IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 16, Issue 12 Ver. I (Dec. 2017), PP 05-16
www.iosrjournals.org

A Study Of Mandible Fractures And Management Analysis.

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Abstract
Introduction: *The mandible is reportedly the most common fractured bone in facial trauma. The primary goal of the management of fractured mandibule is restoration of its form and function.*
Aim of the study: *To record the number of patients with fracture mandible, following trauma, who underwent treatment in our department during study period, study the age and sex group of patients involved , analyse the various causes of injuries that led to the fracture mandible, study the different region/s in mandible affected, study the various modalities of treatment applied, study the functional outcome of the treatment, give awareness to the patient's relatives about proper follow up of patients.*
Materials and Methods*:Patients who reported to the Plastic Surgery Department, Government Rajaji Medical College hospital, Madurai with Fracture of Mandible were included in the study. The study period was from October 2015 to Mar2017. The patients were referred from other departments or came directly to the Plastic surgery Department opd.*
Results: *Majority of patients affected are from 15 to 45 age group forming 73 % of total incidence. Road Traffic Accidents and accidental fall constitute common causes of mandibular fractures. Majority of fractures are seen in the angle and parasymphyseal region. Single fractures are the most common type of fractures in this study. Among multiple fractures the combination of one side parasymphyseal and another side angle fractures are common. Majority of patients have been managed with open reduction and internal fixation with miniplate and screws.*
Conclusion: *An average of 33 patients per year reporting to our plastic & reconstructive surgery department for treatment. Using mini plates and screws has significantly reduced the post- operative morbidity of the patient to a great extent, allowing for an early mobilization. Adhering to Road traffic rules will prevent the Road Traffic Accidents and thus mandible fractures.*
Keywords: *Mandible fractures, Accident, Parasymphysis, Open reduction, Mini plates, Screws, Wire.*

Date of Submission: 08-11-2017 Date of acceptance: 05-12-2017

I. Introduction

The mandible is reportedly the most common fractured bone in facial trauma. The fractures found predominantly in males and in the age groups between 25 to 34 years . The primary goal of fracture mandibule management is to restoration back of its form and function. Minimizing infection, malunion, soft tissue breakdown, and technical challenges should be included in the overall management of fractures.

II. Aim oF The Study

1) To record the number of patients with fracture mandible, following trauma, who underwent treatment in our department during study period
2) To study the age and sex group of patients involved
3) To analyse the various causes of injuries that led to the fracture mandible
4) To study the different region/s affected
5) To study the various modalities of treatment applied
6) To study the functional outcome of the treatment
7) To give awareness to the patient's relatives for proper follow up of patients.

III. Materials And Methods

All patients With fracture mandible came directly to the Plastic Surgery Department OPD or referred from other departments in Government Rajaji Medical College hospital, Madurai were included in the study.

3.**1The study period was from October 2015 to Mar 2017. The methodology adopted consists of recording**

1. Causes of injury
2. Age and sex groups involved
3. Region of the mandible affected
4. Investigations and treatment planning
5. Preliminary and comprehensive treatment performed
6. Pre-operative and post operative occlusion
7. Management of other injuries
8. Post operative assessment
9. Complications that occurred

All these necessary data were recorded in a proforma.

98 patients of mandibular fractures were registered in the plastic surgery department during the study period.Detailed history regarding nature of injury and symptoms were obtained. A thorough physical examination was done to assess the general status of patient, assess other major and minor injuries, site and number of fractures of the mandible.

Investigations were done which included X-Ray skull AP/Lateral view, X-Ray mandible PA view and Lateral view, Ortho-pantomogram, CT-Scan with 3D reconstruction as required.If indicated and once the patient is fit for surgery, open reduction and internal fixation with Miniplate and screws were done to the majority of patients.

Some patients of with good tooth occlusion who had associated head injuries were managed with maxillo-mandibularfixationalone for 3 to 4 weeks.

IV. Results And Analysis

The total number of patients treated during the study period at the plastic surgery department was ninety eight

Table 1Age-wise distribution in Mandibular Fractures

Age group	No. of patients
e1- 14	3
15- 24	12
25- 34	42
35- 44	18
45- 54	14
55- 64	8
65- 74	0
75- 84	1
Total	98

Majority of the patients are in the 15 to 44 age group, forming 73 % of total incidence.

Table 2. Sex-wise distribution of Mandibular Fractures

Sex Male Female Total	No. of patients
	80
	18
	98

Males are predominantly affected victims

Table3 Aetiology of Mandibular Fractures

Nature of injury	No. of patients
Road Traffic Accidents	51
Fall	27
Assault	19
Sports injury	1
Total	98

Road Traffic Accidents and accidental fall constitute majority of cause of mandibular fractures. With increasing urban violence the incidence of assaults are also on the rise.

Table 4Site-wise distribution of Mandibular Fractures

Site of fracture	No. of fractures
Para-symphyseal	44
Angle	26
Body	10
Symphyseal	8
Condyle	5
Ramus	3
Dento-Alveolar	2

Majority of fractures are seen in the parasymphyseal and angle

Table 5: Nature of Mandibular Fractures

Nature of fracture	No. of fractures
Single fracture	**44**
Multiple fractures	**54**
Parasymphyseal with angle	26
Parasymphyseal with body	20
Parasymphyseal with condyle	08

Single fractures are the most common type of fractures in this study. Among multiple fractures the combination of one side parasymphyseal and another side angle fracture is the most common.

Table 6Management of Mandibular Fractures

Management option adopted	No. of patients
1)MAXILLO-MANDIBULAR FIXATION(MMF)	24
2)OPENREDUCTIONANDINTERNAL FIXATION WITH MMF	74
a)Miniplate and screws	65
b)Stainless steel wire	8
c)Bonegraft with miniplate and screws	01

98 patients of mandibular fractures were taken up for our study.

24 Patients with minimal or undisplaced fractures of mandible managed with mandibulo maxillary fixtion(MMF) , whose jaws immobilized for 3 weeks and were advised to take liquid and fluid diets only during that period.. Gave follow up to them for a period of 3 months , the fracture united successfully. In open method. 66 out of 74 patients(87%). have been managed with open reduction and internal fixation with miniplate and screws , 8 others by using stailess steel wireIntra-oral approach avoided external scars and provides better opportunity to achieve proper reduction and fixation for symphysis, parasymphysis, body of mandible fractures and can be performed easily with experience .

In the initiai Stages of study, Risdon and retro-mandibular incisions were carried out for high angle fractures in 8 patients . With progressing experience those type of cases were managed with intra-oral incisions.For Ramus,sub condyle and Condyle fractures approached through external incisions .

Table 7: Patient with associated injuries

Nature of Injury	No.of Patients
Head Injuries	15
Panfacial fractures	12
Soft tissue Injuries face	10
Lower Limb Injury	3
Upper Limb Injury	2
Chest wall Injuries	2

44 patients in the total number, had also associated injuries, 15 of which had head injuries. All the

Patients who had Panfacial fractures were managed well withORIF.

All the patients were followed up for a period of 2 months to 2 years. The duration of hospital stay in these patients ranged from 2 days to 25 days, averaging 15days.

Table 8 Post management complications

Complications	No.of Patients
1. Impacted molar in the line of fixation 2.Malocclusion with IMF	**01**
3. Marginal mandibular nerve paraesis	**03**
	04

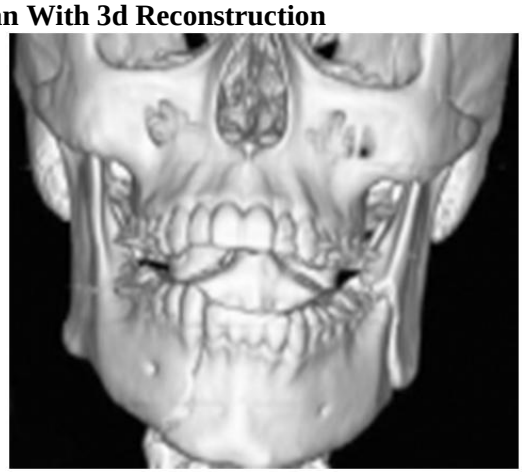
The following post operative complications noted in 8 patients .These include

1. A patient with impacted molar in the line of fixation which produced persistent pain which was managed with dental extraction
2. Marginal mandibular nerve paraesis were noted in four patients with Angle fracture approached through submandibular incision.
3. A 23 year old female patient who had right undisplaced parasymphyseal fracture ,managed with maxillary-mandibulo fixation(MMF) alone and found to have mouth opening restriction with inter incisor distance of 1.5 cms, encountred immediately after removal of MMF , it managed with dynamic mouth opening splint and she had full mouth opening in 2 months time.
4. Two patients with left side angle and right side parasymphyseal fracture who were managed with MMF initially as they had associated head injuries . Since they had inadequate reduction of fracture and were managed with ORIF with miniplates ,thus adequate reduction and fixation obtained.

All the patients who were managed by us were found to have good postoperative tooth occlusion, adequate mouth opening and good reduction of fractures.

X-Ray Facial Bones

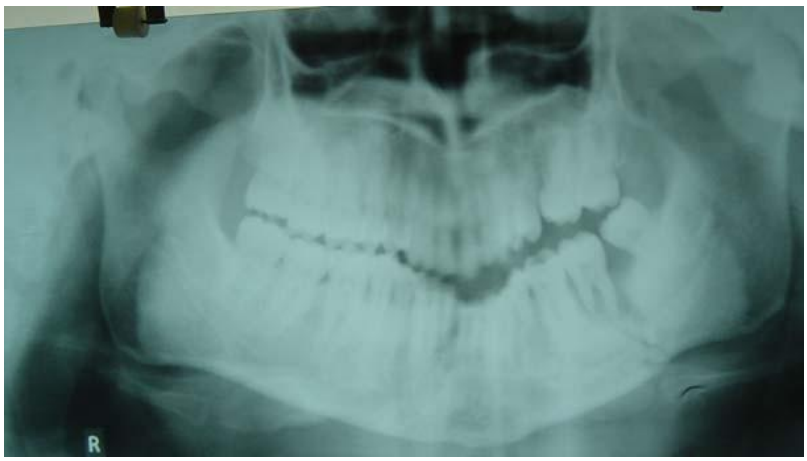
Ct Scan With 3d Reconstruction



Ortho Pantomogram

R Angle, L Para Symphyeal Fracture

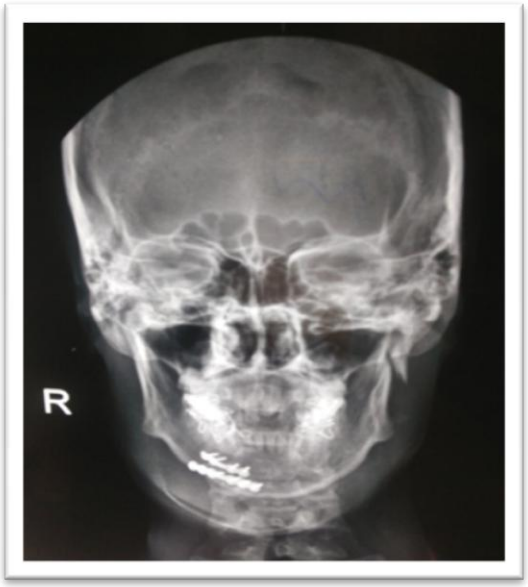
B/ L subcondylar Fracture



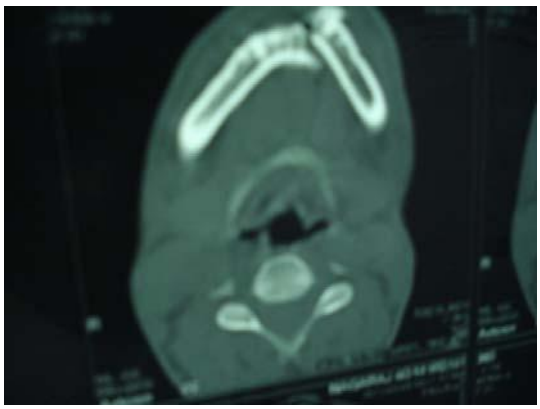
L Body Fracture

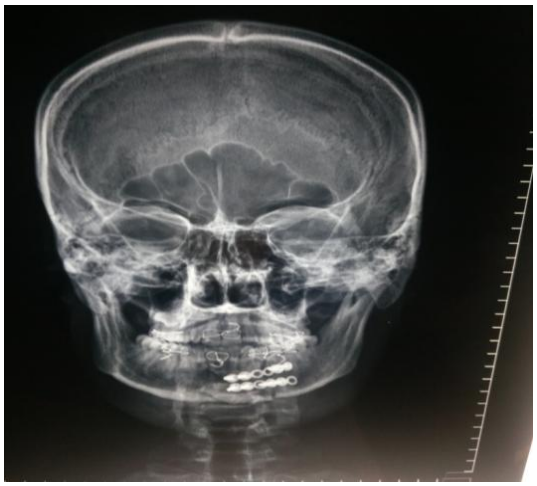
V. Left Parasymephyseal Fracture With Imf

VI. Right Para Symphyseal Fracture With Orif



VII. Left Body Of Mandible Fracture With Orif





VIII. Right Angle Fracture With Orif

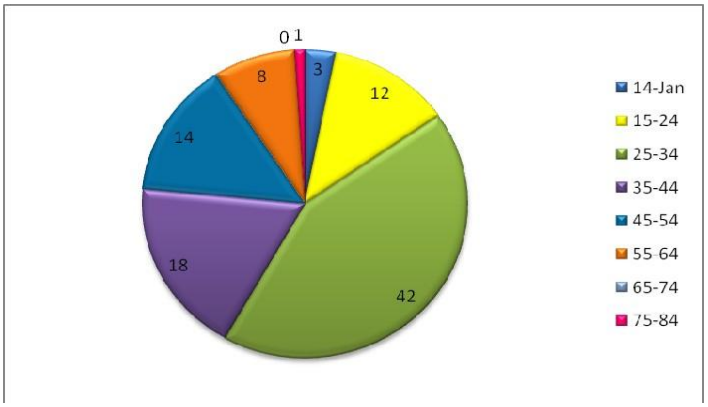
IX. Rt Body With Left Parasymphyseal Fractures With Orif

X. Right And Left Sub Condyle Fractures – Orif Done

XI. Discussion

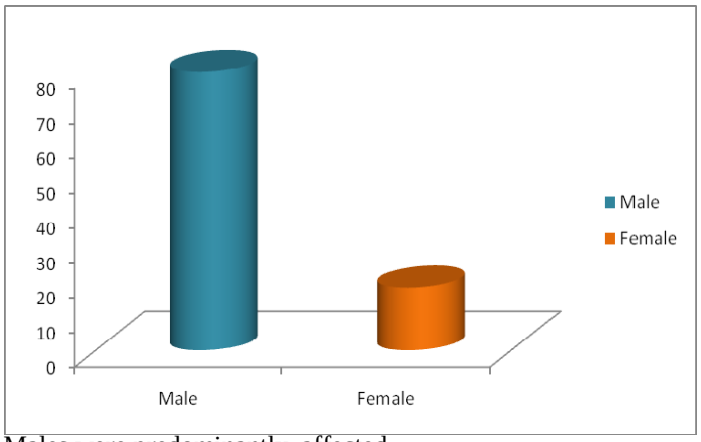
- 98 patients of Post-traumatic Mandibular Fractures were registered during our study period Majority of the Mandibular Fractures were found to be in the 15 to 45 years age group, with predominance in 25-34 years age.

14.1 Age wise Distribution



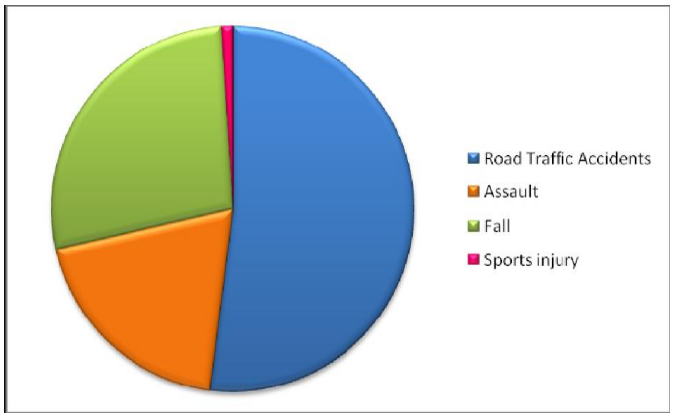
The age group 25-34 has the highest incidence 42.8 % in this study. In this study the youngest patient was 4 years old female and the oldest patient was 71 years old male. These results are in comparison to a study by ogundare et al (2003), which shows the highest incidence in 25-34
year age group in urban major trauma center.

14.2 Gender wise distribution



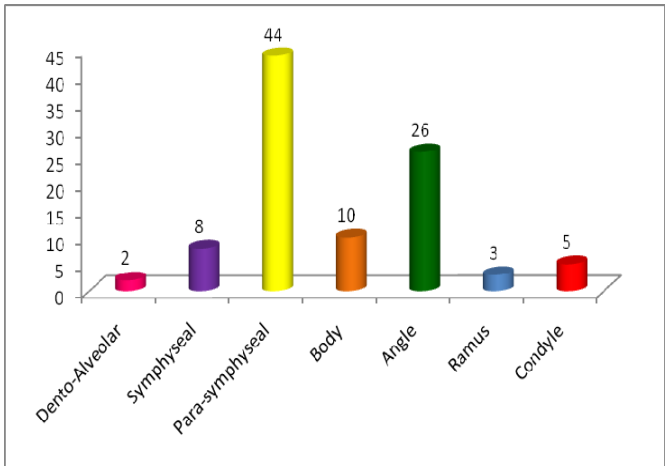
Males were predominantly affected

14.3 Etiology wise Distribution

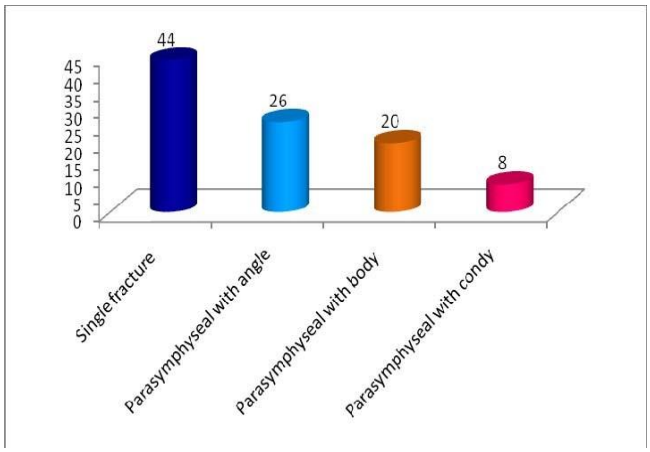


Road Traffic Accidents were the most common cause of Mandibular Fractures

14.4 Site-wise distribution

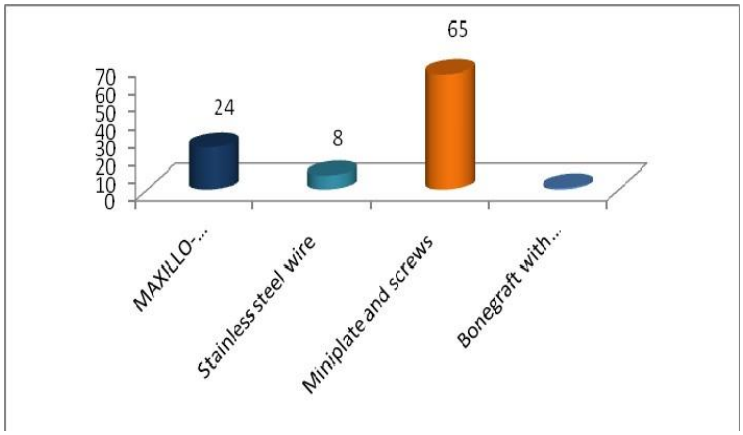


Most of the fractures occurred in the parasymphyseal region, when multiple, the combination of one side angle and other side parasymphyseal is the predominant variety..



Single fractures were most common, followed by multiple fractures.

11.5 Management Modalities



1. On an average, patients reported to the department 10 hours after the injury
2. 24 Out of 98 patients were managed with closed technique (MMF) and remaining
3. 74 patients treated surgically (Open Reduction & Internal fixation.)
4. In open technique, open reduction and internal fixation were done to 65 patients using Miniplates and Screws.

XII. Summary And Conclusions

An average of 33 patients per year reporting to our plastic & reconstructive surgery department.
Physical examination will often identify the location of fracture, which can then be verified radiographically.
Increasing vehicular traffic accidents and assaults are forming the majority of causes of Mandibular Fractures.
CT scan with 3D reconstruction and Ortho Pantomogram has given us an accurate way of detecting Mandibular fractures.Mandibular Fractures.patients with concomitant head injuries can also be managed efficiently simultaneously .Intra-oral incisions, which avoids an external scar, it provides the necessary access and caters to the aesthetic expectations of the patient.Rigid fixation of fracture mandible with mini plates and screws has significantly reduced the post-operative morbidity of the patient to a great extent, allowing for an early Jaw mobilization.
Adhering to Road traffic rules will prevent the Road Traffic Accidents and mandible fractures.

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