Section: Plastic Surgery

Original Research Article

# MANAGEMENT AND OUTCOMES OF MANDIBULAR FRACTURES IN A TERTIARY CARE CENTER: A RETROSPECTIVE COHORT STUDY

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## ABSTRACT

**Background:** Mandibular fractures are among the most common maxillofacial injuries, often resulting from road traffic accidents, falls, or assaults. Tertiary care centers play a pivotal role in the management of such fractures, providing multidisciplinary expertise. The objective is management and Outcomes of Mandibular Fractures in a Tertiary Care Center: A Retrospective Cohort Study. **Materials and Methods:** A retrospective cohort study was conducted among 115 patients with confirmed mandibular fractures treated over a 3-year period. Demographic data, fracture characteristics, treatment modalities, complications, and outcomes were collected and analyzed using descriptive and comparative statistics. **Result:** Among the 115 patients, 89.6% were male and 10.4% were female. The highest incidence was observed in the 21–30-year age group. Common causes included road traffic accidents and falls. Postoperative complications Infection:4.4%. Malocclusion: 2.6%, Sensory Deficits: 3.5%, Implant removal- 0.89%. **Conclusion:** Young adult males represent the highest risk group for mandibular fractures.

## INTRODUCTION

Mandibular fractures are a prevalent subset of maxillofacial trauma, attributed to the anatomical prominence and mobility of the mandible. They account for a considerable proportion of facial skeletal injuries and may significantly impair mastication, speech, and aesthetics. Tertiary care centers are uniquely equipped to provide multidisciplinary management involving plastic surgeons, anesthesiologists, and other specialists.[1-3] Although standard protocols exist for the management of mandibular fractures, variation persists in clinical outcomes based on the treatment modality, fracture site, patient comorbidities, and timing of intervention. This study retrospectively analyzes the epidemiology, management strategies, and outcomes in patients with mandibular fractures managed in a tertiary care setting.[4-6]

## MATERIALS AND METHODS

**Study Design and Setting:** This retrospective cohort study was conducted at a tertiary care academic institution. The institutional ethical committee approved the study protocol.

**Inclusion Criteria:**

- Patients diagnosed with mandibular fractures
- Treated at the study institution during the study period
- Complete medical records available

**Exclusion Criteria**

- Pathological fractures (e.g., malignancy, osteoporosis)
- Patients left against medical advise before definitive management.

**Data Collection:**

**Data were extracted from medical records, including:**

- Age, sex, and cause of injury
- Fracture pattern (site, complexity)
- Treatment details (fixation method, conservative protocols)
- Post-treatment outcomes: infection, malocclusion, sensory changes, patient satisfaction

**Data Analysis:** Descriptive statistics were used to summarize demographic data.

Multivariate logistic regression was used to identify predictors of poor outcome.

**Areas of Weak sites:**

- Canine Socket
- Neck Of The Condyle
- Third Molar Region

**Types of fracture**

- Simple
- Displaced fracture
- Comminuted fracture


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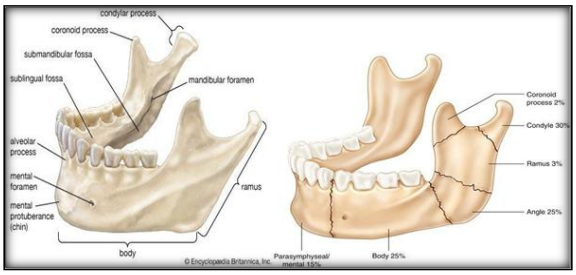
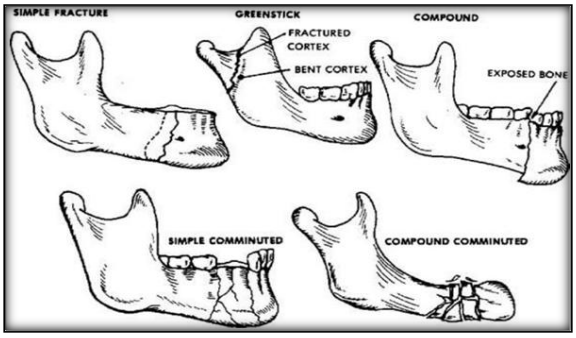
- Compound fracture
- Pathological fracture

**Anatomy**

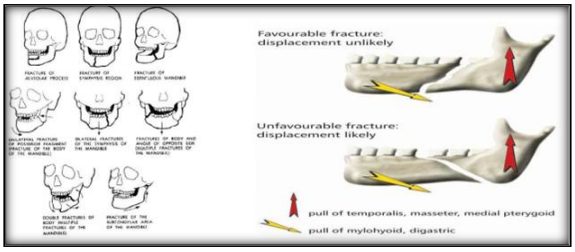



**Types of mandibular fractures**




**Sites of fractures**

- Condyle fracture
- Angle/ ramus fracture (body fracture)
- Canine region (parasymphesial fracture)
- Midline fracture (symphesis fracture)
- Coronoid fracture (rare) Types of mandibular fractures




**Horizontally Favorable:** fractures that are directed downward and forward.

**Horizontally Un Favorable:** fractures running from above, downward and posteriorly.

**Vertically Favorable:** The fracture that passes from the lateral surface of the mandible posteriorly and medially because the muscle pull tends to prevent displacement.

**Vertically Unfavorable:** the fracture runs from posteriorly forward and medially, displacement would take place in a medial direction because of the medial pull of the elevator muscles of mastication.

**Clinical assessment and diagnosis**

- History of trauma (traumatized patients with possible head injury) and facial injuries
- Clinical Examination

**Extra oral:** Inspection (assessment of asymmetery, swelling, ecchymosis, laceration and cut wounds) Palpation for eliction of tenderness, pain, step deformity and malfunction

**Intra- and paraoral:** bleeding, hematoma, gingival tear, gagging of occlussion and step deformity and sensory and motor deficiency

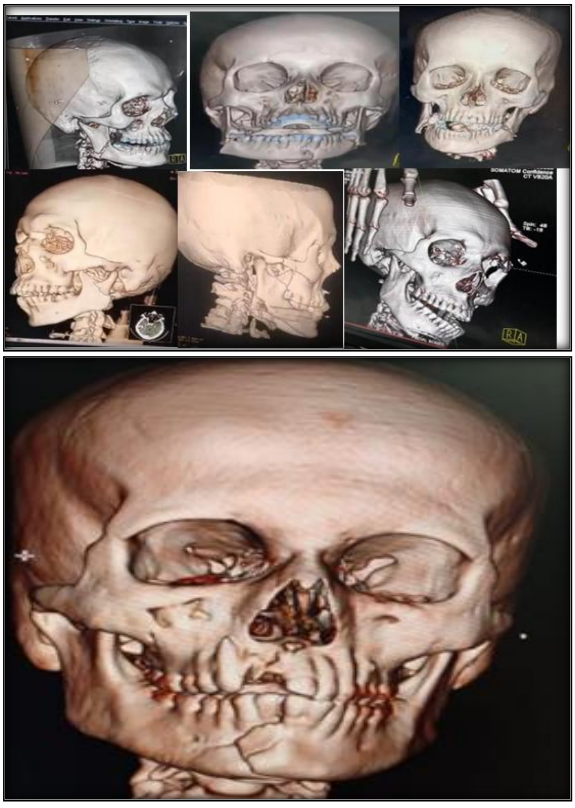
- The most consistent physical finding is dental malocclusion.
- It may be lateral cross bite or anterior open bite.
- Complete workup of the patients was done which included a detailed history and hematological and urine examination.
- Radiological investigation was based on the site of injury and the presenting clinical features.

Computed tomography (CT) scans were performed in cases of concomitant head injury and / or pan facial trauma cases.

**Radiographs**

- Plain radiograph
- OPG
- Lateral oblique
- PA mandible
- AP mandible (reverse Townes)
- Lower occlusal

**CT scan**



**Principles of treatment**

Reduction of fragments in good position Immobilization until bony union occurs These are achieved by:

Close reduction and immobilization Open reduction and rigid fixation Conservative Management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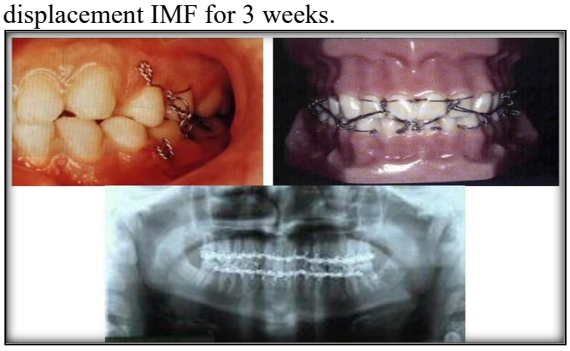
- With Undisplaced Asymptommatic Fractures, Treatment Consists Of Periodic Observation And A Mechanically Soft Diet For 3-6 Weeks.

**Closed reduction:** Dental wiring For Minimal displacement IMF for 3 weeks.



**Closed Reduction**

- Favourable and mildly displaced fractures
- Grossly comminuted fractures
- Severly atrophic edentulos mandible
- Fractures in children with developing dentition
- Arch bar and imf for 3 weeks
- We remove imf for 3 weeks and archbar after 4 weeks and follow the patient for further 2 weeks.
- After removal of imf we start mouth opening exercises and soft diet.
- In condylar and subcondylar fractures we remove imf after 2 weeks

**Open reduction and rigid fixation**

- Intra oral approach

**Closed reduction**

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**Open reduction and rigid fixation**

**Intra oral approach**

**Extra oral Approach**

**Open reduction**

- Un favourable and displaced fractures
- Associated midface fractures
- When imf is contraindicated or not possible

**Contra indications for open reduction**

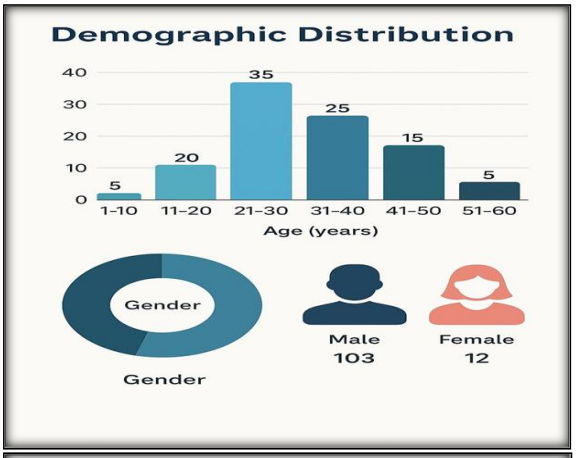
- Severe comminution and stabilization not possible.
- No soft tissue cover
- Too high anesthetic risk

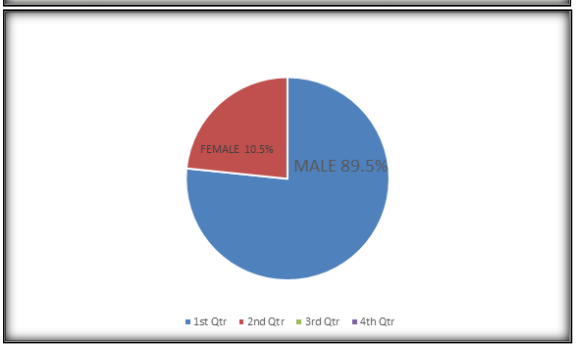
## RESULTS

**Demographic Distribution**

Total patients: 115

- Male: 103 (89.6%)
- Female: 12 (10.4%)
- Age distribution peaked in 21–30 years (33%)




- Road Traffic Accidents: 58%
- Falls: 27%
- Assaults: 15%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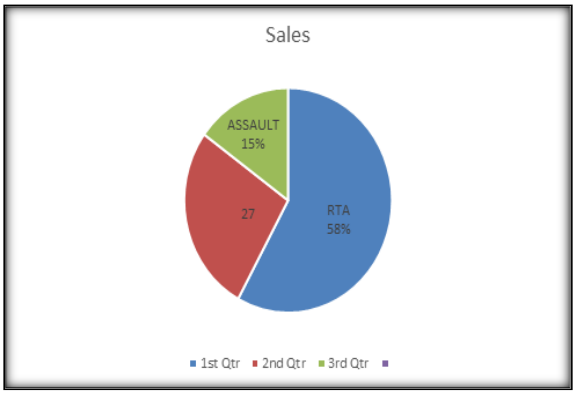
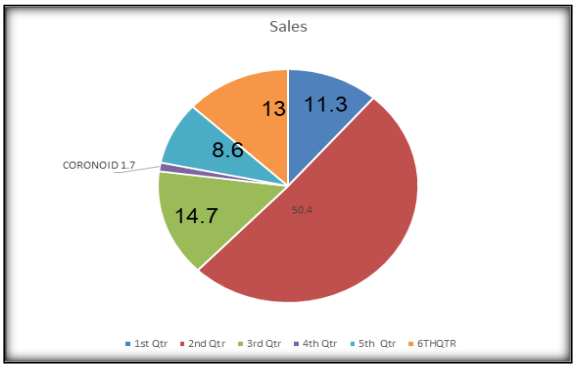



**Fracture Types**

- Symphysis: 11.3%
- Parasymphysis: 50. 4 %
- Angle of Mandible: 14.7%
- Coronoid: 1.7%
- Condylar region: 8.6%

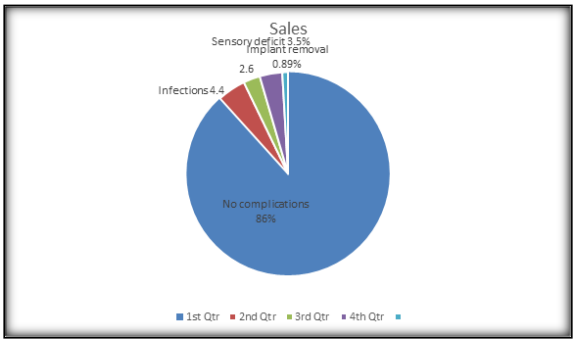
Segmental: 13




**Complications**

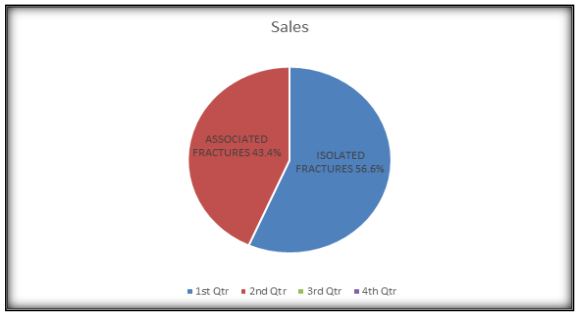
- Infection:4.4%
- Malocclusion: 2.6%
- Sensory Deficits: 3.5%,
- Implant removal- 0.89%

Due to malocclusion 3 patients underwent redo surgery and attained occlusion




**Associated Fractures**

- Isolated fractures of mandible-56.6%
- Associated fractures-43.4 %




**Outcomes:** Surgical management showed statistically significant better outcomes in terms of occlusion, healing time, and patient satisfaction ($p < 0.05$).

## DISCUSSION

This study corroborates global trends in mandibular fracture epidemiology, with young adult males being disproportionately affected. Road traffic accidents remain the leading cause.[7]

Surgical management via ORIF remains the gold standard in achieving anatomical reduction, functional restoration, and patient satisfaction.[8]

Conservative treatment, though non-invasive and cost-effective, is associated with prolonged immobilization, nutritional compromise, and higher complication rates. ORIF, when performed by experienced hands, minimizes complications and facilitates early return to function.[9]

In this study 3 pediatric patients underwent conservative management.

Our findings are consistent with studies by Chrcanovic et al. and Kumar et al., who demonstrated superior outcomes with surgical management in similar cohorts.[10]

## CONCLUSION

Mandibular fractures are predominantly seen in young males and are best managed surgically in a tertiary care setting. Early intervention, precise reduction, and internal fixation are critical to minimizing morbidity and enhancing recovery.

**Limitations**

- Retrospective design
- Single-center data
- Lack of long-term follow-up beyond 6 months

**Future Directions**

- Prospective multicentric trials
- Inclusion of quality-of-life metrics
- Long-term outcomes and cost analysis

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