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Case Report

Management of a distoangular impacted mandibular first molar with severe carious destruction: a case report

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Abstract

Impaction of the permanent mandibular first molar is an uncommon clinical finding and is rarely diagnosed in adulthood. Management becomes particularly challenging when the tooth is deeply impacted, unfavourably angulated, and structurally compromised by advanced carious destruction. This case report describes the surgical management of a disto angular impacted mandibular first molar in a 35-year-old female who presented with pain in the lower left posterior mandibular region. Clinical examination and panoramic radiographic assessment revealed a deeply impacted, non-restorable mandibular first molar with complete root formation and no radiographic evidence of proximity to the inferior alveolar canal. Owing to unfavourable angulation and advanced structural compromise, surgical extraction under local anaesthesia was planned. Controlled crown sectioning followed by staged removal of the roots was performed to minimise surgical trauma. Autologous platelet-rich fibrin was placed in the extraction socket to support postoperative healing. The postoperative course was uneventful, with no evidence of neurosensory disturbance. This case highlights that carefully planned surgical extraction represents a viable management option for deeply impacted, non-restorable mandibular first molars diagnosed in adult patients.

Keywords: Mandibular first molar; Platelet-rich fibrin,Surgical extraction, Tooth impaction;

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Introduction

The permanent mandibular first molar typically erupts between six and seven years of age and plays a crucial role in establishing functional occlusion, mastication, and maintenance of vertical facial height. Failure of eruption of this tooth due to impaction is exceedingly rare when compared with other permanent teeth. The reported prevalence of impacted permanent teeth ranges from 0.01% to 0.08%, with mandibular first molars accounting for only a small proportion of these cases [1]. The aetiology of tooth impaction is multifactorial and may involve local factors such as inadequate arch space, abnormal positioning of the tooth germ, prolonged retention or premature loss of primary teeth, and obstruction by

odontogenic cysts or tumours [2]. Systemic and genetic influences, including disturbances in eruption pathways, have also been described [3]. Disruption of the gubernacular canal, which normally guides erupting teeth, may further contribute to eruption failure.

Delayed diagnosis of impacted mandibular first molars into adulthood is uncommon and often associated with complete root formation and unfavourable angulation, limiting orthodontic treatment options. Such cases may present with pain, caries, periodontal compromise of adjacent teeth, and occlusal disturbances [4]. Reports describing the management of deeply impacted mandibular first molars with severe carious destruction in adults remain limited. This case report describes the surgical extraction of a distoangular impacted mandibular first molar in an adult patient and discusses the clinical considerations influencing treatment selection.

Case Report

A 35-year-old female presented with a five-day history of progressively worsening, continuous pain in the lower left posterior jaw region, associated with difficulty in mastication. The patient reported no history of systemic illness, deleterious habits, trauma, or relevant medical conditions. Extraoral examination revealed no facial swelling, asymmetry, trismus, or lymphadenopathy. Intraorally, crown of mandibular left first molar region was partially visible and was tenderness on percussion. No intraoral or extraoral purulent discharge or sinus tract was observed.

Panoramic radiograph revealed, distoangular impacted mandibular left first molar (tooth #36), with its crown located beneath the adjacent second premolar and second molar. The tooth had extensive carious involvement and was involving pulp. The adjacent mandibular second molar exhibited mesial tipping, closely abutting the distoocclusal surface of impacted first molar. Root formation of tooth #36 was complete, with no evidence of periapical bone changes. The inferior alveolar canal was positioned inferior to the roots, maintaining a safe anatomical distance (Figure 1).

Based on the clinical and radiographic assess-

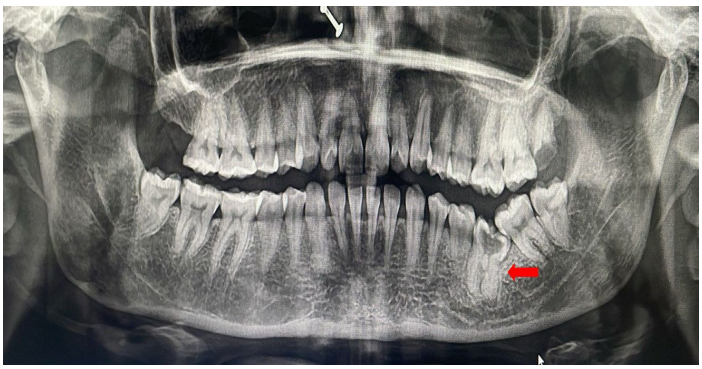

Figure 1. Panoramic radiograph showing a distoangular impacted mandibular left first molar with extensive carious destruction.

-ment, a diagnosis of distoangular impaction of the mandibular left first molar associated with advanced carious destruction was established. Orthodontic uprighting was not considered due to extensive tooth structure damage, and thus, surgical extraction under local anesthesia was planned. Inferior alveolar, lingual, and long buccal nerve blocks were administered to achieve local anaesthesia. A crevicular incision was made extending from the distal aspect of the first premolar to the mesial aspect of third molar along with an anterior release incision placed mesial to #34 carefully avoiding injury to mental nerves and vessels.

A full-thickness mucoperiosteal flap was elevated, and buccal bone guttering was carefully performed using a rotary surgical bur #701 under continuous sterile saline irrigation to adequately expose the crown. Due to the mesial inclination of the adjacent second molar, surgical access was restricted, increasing the risk of enamel damage during elevation. To avoid this, the crown was sectioned vertically in two parts and horizontally at the cementoenamel junction, thereby separating it from the roots. The mesial and distal roots were separated at the bifurcation and delivered separately thereby reducing risk of injury to the inferior alveolar nerve (Figure 2). Following extraction, the socket was thoroughly debrided and irrigated with sterile saline. Autologous platelet-rich fibrin (PRF) was then placed into the socket to enhance healing and bone regeneration. Primary closure was achieved with 3-0 resorbable polyglactin sutures (VICRYL®, Ethicon).

The patient was prescribed amoxicillin-clavulanic acid (625 mg) twice daily for five days, Ibuprofen (400

mg) as analgesic, and 0.12% chlorhexidine gluconate mouth rinse twice daily for one week. Postoperative instructions were given, with emphasis on maintaining oral hygiene. Healing was uneventful, with no evidence of infection, wound dehiscence, or neurosensory deficit. At the two-week follow-up, the patient reported complete resolution of symptoms and restoration of masticatory function. A panoramic radiograph taken at four weeks revealed satisfactory bone regeneration at the extraction site.

Discussion

Impaction of the mandibular first molar is a rare clinical finding, particularly when diagnosis is delayed until adulthood. Management of such cases requires careful assessment of patient age, angulation and depth of impaction, proximity to adjacent anatomical structures, and structural integrity of the affected tooth. In adult patients, complete root formation and unfavourable angulation frequently limit orthodontic uprighting or surgical repositioning, making extraction the preferred treatment option when the tooth is non-restorable [5,6].

In the present case, panoramic radiography was sufficient to assess the relationship between the impacted tooth and the inferior alveolar canal. Although cone beam computed tomography provides superior three-dimensional visualisation, it was not deemed necessary due to the absence of panoramic features suggestive of intimate neurovascular contact. This approach reduced radiation exposure while still allowing safe surgical planning.

Surgical extraction of deeply impacted mandibular molars carries inherent risks, including excessive bone removal and inferior alveolar nerve injury. Controlled sectioning and staged root removal were employed to minimise surgical trauma and preserve the surrounding alveolar bone. The adjunctive use of platelet-rich fibrin was intended to support postoperative healing. While evidence regarding its regenerative efficacy remains variable, satisfactory clinical and radiographic outcomes were observed in this case [7].

The primary limitation of this report is its nature as a single case and reliance on panoramic imaging alone. Nevertheless, this case adds to the limited literature on impacted mandibular first molars diagnosed in adulthood and highlights practical surgical considerations for their management.

Conclusion

Impaction of the permanent mandibular first molar is an uncommon condition that may remain undiagnosed until adulthood and present with significant clinical challenges when associated with severe carious destruction. In adult patients with deeply impacted and non-restorable mandibular first molars, carefully planned surgical extraction represents a viable management option. Individualized treatment planning remains essential to achieve favourable outcomes in such rare clinical scenarios.

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