Case Report

Transmasseteric Antero Parotid Approach for Open Reduction and Internal Fixation of Vertical Ramus Fracture: A Case Study

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ABSTRACT

This case study explores the management of a 27-year-old male patient with a right parasymphysis fracture and a left vertical ramus fracture following a road traffic accident. Utilizing the transmasseteric anteroparotid approach for open reduction and internal fixation (ORIF), we discuss the clinical features, surgical techniques, and classification of ramus fractures. The results underscore the approach's effectiveness in achieving stable fixation and optimal functional recovery.

Key-Words: Ramus Fracture, Mandible Fracture, Transmassetric Approach, Anteroparotid Approach

INTRODUCTION

Fractures of the mandible are commonly encountered by the oral and maxillofacial surgeon, and are in fact the third most common maxillofacial fracture after nasal bone and zygomatic bone fractures.[1]Mandibular fractures are common in trauma cases, and their management is essential for restoring function and aesthetics. Vertical ramus fractures are particularly challenging due to their location and potential complications, such as malocclusion and temporomandibular joint dysfunction. This report highlights the clinical presentation, surgical management, and outcomes of a vertical ramus fracture treated via a transmasseteric anteroparotid approach.

Clinical Features

The patient, a 27-year-old male, presented to the Uttaranchal Dental and Medical Research Institute, Dehradun, on June 19, 2023, following a road traffic accident. Clinical examination revealed:

- Facial Edema: Significant swelling of the mandible, particularly on the left sideleading to facial asymmetry.
- Malocclusion: The patient exhibited an anterior open bite and impaired occlusion.
- Tenderness and Crepitus: Palpation of the left ramus and right parasymphysis revealed tenderness and a palpable step deformity.
- Limited Mouth Opening: The patient reported difficulty in opening the mouth with mouth opening approximately 2 cm.
- Sublingual hematoma was present
- Mobility of fracture segments at right parasymphysis between 42 and 43
- Radiographic evaluation (OPG xray) confirmed a right parasymphysis fracture and a left vertical ramus fracture.

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Classification of Ramus Fractures

Type I: Vertical/oblique fracture line extending from the sigmoid notch to either the inferior border or angle of mandible.
Type II: Vertical/ oblique fracture line extending from coronoid process to either the inferior border or angle of mandible.
Type III: Horizontal fracture line extending from anterior border to posterior border of ramus of mandible.
Type IV: Oblique fracture line extending from posterior border of ramus to inferior border of mandible (separating the angle segment).
Type V: Comminuted fracture of ramus of mandible (may cause isolated fractures of the coronoid, condyle, and the angle of mandible).

The vertical ramus fracture in this case was classified as a displaced fracture due to the significant displacement observed during clinical and radiographic evaluation.[2]

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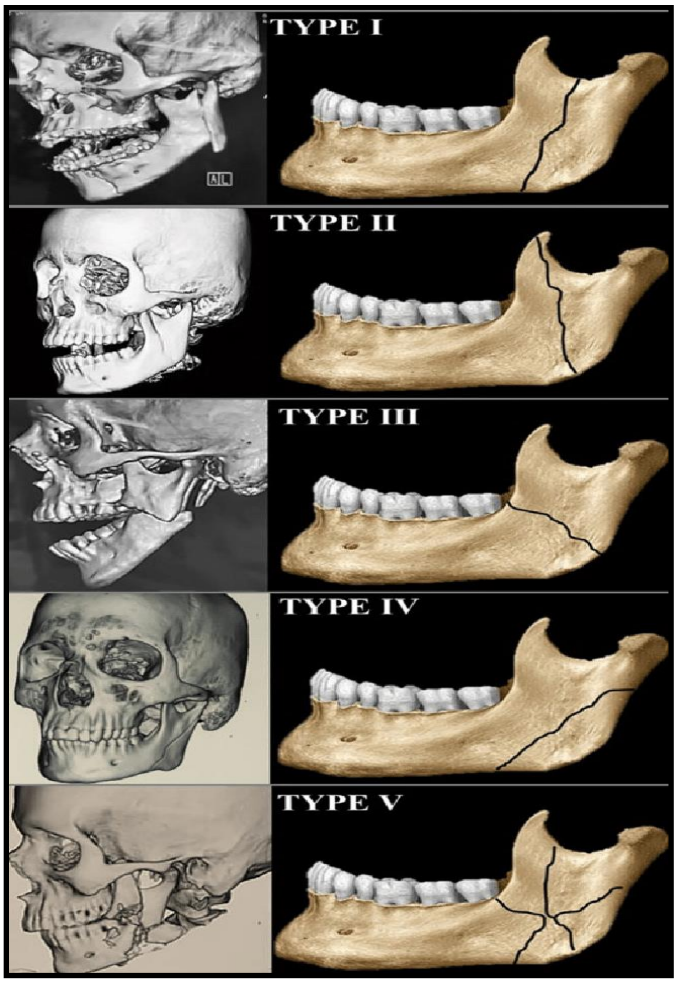

Surgical Procedure

The surgical intervention was performed under general anesthesia. The approach for each fracture was tailored to ensure optimal exposure and stabilization:

1. **Right Parasymphysis Fracture:**
   - **Incision:** A vestibular incision was made, extending from the midline to the buccal vestibule.
   - **Reduction and Fixation:** The fracture was reduced manually, IMF done with arch bars and fixation done with two titanium plates ie 2mm 4 holes with gap and 2mm 2 hole with gap secured using 2mm x 8mm screws.
2. **Left Vertical Ramus Fracture:**
   - **Incision:** A modified retromandibular incision was employed to enhance access to the ramus without compromising the facial nerve.
   - **Reduction and Fixation:** The fracture was stabilized using a 2mm 4-hole 3D titanium plate with 2mm x 10mm screws, providing stability to the vertical ramus. The transmasseteric anteroparotid approach facilitated access while minimizing soft tissue disruption.

Meticulous hemostasis was maintained in procedure, and wounds were closed in layers to promote healing.

Fig 1: Pre-operative OPG xray

Fig 2: Pre-operative occlusion

Fig 3: Incision for mini retomandibular approach

Fig 4: Fixation with 3d plate

Fig 5: Post-op OPG xray

Postoperative Care and Outcome

Postoperatively, the patient was monitored for complications, such as infection or nerve damage. Pain management included oral analgesics, and the patient was placed on a soft diet to facilitate healing. Follow-up appointments at two weeks and six weeks revealed:

- **Wound Healing:** No signs of infection; sutures were removed at two weeks.
- **Functional Recovery:** The patient demonstrated improved occlusion and mouth opening.
- **Radiographic Assessment:** Follow-up imaging confirmed proper alignment and healing of the fractures.

Fig 6: Post op healing

DISCUSSION

The transmasseteric anteroparotid approach offers several advantages for the surgical management of vertical ramus fractures. This technique allows for direct visualization of the fracture site, facilitating accurate reduction and stable fixation. Studies suggest that this approach minimizes complications related to facial nerve injury and enhances postoperative recovery[3] Proper classification of ramus fractures is crucial for determining the appropriate surgical approach.[4] As noted, this case exemplifies the successful application of the transmasseteric approach in achieving satisfactory outcomes in a patient with a complex vertical ramus fracture.[5]

CONCLUSION

The anteroparotid transmasseteric approach is a simple, direct approach to treating subcondylar fractures and ramus fracture. The successful management of a vertical ramus fracture using the transmasseteric anteroparotid approach demonstrates its effectiveness and reliability. This technique, combined with careful surgical planning and execution, can lead to excellent functional and aesthetic outcomes in patients with complex mandibular fractures.

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