfacial fractures.^[3] The energy required to fracture it being of the order of 44.6–74.4 kg/m, which is about the same as the zygoma and about half that for the frontal bone.^[4–7] It is four times as much force is required to fracture maxilla.^[8]

Bone fractures at site of tensile strain, since their resistance to compressive forces is greater.^[5] Areas that exhibit weakness include the area lateral to the mental protuberance, mental foramen, mandibular angle, and the condylar neck.^[3] The thickening on the inner aspect of the condylar neck or crest of the neck apparently acts as a main buttress of the mandible as it transmits pressure to the TMJ and the base of the skull.

The main causes of maxillofacial fractures worldwide are traffic accidents, assaults, fall, and sport-related injuries. Alcohol consumption is a well-known contributing factor to mandibular fractures derived from assault.

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Hagan and Huelke in their Survey showed a Clean-cut Pattern of Mandibular Fractures,^[9] as follows:

1. The Condyle region is the most common site of fracture.
2. Angle is the second most common site of fracture.
3. But if only one fracture is there, then angle is the most common site of fracture than condyle.
4. Multiple fractures are more common than single (Ratio 2: 1).

Clinical examination may be sufficient to make a provisional diagnosis of a fracture, but the presence of edema, usually prevents an accurate assessment of the underlying skeletal damage. With maxillofacial radiography, at least two radiographs at right angles to each other are recommended. Because indirect fractures of the mandible are common, it is important to take radiographs at both sides of the jaw in every trauma case.

This study was undertaken to study Various Aspects of Mandibular Fractures clinically and Radiologically with an Aim to:

1. Calculate the incidence of mandibular fractures.
2. Study the pattern of fracture and the commonest site of fractures, in population in kumaon region.

MATERIAL AND METHODS:

Place of Study: ENT & HNS Dept., Dentistry Dept., & Casualty.

Period of Study: OCT 2012 to OCT 2014.

Study Design: Descriptive study.

Study Population: This study includes 78 pts. Having isolated having Faciomaxillary injury.

Inclusion Criteria: All patients with isolated Faciomaxillary injuries irrespective of Sex/Age/Religion.

Exclusion Criteria:

- Patient with bleeding disorders.
- Patients arrived dead.
- Patients died within 24 hour.
- Patient with head injury
- Pregnant females.
- Patient with polytrauma.
- Patients unwilling to participate in the study.

STUDY PROCEDURE: All patients with isolated maxillofacial fractures were assessed by preformed Performa & analyzing CT axial images and also with 3D reconstructed images and coronal MPRs, x-ray face and OPG as needed.

The results were statistically analyzed.

OBSERVATIONS AND RESULTS: All patients with isolated maxillofacial fractures were assessed by analyzing axial images and also with 3D reconstructed images and coronal MPRs.

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Age Distribution of Patients in the Study: In this study group which comprised of a total number of 78 patients, the age at presentation ranged from 03 to 65 years. Most patients belonged to the 21 - 30 age groups and 11-20age groups with 46. 15% and 25. 64% patients respectively.

Age Group	Numbers	Percentages
0-10	2	2. 56
11-20	20	25. 64
21-30	36	46. 15
31-40	15	19. 23
41-50	3	3. 85
51-60	1	1. 28
61-70	1	1. 28
71-80	0	0. 00
81-90	0	0. 00
Total	78	100

Table 1: Age distribution

Type of mandibular fracture	No. of Fracture	Percentage
Condylar	17	21. 79
Body	19	24. 36
Sub Condylar	0	0. 00
Coronoid	0	0. 00
Ramus	0	0. 00
Angular	1	1. 28
Alveolar ridge	1	1. 28
Parasymphysis	14	17. 95
Symphysis	1	1. 28

Table 2: Fracture Distribution in Mandible

- Out of 78 patients of faciomaxillary trauma 24 patients had mandibular fractures (30.77%).
- The mandibular fractures were most common in the body (24.36%) and condyle (21.79%).
- Of the 24 fractures that were detected in the persons having mandibular fractures, 24.36% and 21. 79% were noted in the body and condyle, respectively.
- Parasymphyseal fractures were 17.95 % of total mandibular fractures.

DISCUSSION: Mandible is the only mobile bone of facial skeleton, and there has been significant increase in the number of cases in recent years. Mandible fractures if not identified or inappropriately treated may lead to severe consequences both cosmetic and functional.

This study was undertaken with the view to review the incidence, commonest site, and combination of mandibular fracture sites; to study correlation of site of fracture with etiology; to study correlation of number of fracture sites in mandible with age, sex, and etiology.

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The incidence of mandibular fracture in this study increased with increasing age from 0 to 30 years then progressively decreased from 31 years of age. This could be explained as children till the age of 6 years are under parental care thereby prevented from sustaining severe injuries and the elasticity of bones makes them less prone to fracture. As the age progresses, they are more involved in physical activities, by the time they reach adulthood they are involved in fast and rash driving, interpersonal violence, alcohol abuse, contact sports, and so forth, while the people beyond 40 years of age lead a more calm, peaceful, and disciplined life.

In this study, the incidence was highest in 21 to 30 years of age followed by 11 to 20 years of age. This is in conformity with Adi et al.,^[10] Bataineh,^[11] Dongas and Hall,^[12] Ahmed et al.,^[13] Brasileiro and Passeri,^[14] but contradictory to Shapiro et al.,^[15] who reported 34.1 years as mean age range, Ogundare et al.,^[16]

Male are predominating with 80.77%. This is in conformity with Adi et al.,^[10] Bataineh,^[11] Dongas and Hall,^[12] Ahmed et al.,^[13] Shapiro et al.,^[15] Ogundare et al.,^[16] Sakr et al.,^[17] and Brasileiro and Passeri,^[14] with a slight variation from this study. This is probably due to higher level of physical activity among men as they are still the bread winners in this part of the country.

The most common etiologic factor in this study is road traffic accident which is in accordance with Luce et al.,^[7] Bataineh,^[11] Shah et al.,^[18] Ahmed et al.,^[13] and Brasileiro and Passeri.^[14] Adi et al.,^[10] Dongas and Hall,^[12] and Olosoji et al.,^[19] reported assault as the main cause whereas no such case is reported in this study. In this study, fall from height is the second common etiologic factor. Road traffic accident is still the major cause probably due to reckless and high-speed driving, reluctance to use helmets and seat belts, with inadequate enforcement of traffic safety rules.

The mandibular injuries were most common in the body and the condyle of mandible i.e., 24.26 and 21.79% respectively. Many studies especially the one by HALL-RK et al.,⁽²⁰⁾ have noted that most common site for all mandibular fractures are (If single and multiple fracture cases are included) is the condylar-subcondylar region (25-40%). However, if only one fracture is present, it most commonly occurs at angle. KRUGER-GO,⁽¹⁾ states that the body fractures occur in 16-36% of mandibular fractures, highest incidence occurring in patients involved in motor vehicle accidents. This study where most of the patients presented with the history of RTA, most common site of injury was found to be body region in accordance with et al.,^[21] Adi et al.,^[10] Bataineh,^[11] and Shah et al.,^[18] who reported body as the commonest while Dongas and Hall,^[12] Ogundare et al.,^[16] and Sakr et al.,^[17] reported angle; Motamedi,^[22] Ahmed et al.,^[13] and Brasileiro and Passeri^[14] stated condyle as the most commonest site of fracture.

CONCLUSIONS: The following conclusions have been drawn from the foregoing study. The mandibular fractures were more common in males with the highest percentage in 21–30 years of age, followed by 11–20 years of age. Road traffic accidents were the most common cause of fracture followed by fall from height. Fractures of mandible of which body (24.26%) was the most common site of fracture in mandible followed by condyle (21.79%).

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