ORIGINAL ARTICLE

CLINICAL PROFILE OF MAXILLO FACIAL FRACTURES IN A TERTIARY CARE HOSPITAL IN UTTAR PRADESH

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ABSTRACT

Introduction- Trauma from external causes poses one of the greatest challenges for public health services in different parts of the world. Maxillofacial fractures are the most common outcome of trauma. Several factors which are contributing to these can bemanaged well after careful examination of the clinical profile of the patients.
Aim - This study was done to find the clinical profile of maxilla facial fractures in a tertiary care hospital in Uttar Pradesh.
Materials and methods -A retrospective study was conducted in Department of Otolaryngology and Head and Neck Surgery, SRMS IMS from May 2016- October 2018. Medical records of 53 patients in and around west Uttar Pradesh with maxillofacial injuries admitted in our hospital were studied.
Results –Males in age group in 20-40 yr were mostly involved in RTA which was most common cause of fmaxillofacial injuries. Fracture mandible was the most commonly fractured bone.
Conclusion - There has to be strict regulations installed by the government to ensure compliance of rules regarding use of seat belts while driving and use of helmet while riding two-wheeler. Better compliance of traffic rules is an important factor in reducing the incidents of this trauma.

KEYWORDS -Maxillofacial trauma, RTA , Fracture mandible

INTRODUCTION:

Trauma from external causes poses one of the greatest challenges for public health services in different partsof the world [1]. Several people are involved in traffic accidents annually, burdening the health services and generating high emotional and social expenditure.[2] Trauma in head, neck and face is one of the most prevalent outcomes of trauma. Common etiological agents of facial traumaare road traffic accidents (RTA); fall on face and from height, violent aggressive encounters and penetrating wounds. Several studies have been conducted worldwide to investigate the epidemiology of these facial fractures in different localities.[3]

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. [4] The maxillofacial skeleton is commonly fractured due to its prominent position. The pattern of maxillofacial fractures varies from one country to another.[5] Maxillofacial region (MFR) involves soft and hard tissues forming the face extending from frontal bone superiorly to the mandible inferiorly.[5]

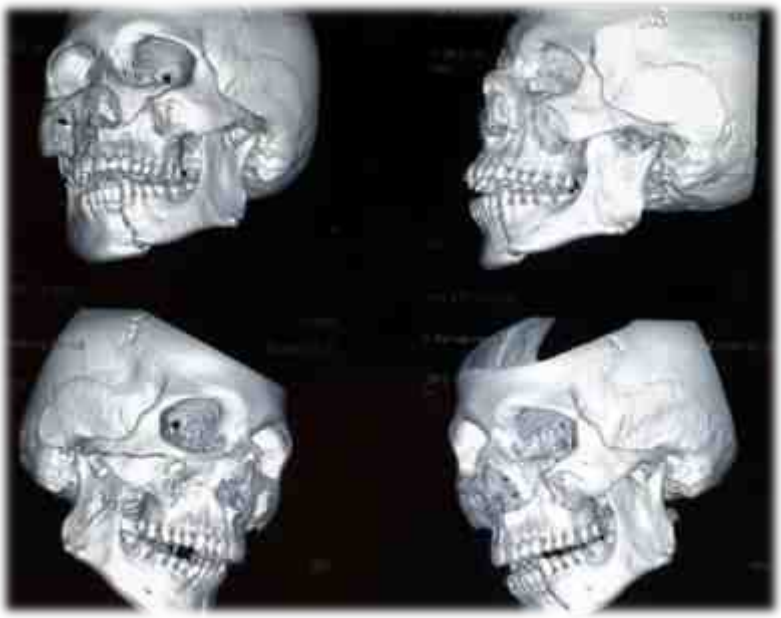


IMAGE 1: 3D CT RECONSTRUCTION

Etiology of facial injury has slowly changed over the last four decades. In Europe, assault and fall were the main causes of facial fractures, while in Asia and Africa, road accidents are the main cause[5.] Very few studies on maxillofacial fractures have been done in Northern India. Uttar Pradesh is the most populous state in Republic of India and the most populous country subdivision in world.

The densely populated state, located in the northern region of the Indian subcontinent, has over 200 million inhabitants. The huge population also results in several cases of RTA annually which is one of the leading causes of maxillofacial trauma The aim of the study was to evaluate the etiology, incidence, patterns and treatment modalities of maxillofacial trauma in northern India taking into consideration Uttar Pradesh region.

METHODS AND MATERIALS:

A retrospective study was conducted in Department of Otolaryngology and Head and Neck Surgery, SRMSIMS, a tertiary care centre in Bareilly, Uttar Pradesh, India from May 2016 - October 2018. Medical records of 53 patients in and around west Uttar Pradesh with maxillofacial injuries admitted in our hospital were studied. Parameters assessed were age, sex, time, and mechanism of injury, etiology of injury, type of vehicle, use of preventive measures, fracture type, treatment received. All patients underwent a thorough history and clinical assessment along with radiological investigations including 3D CT face reconstruction and were managed in the hospital.

RESULTS:

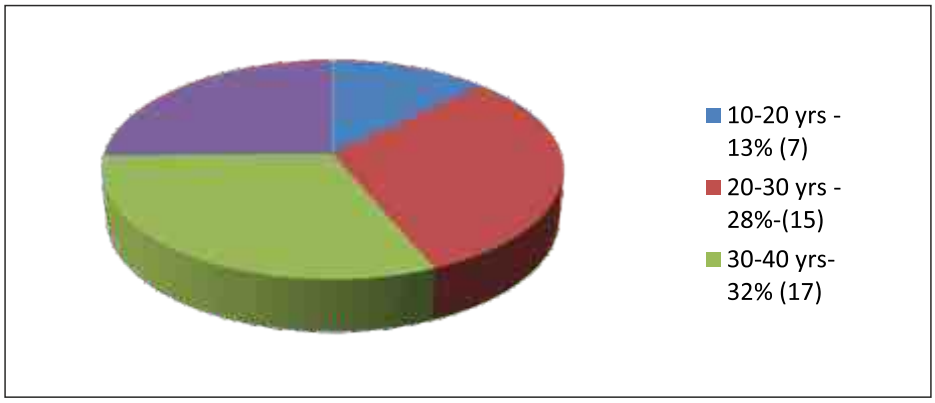
A total of 53 patients were analysed over a 2 year study period. The youngest patient was 15 years old and eldest 48 years old. Male to female ratio was 3.4:1. Majority of patients were males. (Table 1)

TABLE 1: NUMBER OF PATIENTS

SEX	NO. OF PATIENTS	PERCENTAGE
MALE	41 patients	77.4%
FEMALE	12 patients	22.6%

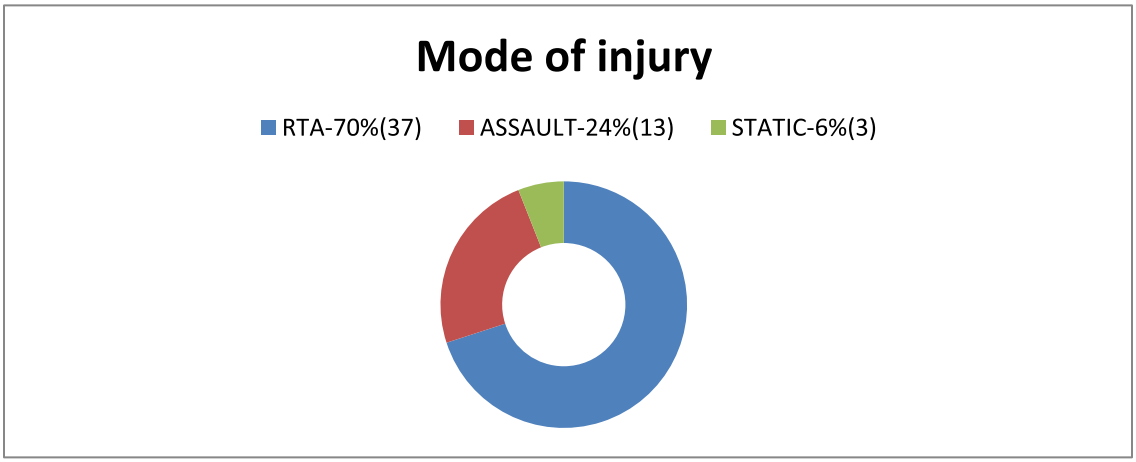
Majority of patient's i.e. 32(60%) were in the 20 to 40 year age group.

FIGURE 1: AGE WISE DISTRIBUTION OF PATIENTS



RTA is the most common cause of maxillofacial trauma seen in 37 cases followed by 13 cases of assault injuries. Static injuries were present in 3 patients. In this accident occurred when patient was not driving any vehicle and was either a pedestrian crossing road or standing by the road.

FIGURE 2: MODE OF INJURY



In RTA, the most common vehicle involved was bike 29(77.8%). Cycle was involved in 5(13.4%) cases and car in3 (8.7%). In cases of assault, 10(76.92%) were with a wooden stick while rest 3(23.08%) cases were by metallic object. In static injuries, 2 patients were rammed by an uncontrolled four wheeler waiting roadside while one patient was injured when a under construction wall fell over him.

Majority of patients, 19(35.84%) were students followed by Businessman 13(24.52%) and farmers who formed 12(22.64%) of the study group. Students had high number of road traffic accidents and assault whereas static injuries were seen to be more common in roadside vendors.

TABLE 2: PROFESSION OF PATIENTS

PROFESSION	NO. OF PATIENTS			TOTAL	PERCENTAGE
	RTA	ASSAULT	STATIC		
Student	14	07	00	21	39.62%
Farmer	09	02	01	12	22.64%
Businessman	10	03	00	13	24.52%
Serviceman	03	01	00	04	07.54%
Vendors	01	00	02	03	05.68%

In cases of RTA, travelling for tourism 10(27.02%) and trips for partying 12(32.43%) emerged as two major causes which resulted in accidents. Other important causes were trips to meet family and job related travels.

TABLE 3: REASON OF TRAVEL

TRAVEL REASON	NO. OF PATIENTS	PERCENTAGE
JOB	05	13.51%
PARTY	12	32.43%
TOURISM	10	27.02%
EMERGENCY	03	08.10%
MEETING FAMILY OUTSTATION	07	18.91%

A major reason of these maxillofacial traumas came out to be due to lack of adherence to traffic laws and preventive measures. Majority of the drivers and passengers were not using helmets and seat belts at the time of incidents which highlighted the casual approach of citizens towards complying to traffic rules meant for their own safety.

TABLE 4: USE OF PREVENTIVE MEASURES

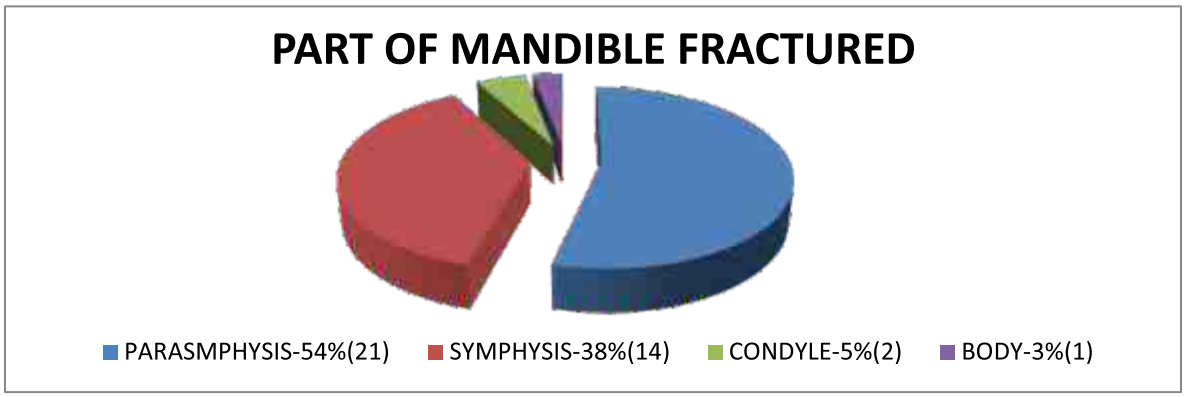
PREVENTIVE MEASURE		NO. OF PATIENTS	
		USED	NOT USED
TWO WHEELER	**HELMET OF DRIVER**	03	19
	HELMET OF BACK SEAT RIDER	01	06
	REFLECTORS ON BYCYCLE	03	02
FOUR WHEELER	**SEAT BELT DRIVER**	00	01
	SEAT BELT FRONT SEAT	00	01
	SEAT BELT BACK SEAT	00	01

Fracture mandible was the most common bone fractured in this study followed by fracture maxilla. In fractures of mandible, parasymphysis was the most fractured part 54 %, symphysis fractures were 38%. Condylar and body fractures accounted for 5% and 3% respectively.

TABLE 5: FRACTURE TYPES

TRACTURE TYPE	NO. OF PATIENTS	PERCENTAGE
FRACTURE MANDIBLE	36	67.9%
FRACTURE MAXILLA	6	11.3%
FRACTURE ZYGOMA	5	9.4%
FRACTURE NASAL BONE	2	3.8%
FRACTURE MAXILLA , MANDIBLE ,ZYGOMA	2	3.8%
FRACTURE MANDIBLE AND NASAL BONE	1	1.9%

FIGURE 3: PART OF MANDIBLE FRACTURED



Most cases of Facial trauma occurred during night and early morning time. About 34% were under the influence of alcohol during the incident i.e in 18 patients during examination had evidence of alcohol intake present. 2 patients had history of drug abuse prior to the injury.

TABLE 6: TIME OF INJURY

FACIAL INJURY INCIDENT TIMING	TOTAL NUMBER OF PATIENTS	SUBSTANCE ABUSE	
		ALCOHOL INFLUNECE	DRUG INTAKE
MORNING (6 AM -10 AM)	09(18%)	02	01
EVENING (4PM – 7PM)	15(28%)	03	00
NIGHT TIME– EARLY MORNING (11PM-4AM)	29(54%)	13	01

After assessment with help of X Ray and preferably 3D CT with facial reconstruction, open reduction and internal fixation (ORIF) was done in 87% patients, Inter maxillary fixation (IMF) in 6%, nasal bone reduction in 2%, ORIF with nasal bone reduction in 2% whereas 3% patients were conservatively managed.

FIGURE 4: MANAGEMENT OF FACIOMAXILLARY TRAUMA

DISCUSSION:

The incidence of maxillofacial fractures vary with the geographic region, socioeconomic status, culture and religion[6]. Maxillofacial trauma is most common outcome of road traffic accidents.

IMAGE 2: ORIF PLATING

IMAGE 3: INTERMAXILLARY WIRING

The ratio of male to female in our study was 3.4:1 which is in agreement with studies done by Kar et al and Ravindran et al[7,8] As per studies done by Weihsin et also there was pre-ponderence of male more than females.[9] This is most likely due to the fact that in the lower socioeconomic group, which constitutes the bulk of the patients coming to this particular hospital, men are often the primary bread winners of the family and tend to remain outdoors for a long period of time, thus making them susceptible to trauma in general and maxillofacial trauma in particular. Also, females drive less frequently and

are thus less likely to be involved in vehicular accidents. They are also less vulnerable to sport-related injuries and to falls and violence related to alcohol consumption.

In the present study, most commonly affected age group was between 30 and 40 years i.e 32 %, whereas studies from other states of India such as Gujarat[9], Karnataka[10], Haryana[5] and Delhi[11] mentioned the common age group between 21 and 30 years.

Indian studies from various states show road traffic accident being the leading cause of maxillofacial trauma except a study from New Delhi done by Kapoor et al which showed assault to be the main cause[11]. The etiology of maxillofacial injuries is known to vary from one geographical region to another. In developing countries such as ours, road traffic accident is seen to be the most common cause of facial trauma and this has been confirmed by some of the previous studies such as that by Chandrashekar et al.[12] Alcohol was another contributing factor leading to increasing chances of maxillofacial trauma. Our study results were in agreement with the study by Kar et al.[7] High speed driving, non-permitted overtaking and the lack of compliance to traffic rules may explain the occurrence of traffic accidents in the region studied.

Among road traffic accidents, two-wheeler is most common vehicle involved in 77.4% of patients . This can be attributed to the fact that there are are no strict laws for helmet. In a study conducted in India by Weihsin et al and Shah et al the highest incidence of road traffic accidents involving two wheelers is because young adults favor speedy bikes which when run on bad roads without wearing helmet, lead to maxillofacial injury and head injury.[9,13]

IMAGE 4: ORIF PLATING 2

Most frequently, facial bone involved was the mandible which is similar to various studies across India. Preponderance of mandible is due its prominent anatomical position, it being the only movable facial bone and inherent structural weakness, leading to greater chance of being fractured.[6,14] Parasymphysis fracture was the most common mandibular fracture accounting for 54% , which is similar to other Indian studies[5,14]. However study by Gali et al has found condylar fractures as most common site.[1]

In our study ORIF was the most preferred surgical modality which was same as in study of Kamath RA et al [14], Manodh et al [15] and P Manodh D et al[16]. Open reduction internal fixation is preferred than closed reduction in various centers in India[5]. A study done in brazil by Farias et al also recorded the same findings of ORIF being the most employed surgical procedure for maxillofacial trauma as described in our study.[16]

Conclusion:

Most common cause of maxillofacial trauma is road traffic accidents followed by interpersonal violence or assaults. It occurs most commonly in young adults, especially in men .The most common affected site was mandible associated with soft tissue injuries of face The use of alcohol and subsequent drunk driving was another contributing factor. There has to be strict regulations installed by the government to ensure compliance of rules regarding use of seat belts while driving and use of helmet while riding two-wheeler. Better compliance of traffic rules can be achieved in the long run by conducting awareness camps in schools and colleges regarding road safety.

The epidemiological data of every hospital is important to analyze the etiological factors of accidents and implementing strict rules to prevent them and to help the government to create new guidelines to prevent these injuries. Open reduction internal fixation remains the choice of treatment considering good fracture reduction and providing early functional outcomes. It promotes the patient's oral health-related quality of life, and minimizes any mastication disability resulting from prolonged immobilization of the jaws, thus having better nutritional status compared to closed reduction methods like inter maxillary fixation.

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