



A PROSPECTIVE STUDY ON THE EPIDEMIOLOGY AND MANAGEMENT OF MANDIBULAR FRACTURES IN A TERTIARY CARE CENTRE (OSMANIA GENERAL HOSPITAL)

Plastic Surgery

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ABSTRACT

Background:- The fractures of mandible is one of the most common cases encountered by any plastic surgeon. These fractures lead to malocclusion of dentition making surgical management essential. The prominent position of mandible renders it susceptible to trauma. Major injuries due to high energy impact, especially high speed two wheeler accidents & together with not wearing of proper protective equipment, requires multi-disciplinary team approach, as they involve multiple facial bone fractures, and are real burden to plastic surgeons. Mandibular fractures are often associated with fractures of maxilla, nasal bones, zygoma, in high energy impact injuries. In this study, epidemiological parameters like drunken driving, habits like wearing helmets while driving, age, sex, etiology, management & complications have been studied.

Materials & Methods:- Study Design: This is a prospective, observational, hospital based study conducted on 40 patients. Study Period: From may 2023 to October 2023. Duration of study : 6 months. Source Of Data: 40 patients who underwent surgery for fracture mandible admitted in the Department of Plastic and Reconstructive Surgery in osmania general hospital. A prospective, hospital based observational study involving observation of patients from admission to final outcome of management at discharge & follow up for 6 weeks.

Results: In this departmental study, out of 40 patients 37 patients were males & 03 patients were females. Majority of patients age group was in the range of 31 to 40 years. Road traffic accidents (RTA) was the most common cause of mandibular fractures. Pain was the most common symptom complained by patients & malocclusion was the most common sign noticed by doctors. Parasymphysial fractures was the most common fracture noticed, treated by open reduction & internal fixation (ORIF).

Conclusions: RTA is the leading cause of mandibular fractures. Drunken driving & not wearing helmets are major contributing factors in causing mandibular fractures. Domestic violence is the leading cause of mandibular fractures in females. Mandibular fractures are common in males. Open Reduction Internal Fixation + Arch Bar + Maxillary Mandibular Fixation, was the mainstay of treatment with good healing & achieving class 1 occlusion with least complications.

KEYWORDS

Mandible, Mandibular Fractures, Angle Fractures, Parasymphysis, Fractures

INTRODUCTION

The fractures of mandible is one of the most common cases encountered by any plastic surgeon. These fractures lead to malocclusion of dentition making surgical management essential. The prominent position of mandible renders it susceptible to trauma. Major injuries due to high energy impact, requires multi-disciplinary team approach, as they involve multiple facial bone fractures, and are real burden to plastic surgeons. The objective of fracture management is anatomical restoration of displaced bone fragments to their native pre-morbid position with application of maxillary MANDIBULAR fixation &/or open reduction and internal fixation, until osseous union takes place.

MATERIALS & METHODS

Aim:- To study The age, sex, etiology, social behavior in association with fractures of mandible, Type of surgery done, Follow up complications & outcomes of the procedures.

Study Design: This is a prospective, observational, hospital based study conducted on 40 patients.

Study Period:

- From may 2023 to October 2023.

- Duration of study : 6 months

Source Of Data: 40 patients who underwent surgery for fracture mandible admitted in the Department of Plastic and Reconstructive Surgery in osmania general hospital

Inclusion Criteria

- All patients with facial trauma with mandibular fractures, presenting to emergency department.
- Age group 1-65 years

Exclusion Criteria

- Patients unfit for anesthesia.
- Patients with multiple comorbidities.
- Patients not willing to participate in the study.
- Age: < 1 year and > 65 years.
- Patients with GCS less than 8.

A prospective, hospital based observational study involving observation of patients from admission to final outcome of management at discharge & follow up for 6 weeks.

Patients presenting to the hospital with facial fractures will undergo

clinical examination and below mentioned investigations following which information regarding the mode of presentation, age, sex, relevant history, signs and symptoms, treatment offered will be collected in a pretested, semi-structured proforma cum observational check list and followed up by telecommunication.

Investigations

1. Hemoglobin percentage
2. Renal function tests
3. Liver function tests
4. Total and differential WBC count
5. ECG
6. Blood grouping & rbs
7. HIV/HBsAg
8. Abdominal and chest X-ray erect and supine
9. Ultrasonography abdomen
10. Bleeding time & Clotting time
11. 3D CT FACIAL BONES
12. COMPLETE URINE ANALYSIS.

In this study, epidemiological parameters like drunken driving, habits like wearing helmets while driving, age, sex, etiology, management & complications have been studied.

RESULTS

Gender Distribution:- out of 40 patients 37 patients were males & 3 patients were females. Males constitute 92.5% of all mandibular fractures in our study population.

Age Distribution of patients:- majority of patients were in the age group of 31 to 40 years of age.

Age Group	No of Patients	Percentage (%)
1 to 10	2	5
11 to 20	7	17.5
21 to 30	12	30
31 to 40	15	37.5
41 to 50	3	7.5
51 to 60	1	2.5

Site of Accident :- majority of accidents occurred on main streets, bigger streets, some distance away from their homes

S.No	Site	No of patients	Percentage (%)
1	HOME- small lanes	05	12.5 %
2	STREET	30	75 %
3.	HIGHWAY	05	12.5 %

Time Of Accident:- Majority of accidents occurred on daytime.

Day Time : Timings between 6:00am to 6:00pm

Nighttime : Timings between 6:00pm to 6:00am

TIME OF ACCIDENT	NO OF PATIENTS	PERCENTAGE
DAYTIME	31	77.5 %
NIGHTTIME	09	22.5 %

Etiology Of Fracture Mandible:- Majority Of Accidents Occurred Due To Road Traffic Accidents (RTA)

ETIOLOGY	NO OF CASES	PERCENTAGE
RTA	30	75%
FALL FROM HEIGHT	03	7.5%
ASSAULT	07	17.5%

RTA CATEGORY	NO OF PATIENTS	PERCENTAGE OF TOTAL	% OF TOTAL OF ALCOHOLICS	% OF TOTAL OF NOT WEARING HELMETS
BIKE RIDER	26	65 %	37.5 % (15)	55 % (22)
BICYCLE RIDER	03	7.5 %	2.5 % (1)	7.5 % (3)
PILLION RIDER	01	2.5 %	2.5 %	2.5 %
PEDESTRIAN	00	00		
TOTAL		75 %	42.5 %	65 %

Among RTA patients, majority of patients were bike riders (65%), and

55 % of patients were not wearing helmets & 42.5 % of patients were under the influence of alcohol.

ETIOLOGY	NO OF PATIENTS	PERCENTAGE	GENDER	PERCENTAGE
FALL FROM HEIGHT	3	7.5 %	TWO MALES	5 %
			ONE FEMALE	2.5 %

Fall from height was the etiology for 3 patients, out of which 2 patients were males & one patient was female.

ETIOLOGY	NO OF PATIENTS	PERCENTAGE	GENDER	PERCENTAGE
ASSAULT	7	17.5 %	FIVE MALES	12.5 %
			TWO FEMALE	5 %

Assault was the etiology of mandibular fractures in 7 patients, out of which 5 patients were males & 2 were females.

Etiology Among Females

ETIOLOGY	NO OF PATIENTS	PERCENTAGE AMONG FEMALES	NOT WEARING HELMET
RTA - PILLION RIDER	1	33.3 %	100 %
ASSAULT	2	66.6 %	
TOTAL	3	100 %	

All the female patients with fracture mandible were not wearing helmets, & assault was the major cause of mandibular fractures.

Etiology Among Males :- in males, RTA was the major cause of mandibular fractures.

CATEGORY	NO OF PATIENTS	PERCENTAGE AMONG MALES	ALCOHOLICS	NOT WEARING HELMET
RTA	29	72.5 %	40.5% (15)	59.5% (22)
FALL FROM HEIGHT	03	7.5 %		
ASSAULT	05	12.5 %		

Symptoms :- pain was the most common symptom complained by patients of mandibular fractures.

s.no	symptoms	No of patients	percentage
1	Pain	40	100 %
2	Difficulty in opening mouth	35	87.5%
3	Loss of sensations	3	7.5%
4	Difficulty in mastication	37	92.5%

Signs :- malocclusion was the most common sign noticed by doctors during examination of patients.

s.No	signs	No of patients	Percentage
1	Restricted mouth opening	10	25%
2	Open bite	08	20%
3	Cross bite	18	45%
4	malocclusion	30	75%
5	Step deformity	28	70%

Site of Mandibular Fractures :-

s.no	site	No of subjects	Percentage
1.	Parasymphysis	25	62.5%
2.	Angle	12	30%
3.	Condyle	06	15%
4.	Subcondyle	04	10%
5.	Dento-Alveolar	02	05%
6.	Coronoid	02	05%
7.	Symphysis	03	7.5%

Fracture mandible at parasymphysis region was the most common site of mandibular fractures in the study, it was observed in 25 patients accounting for 62.5% of total patients in our study.

Combinations of Fracture Sites :-

S.No	Site	No of subjects	Percentage
1.	PS + Angle	6	15%
2.	PS + Condyle	3	7.5%
3.	PS + Subcondyle	2	05%
4.	B/L condyle	2	05%
5.	B/L PS	1	2.5%
6.	SYMPHYSIS + CONDYLE	2	05%
7.	PS/BODY/ANGLE + ZYGOMA	5	12.5%

Among the fracture mandible cases, some patients had multiple facial fractures & fracture mandible parasymphysis plus mandibular angle fracture was the most common combination of facial fractures observed in 6 patients constituting 15% of all mandibular fracture patients.

Surgical Management:-

Open reduction internal fixation + eric's arch bar for mandibular teeth + eyelets for maxillary teeth was the most common mode of surgical management of mandibular fractures in our study.

s.no	Type of surgery done	No of patients	percentage
1	Cap splinting	1	2.5%
2	Interdental wiring	2	5%
3	Mandibular eyelets + imf	8	20%
4	ORIF+AB+IMF	29	72.5%

Complications :-

Post surgical management, persistent malocclusion was the most common complication observed in mandibular fractures patients, observed in 3 patients constituting 7.5% of total patients, for which patients were referred to Osmania dental hospital for correcting the malocclusion if required & desired by patients.

s.no	complication	no	Percentage
1.	Malocclusion	3	7.5%
2.	Wound infection	1	2.5%
3.	Traumatic oral ulcers	1	2.5%

DISCUSSION

RTA is the leading cause of mandibular fractures. Drunken driving & not wearing helmets are major contributing factors. Domestic violence was the leading cause of mandibular fractures in females. Mandibular fractures are common in males when compared to females. RTA occur most commonly in mainroads at daytime. Isolated mandibular parasymphysis fractures followed by angle fractures & condyle fracture were the commonest sites of mandibular fractures following Road Traffic Accidents (RTA).

CONCLUSION

Open Reduction and Internal Fixation (ORIF) + Arch Bar (AB) + Maxillary Mandibular Fixation (MMF), was the mainstay of treatment with good healing & achieving class I occlusion with least complications. Strict laws like compulsory wearing helmets & strict punishments for drunken driving will help in preventing many accidents. Counselling & education will help in preventing domestic abuse in homes.

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