

MANAGEMENT OF MANDIBULAR PARASYMPHYSIS FRACTURE WITH TOOTH EXTRUSIVE LUXATION: A CASE REPORT

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ABSTRACT

Introduction: Mandibular parasymphysis fractures account for approximately 15% of all mandibular fractures, often resulting from high-impact trauma directed upward or obliquely to the lower face. Such injuries may be associated with traumatic dental injuries, including extrusive luxation, which is characterized by loosening and partial avulsion.

Case and Management: This case reports a 20-year-old male referred to RSUD Dr. Achmad Mochtar following a motorcycle accident 7 days prior to admission. The patient presented with chin pain, limited mouth opening, masticatory difficulty, and mobility with sensitivity of the maxillary anterior tooth. From clinical examination, there is an abrasion on the left cheek and a sutured laceration on the left upper labial and mental regions, a posterior open bite on the right side, and extrusive luxation of tooth 22. Step deformity and mobility were noted in the right mandibular region at teeth 43–44. Radiographic evaluation confirmed a radiolucent fracture line between teeth 43 and 44. The socket of tooth 22 appeared empty apically, with a widening of the periodontal ligament space. Diagnosis of mandibular parasymphysis dextra fracture with extrusive luxation of tooth 22 was established. Treatment of repositioning and stabilization of tooth 22, followed by closed reduction and internal fixation (CRIF) using an arch bar and intermaxillary fixation. Postoperative outcomes showed intact occlusion and stable adaptation of tooth 22 in its socket.

Conclusion: This case concerns the importance of comprehensive evaluation and management of mandibular fractures associated with dental luxation to restore function and prevent long-term complications.

Keywords: CRIF, extrusive luxation, mandibular parasymphysis fractures, repositioning

Received (05/11/2025);
Accepted (18/12/2025);
Available online (07/01/2026)

DOI:

<https://doi.org/10.33854/jbd.v12i2.2003>

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INTRODUCTION

Mandibular fractures are the most common maxillofacial injuries, occurring more frequently than fractures of other facial bones.¹ Approximately 15% of mandibular fractures involve the parasymphysis region.² The mandible is the lowest part of the face and is highly

susceptible to trauma, particularly from high-impact forces directed upward or obliquely.² The primary goal of mandibular fracture management is to restore both form and function, which requires anatomical reduction and fixation of the fractured segments.³ Treatment of parasymphyseal fractures emphasizes occlusal principles, ensuring proper alignment between the mandibular and maxillary teeth to achieve stable occlusion, facilitate healing, maintain

adequate nutrition, and prevent complications such as infection, malunion, or nonunion.^{2,3}

High-impact trauma to the oromaxillofacial region may also result in traumatic dental injuries (TDIs). Luxation injuries accounted for 18–33% of trauma affecting the permanent dentition.⁴ These injuries involve displacement of a tooth from its socket due to acute trauma without complete avulsion. Luxation may occur in intrusive, extrusive, or lateral directions.⁴ Extrusive luxation is caused by oblique forces and is characterized clinically by increased mobility, elongation of the affected tooth, and pain during occlusion and mastication.⁵ Radiograph examination shows that the periodontal ligament space appears widened. In the socket of avulsion, there are empty areas in the apical and lateral portions of the socket.⁶ Optimal management requires immediate repositioning, stabilization, and observation for the long-term of the affected tooth.^{5,6}

This case concerns the management of a case involving mandibular parasymphysis fracture combined with extrusive luxation, the importance of diagnosis, and a multidisciplinary treatment approach.

CASE AND MANAGEMENT

A 20-year-old male was referred to RSUD Dr. Achmad Mochtar, Bukittinggi, Indonesia, with complaints of pain on his chin, limited mouth opening, impaired mastication, and mobility with sensitivity of the maxillary anterior teeth. The patient had a history of a motorcycle accident 7 days prior to admission and had previously undergone wound debridement and

suturing at a public health center. There are no systemic diseases.

Clinical examination showed the patient was in good general condition, *compos mentis*, cooperative, and with stable vital signs. Extraoral assessment showed an abrasion on the left cheek and a sutured laceration on the left upper labial region and mentum without facial asymmetry (Fig. 1A). There was a step-off in palpation examination detected in the right mandibular region. No subconjunctival hemorrhage, periorbital ecchymosis, Battle's sign, bloody rhinorrhea, or otorrhea was observed. Intraoral examination showed limited mouth opening (2 cm), posterior open bite on the right side (Fig. 1B), palpation with tenderness in the region of teeth 43–44, and extrusive luxation of tooth 22 with mobility (Fig. 1C). Orthopantomogram (OPG) imaging demonstrated a radiolucent fracture line between teeth 43 and 44. The socket of tooth 22 is empty apically, with widening of the periodontal ligament space (Fig. 1D).

A diagnosis of mandibular parasymphysis dextra fracture with extrusive luxation of tooth 22 was established. The treatment consisted of repositioning tooth 22 into its socket and stabilization with interdental wiring involving teeth 21 and 22 with general anesthesia. The mandibular fracture was treated with closed reduction and internal fixation (CRIF) using maxillary and mandibular arch bars between teeth 17–27 and 37–47. Intermaxillary fixation (IMF) with steel wires was subsequently applied (Fig. 2A). The patient received pharmacological therapy in the form of Cefadroxil tab 500mg/12h, Ketorolac inj 30mg/8h, Ranitidine inj 50mg/12h, Dexamethasone inj 5mg/12h, Tranexamic acid

tab 500mg/8h (discontinue once the bleeding stop) and was placed on a liquid diet. After 1 week, the steel wires were replaced with elastic traction bands (Fig. 2B). At 4 weeks postoperatively, the occlusion was intact, and tooth 22 showed stable adaptation within the socket (Fig. 2C). Removal of IMF and arch bars was scheduled for 6 weeks postoperatively.



Figure 1. A. Extraoral examination; B. Extrusive luxation of tooth 22; C. Posterior open bite on right side; D. OPG

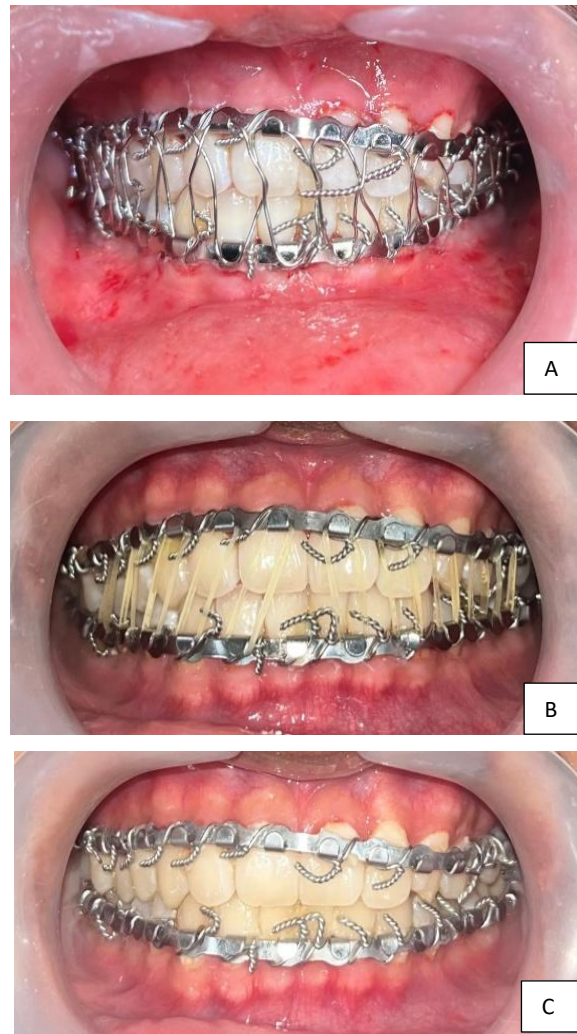


Figure 2. A. post-op CRIF, 2b. IMF with rubber elastics, 2c. 4 weeks post-op

DISCUSSION

The most common symptoms of mandibular fractures are localized pain at the fracture site and malocclusion, with pain exacerbated by swallowing, speaking, and mandibular movements. Patients may also present with trismus, tooth mobility or fracture, and paresthesia of the lower lip. Extraoral findings often include skin abrasions and lacerations, while intraoral examination showed malocclusion with a visible or palpable step deformity along the occlusal plane or inferior border of the mandible.⁹

In this case, the mandibular fracture was accompanied by extrusive luxation, a type of TDIs characterized by increased mobility and partial displacement of the tooth from its socket. Clinically, the affected tooth appears elongated and painful during occlusion and mastication.⁶ The presence and distribution of abrasions and lacerations may provide valuable information about the direction and magnitude of trauma. In this patient, lacerations were observed on the left upper labial region and mentum, suggesting an oblique force originating from the left side. During an impact, the force on the cortex results in compression, and the other cortex undergoes tension. If the force of the impact is more than the compressive and tensile strength of the bone, the bone fractures. Similarly, when there is an impact, the point of application of force gets compressed, and the resultant vector travels along the bone and applies a tensile force on the point intersected by this vector. The fracture at the site of intersection with the vector is an indirect fracture, which happened in this case.¹⁴

The main objectives in the treatment of mandibular fractures are to reduce fracture segments, re-establish occlusion and mastication, maintain facial contour, and prevent complications such as infection. Restoration of mandibular function is crucial, as it improves the stomatognathic system, allowing proper mastication, speech, and temporomandibular joint movement. When TDIs such as extrusive luxation of teeth occur, they must be carefully repositioned, as they may compromise occlusion and function.⁷

Closed reduction is an established treatment modality for favorable mandibular

fractures with stable occlusion and adequate anchoring teeth. Intermaxillary fixation (IMF) is typically maintained for 4–6 weeks in adults.¹⁰ This method involves the application of steel wires or elastic traction bands to gradually achieve proper occlusion and stabilization. Adjunctive management includes administration of antibiotics and analgesics, nutritional support, maintenance of oral hygiene, and physiotherapy.¹

Management of extrusive luxation in permanent teeth requires immediate repositioning, with gentle pressure applied to expel coagulum and debridement between the displaced root and socket wall. Compression of the labial and palatal bone plates facilitates complete repositioning and periodontal healing, followed by stabilization with a splint. The splinting period is generally 3 weeks, but may be extended to 6–8 weeks in cases complicated by marginal bone loss.¹¹ Potential complications include pulp necrosis, canal obliteration, root resorption, and marginal bone loss; it is important to follow up.¹⁵

CONCLUSION

Nondisplaced or minimally displaced parasymphysis mandibular fractures with associated dental trauma, such as extrusive luxation, can be successfully managed with a conservative protocol of closed reduction, immobilization, a soft diet, and analgesia. This non-invasive approach minimizes surgical morbidity and reduces the risk of iatrogenic complications, including nerve injury. Successful outcomes are contingent upon stringent patient compliance with postoperative care instructions. This case underscores the critical importance of

accurate diagnosis, meticulous treatment planning, and coordinated interdisciplinary care between oral and maxillofacial surgeons and dental practitioners. Prompt and appropriate management is essential to restore occlusal function and to prevent long-term sequelae, ensuring optimal patient recovery.

REFERENCES

1. Fardhani A, Rizqiawan A, Mulyawan I, Anugraha G. Comparison outcome of open and close reduction treatments for parasymphysis mandibular fractures. *Dent J*. 2023 Dec;56(4):268-72.
2. Hatwar VA, Kulkarni CA, Patil S, Hatwar V. Rehabilitation and management of complex multiple para-symphysis mandible fracture: a case report. *Cureus*. 2022 Nov 7;14(11).
3. Mukul SK, Singh A. Symphysis, Parasymphysis and Body Fractures. In *Maxillofacial Trauma: A Clinical Guide 2021 May 3* (pp. 191-202). Singapore: Springer Singapore.
4. Spinass E, Zangani A, Mallus T, Marogna G, Carboni L. Extrusive and Lateral Luxation Injuries in permanent teeth: Literature Review and Treatment Complications Update. *European journal of paediatric dentistry*. 2024;25(2):163-7.
5. Amaral MF, De Almeida MM, De Faria LP, Brandini DA, Poi WR, Okamoto R. Treatment of Extrusive Luxation in Permanent Teeth: Literature Review with Systematic Criteria. *The journal of contemporary dental practice*. 2017 Mar 1;18(3):241-5.
6. Spinass E, Pipi L, Dettori C. Extrusive luxation injuries in young patients: A retrospective study with 5-year follow-up. *Dentistry Journal*. 2020 Dec 16;8(4):136.
7. Orabona GD, Iaconetta G, Abbate V, Califano L. Bifocal mandibular fractures: which should be treated first?. *Journal of Craniofacial Surgery*. 2012 Nov 1;23(6):1723-7.
8. Tayşi M, Yıldırım S. Should the teeth in the line of jaw fractures be extracted?. *Journal of Istanbul University Faculty of Dentistry*. 2015;49(1):61-5.
9. Dabi M. *Biomechanical Modeling and Testing of Point-of-Care Manufactured Devices*. 2023. (Master's thesis, North Carolina Agricultural and Technical State University).
10. Namdev R, Jindal A, Bhargava S, Dutta S, Singhal P, Grewal P. Patterns of mandible fracture in children under 12 years in a district trauma center in India. *Dental traumatology*. 2016 Feb;32(1):32-6.
11. Andreasen JO, Andreasen FM. *Textbook and color atlas of traumatic injuries to the teeth*. Munksgaard; 1994.
12. Huang R, Zhou C, Zhan L, Liu Y, Liu X, Du Q, Wang J, Zhao W, Song G, Wu LA, Jiang B. Experts consensus on management of tooth luxation and avulsion. *International Journal of Oral Science*. 2024 Sep 26;16(1):57.
13. Yanti MN, Tasman A, Fathurachman F. The Management Close Reduction Of Mandibular Fracture In Pediatric Patient: A Case Report: Perawatan Reduksi Tertutup Fraktur Mandibula Pada Anak: Laporan Kasus. *Dentika: Dental Journal*. 2016 Dec 12;19(2):149-53.
14. Rai A. Fractures of the Mandible. In *Oral and maxillofacial surgery for the Clinician 2021 Feb 15* (pp. 1053-1084). Singapore: Springer Nature Singapore.
15. Lin S, Pilosof N, Karawani M, Wigler R, Kaufman AY, Teich ST. Occurrence and timing of complications following traumatic dental injuries: A retrospective study in a dental trauma department. *Journal of clinical and experimental dentistry*. 2016 Oct 1;8(4):e429.