

# Surgical Management Of Impacted Mandibular 1<sup>st</sup> Molar: A Case Report

Dr. Saeel Prabhukonkar, Dr. Edlyn Rodrigues, Dr. Francis Akkara,  
Dr. Vikas Dhupar, Dr. Akash Pk, Dr. Soniya Dessai

(Department Of Oral And Maxillofacial Surgery, Dental College And Hospital, India)

(Department Of Oral And Maxillofacial Surgery, Dental College And Hospital, India)

(Department Of Oral And Maxillofacial Surgery, Dental College And Hospital, India)

(Department Of Oral And Maxillofacial Surgery, Dental College And Hospital, India)

(Department Of Oral And Maxillofacial Surgery, Dental College And Hospital, India)

(Department Of Oral And Maxillofacial Surgery, Dental College And Hospital, India)

## Abstract:

Eruption failure of the first permanent molar is very rare; the incidence is 0.01% of the population. Adequate occlusal support and facial growth coordination is provided by permanent molars. Failure to erupt leads to an array of complications. It is imperative to diagnose and manage the condition at initial stage. Deeply impacted mandibular first molar cases, the extraction needs delicate technique and in addition requires cautious management to diminish risks of injury to the adjacent teeth, neurovascular bundle and the mandibular fracture. This report summarizes a rare case of impacted mandibular molar treated surgically in a unique way, where in the socket and nerve preservation were carried out simultaneously.

**Keywords:** Impacted first molar, Nerve preservation, Socket grafting

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## I. Introduction

The impaction of permanent teeth is not uncommon, but mandibular first molars is rare and accounts for 0.01% according to Dachi and Howell reports<sup>(1)</sup> The permanent molars are especially paramount for providing abundant occlusal support and facial growth coordination. The local factors and systemic factors play an important role in permanent tooth impaction. Impactions of such teeth can lead to a multifactorial complication<sup>(2)</sup>. Treatment options for an impacted molar include extraction, surgical-orthodontic approach, surgical and prosthetic rehabilitation. Excessive bone removal may be needed for extracting deeply seated impacted molars, leading to complications like iatrogenic or pathologic mandibular fractures and inferior alveolar nerve injury.<sup>(2)</sup>

## II. Case Presentation

An 18-year-old male patient, healthy systemically, reported with a chief complaint of pain in lower left back tooth region, after thorough clinical and radiological assessment, a carious impacted mandibular first molar was seen in close proximity to the inferior alveolar nerve canal. (fig:1)

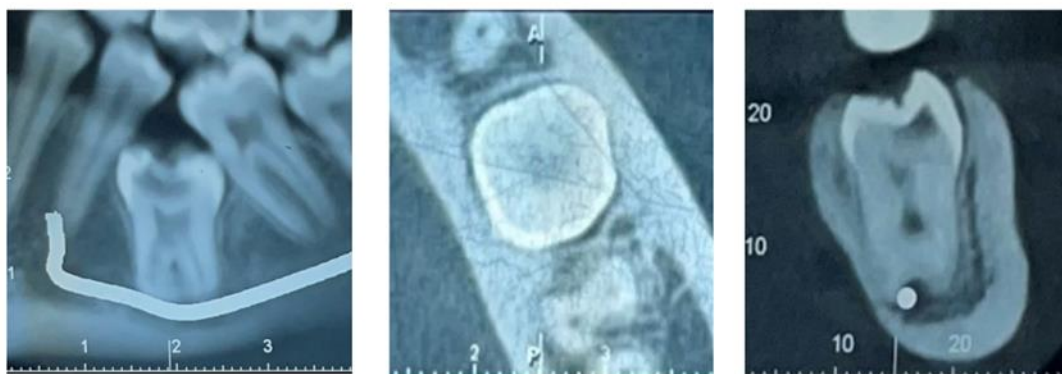


Fig:1 Preoperative CBCT

The challenge encountered in the case was:

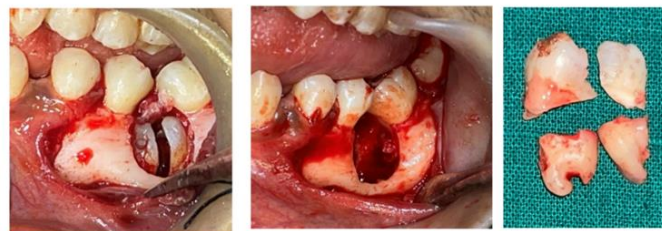
1. Access to the mandibular impacted molar which was wedged between the second premolar and second molar.
2. Preserving maximum bone around the impacted tooth for future rehabilitation
3. Preventing iatrogenic damage to an adjacent tooth
4. Avoiding pathological fracture of the mandible
5. Preventing nerve injury

A decision was made to surgically extract the molar with socket grafting under general anaesthesia. A written informed consent was obtained after all the risks were explained to the patient, after pre-operative work up, under general anaesthesia, crevicular incision extending from mesial aspect of second pre-molar up to the distal aspect of second molar with vertical release was made. A full thickness mucoperiosteal flap was raised, exposure of the crown by removal of overlying cortical bone was done using the bone scraper. (fig: 2)



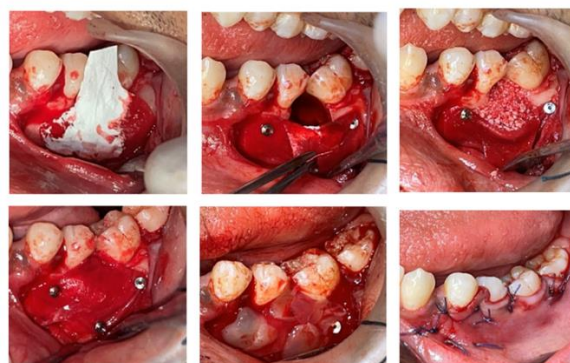
**Fig: 2 Surgical exposures:**  
**(a): Preoperative clinical photographs (b): Mucoperiosteal flap raised (c): Exposure of the crown**

Under copious irrigation odontotomy was performed. First, the crown and root were separated by a horizontal cut, and then the crown was sectioned into two parts by a vertical cut and delivered buccally. Subsequently, the root was split into two parts and delivered coronally and buccally. (fig: 3)



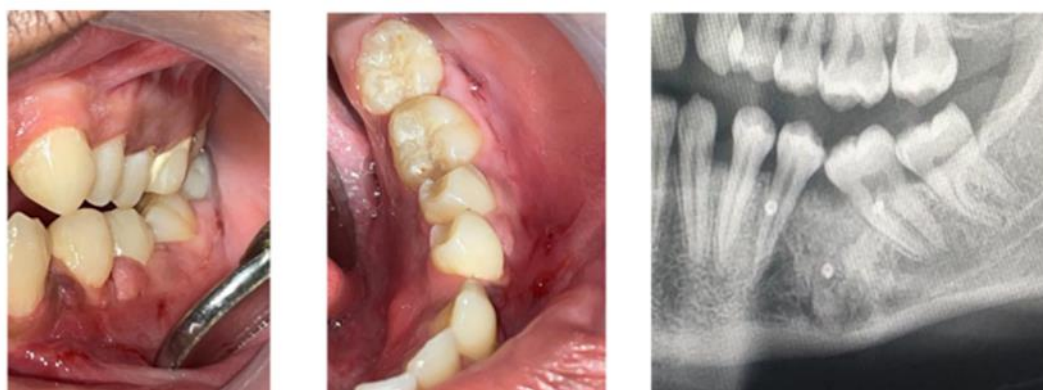
**Fig 3: Odontotomy**

Following meticulous inspection and debridement of the socket, the inferior alveolar nerve was visible. Geistlich Bio-Gide Collagen Membrane was placed over the exposed nerve to prevent impingement from the graft particles on the inferior alveolar nerve. Contour grafting and socket grafting of the defect was carried out using three titanium pins to stabilize the membrane and contain the graft particles. Autograft + Geistlich Bio-Oss xenograft [50:50] with platelet rich fibrin was condensed within the bony defect, membrane was then tucked lingual. (fig: 4)



**Fig 4 Socket grafting:**  
**(a & b): Membrane stabilisation (c): Socket grafting (d): Membrane immobilisation (e): PRF placed (f): Closure**

Hemostasis was achieved. Closure of the flap was done using (3-0 vicryl, made by Ethicon) in horizontal mattress fashion. Post operatively analgesic and antibiotic with supportive therapy was administered. (fig: 5)



**Fig 5: Postoperative day 14 assessment**

Patient was followed up regularly. Transient lower lip paraesthesia was noted which resolved within 14 postoperative days. The wound healing was uneventful.

### **III. Discussion**

First molar impactions are rare. Overall incidence of impacted mandibular molars accounts for 18%. However, the incidence of impaction of first molar and second molar was 0% and 0.06%, respectively according to the Grover and Norton studies.

Failure of the eruption of permanent molars might lead to a range of complications like, supraeruption of the antagonist teeth, a posterior open bite, reduction in the vertical dimension, inclination and resorption of adjacent teeth, and cyst formation <sup>(2)</sup>

First molar's distal root is essential for the appropriate eruption of the second molar's crown. Excessive or deficient space between the follicle often are the local causes for such scenario

In 1993 Kokich pronounced the surgical and orthodontic management of impacted tooth and recognized important factor that will affect prognosis and treatment outcome.

A] Position and Angulation of the impacted tooth

B] Length of treatment time

C] Space availability

D] Presence of keratinized gingiva <sup>(1)</sup>

Many other factors such as, age, occlusion, pathological conditions, and patient's cooperation should be deliberated in making treatment decisions

In this case we didn't opt for orthodontic traction because long duration of orthodontic treatment because the anatomy of adjacent teeth and their proximity, less space availability, which was not in favour of doing so, also the carious nature of the tooth, which made us to choose for surgical extraction with socket grafting as soon as possible. Our goal was to cause minimal damage to adjacent teeth and surrounding bone.

Socket grafting was considered as grafting of osseous defects with an autograft harvested from same buccal cortical site +xenograft and the membrane predictably would result in a significant reduction in the probing pocket depth, clinical attachment level gain, and bone fill, nerve preservation, and would prevent pathological fracture,

It is imperative to diagnose and treat eruption instabilities as soon as possible preferably during the early mixed-dentition period as delayed treatment may result in a myriad of problems

### **IV. Conclusion**

The surgical management of these unique conditions has always been problematic and demands a step-by-step repair Before commencement, a proper order of surgical procedures for the desired results must be established. Each case is special and requires a personalized treatment plan. Clinicians must notify the patient of the possible risks and benefits of treatment substitutes before creating the final treatment plan.

### **References**

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