

Bilateral maxillary premolar impaction – reporting a rare case

Tejraj Kale,¹ Shankargowda Patil,² Akhilesh Verma,³ Sidharamesh Muttagi⁴

Abstract

Impacted teeth and orthodontists share a long-standing relationship where the oral surgeon plays a pivotal role towards the success of orthodontic treatment. Third molar and canine impactions, their effects and management have been discussed in depth in history. Impacted premolars are less commonly encountered in the literature, especially maxillary premolars. This paper describes 3 case reports - a rare case of bilaterally horizontally impacted maxillary premolars; a case of mandibular premolar impaction; a case of sequelae following the denial of treatment at the time of detection of an impaction, emphasizing treatment planning, management and consequences of delaying treatment.

Introduction

By definition,¹ an impacted tooth is one that is embedded in the alveolus so that its eruption is prevented or where the tooth is locked in position by bone or the adjacent tooth/teeth.

Genetic and environmental factors are included in the multifactorial nature of tooth eruption, which may be disturbed at any stage of tooth development.

The prevalence of impacted premolars has been found to vary according to age. The overall prevalence in adults has been reported to be 0.5% - the range being 0.2 to 0.3% for mandibular premolars. Mandibular second premolars

rank third after third permanent molars and maxillary permanent canines, in frequency of impactions.² Impaction of maxillary premolars and canines is seen more often palatally compared with buccally, while the incidence of mandibular premolars is predominantly lingual.² Literature specific to impacted premolars is not extensive, despite the fact that mandibular second premolars alone account for approximately 24% of all dental impactions.² Palatally impacted premolars are sometimes horizontally positioned very high in the palatal vault, close to the nasal and sinus floor and thus might not be detected on a routine periapical radiograph.³ Therefore, when any permanent tooth is clinically missing, a panoramic radiographic examination³ along with an occlusal radiograph is essential. The surgical procedure, although a little extensive, yields excellent results and leaves no residual, cosmetic or functional impairments.

Case Report no.1

In the foregoing case, an adult female presented two horizontally impacted maxillary premolars, of which she was unaware. She was referred to the department of oral and maxillofacial surgery, K.L.E Dental College and Research Centre, Belgaum, for consultation by her orthodontist. The clinical examination showed a mild increase in overjet with moderate mandibular anterior crowding. Her right and left

¹ Associate professor*

² Assistant professor#

³ Postgraduate student*

⁴ Assistant professor*

Department of Oral and Maxillofacial Surgery KLE, Institute of Dental Science, Bangalore, Karnataka

Affiliation: *Department of Oral and Maxillofacial Surgery, Vishwanath Katti (KLE) Institute of Dental Science, Nehrunagar, Belgaum, Karnataka-590010. India

Corresponding Author:

Email: tejraj kale@yahoo.com • Akhilcool2@gmail.com

Phone number: +919448472891



Figure 1: Exposure of the flap on the left side.



Figure 2: Exposure of the crown on the left side.



Figure 3: Exposure of the flap on right side.



Figure 4: Exposure of the right side premolar.

permanent premolars were missing, and no swelling could be seen or palpated, either in the palatal vault behind the incisors or deep in the labial sulcus.

The occlusal radiograph (Figure 9) showed that the missing maxillary premolars were impacted. Both left and right premolars were horizontally impacted, with the crown towards the palate and the root buccally placed very high in the palatal vault. A crevicular incision was made on the palatal side, extending from the distal papilla of the first molar on one side to its counterpart on the other side (Figure 1). A mucoperiosteal flap was reflected and raised. A palatal cusp of the right first premolar was found to be facing the distal side. The buccal and palatal cusp of the crown was exposed until the CEJ, using a bur under continuous irrigation (Figure 2). The tooth was elevated and extracted. The procedure was repeated on the left side (Figure 3 and 4). Hemorrhage was controlled. Closure was done using 3-0 silk using vertical mattress sutures for papilla

to papilla closure, along with compression to avoid blood collection in dead space. Packing was done with cotton gauze placed over the palate which the patient was asked to press with her tongue.

Case report no. 2

A 20-year-old male, who was initially unaware of the right side impacted mandibular premolar, reported to the Dept of Oral and Maxillofacial Surgery. His chief complaint was pain in the right side of the jaw. On clinical examination, a slight bulge and swelling were present in relation to the lingual aspect of first premolar. Radiographic examination showed the presence of an impacted right mandibular second premolar. Surgery was planned, a crevicular incision was made extending distal to the first premolar to mesially to the second molar. A flap was reflected and mild retraction from the blunt end periosteal, taking care to avoid injury to the lingual nerve that may be present close to the crest.



Figure 5: Closure of palatal flap with vertical mattress using 3-0 silk suture.

Using a bur and under irrigation, the crown was exposed until the cemento-enamel junction. The tooth was elevated and extraction was done. Closure was done using 3-0 silk sutures.

Case report no. 3

A 20 year-old female patient reported to the college presenting with a 3x3cm sized swelling in the anterior part of the palate. She was missing maxillary left premolars and had been diagnosed four years previously with impacted left first maxillary and second premolars. She was given a treatment option, but she declined to undergo surgical treatment at the time. A cyst around the first and second premolar can be seen on an orthopantomogram (Figure 8). A biopsy was performed for this palatal swelling which confirmed the presence of a dentigerous cyst which would require cyst enucleation under general anesthesia.

Discussion

Treatment options for impacted teeth include observation, intervention, relocation, and extraction.⁴ The tooth normally erupts into occlusion, often due to various factors such as ankylosis, external root resorption, and root exposure after orthodontic traction.⁵⁻⁶ The position of the impacted premolars in both the cases was so unfavorable that no orthodontic treatment of the tooth was possible, hence extraction was planned. Selection of the appropriate treatment option depends on the underlying etiological factors, space requirements, need for extractions of primary molars, degree of impaction, and root formation of the impacted premolar should be considered.^{6,7} Factors such as the patient's medical history, dental status, oral hygiene, functional and occlusal relationship and attitude toward and compliance with treatment will influence the choice of



Figure 6: Lingual approach used for elevation.

treatment option.^{8,9} The lingual approach was taken due to the tooth position. Besides, the buccal flap would have jeopardized the mental nerve emerging from the mental foramen and the apices of the first permanent molar tooth.

Localisation of impacted tooth

Radiographic techniques play a major role in planning the surgical procedure. Knowing the position of an impacted tooth, palatally or buccally placed, is of utmost importance in planning the incision.^{7,10} In the case of canines and premolars there is more predisposition for palatal position.³ Usually two IOPA's are taken according to Clark's rule or the tube shift principle, or occlusal radiographs (Figure 9) can be used in determining the position.

These impacted premolars and canines, if left unattended may develop dentigerous cysts around them^{11,12} Figure 7. Adenomatoid Odontogenic Tumors¹³ have also been described to develop in relation to impacted teeth. This might require extensive surgical intervention under general anesthesia for its enucleation.

The first patient was referred to us by an orthodontist for extraction, as it was not possible to get the teeth into alignment, nor was orthodontic retraction of the other teeth possible as these occupied a significant space in the arch.

The lingual approach in case of the impacted mandibular premolar was taken due to the position of the tooth. During the incision planning, care should be taken to avoid injury to the lingual nerve if the incision extended distally to the molar.

Timely disimpaction of the impacted maxillary premolars would have prevented the formation of a dentigerous cyst^{11,12} in Case no. 3, which has been well reported in literature.

These peculiar and rare case reports on impacted

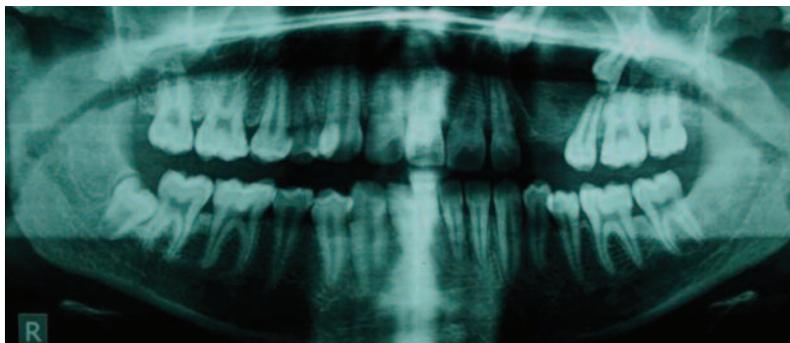


Figure 8: OPG showing a dentigerous cyst around the left maxillary premolar.

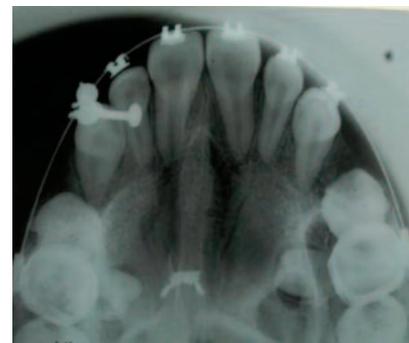


Figure 9: Maxillary Occlusal Radiograph bilateral showing the impacted premolar.

premolars will contribute toward the minimal literature available regarding impacted premolars and offers planning required and the consequences related to late detection.

Correct knowledge of regional anatomy, meticulous manipulation of tissues, and correct application of mechanical principles involved in exodontia will contribute to surgical success.

Conclusion

Surgical management of the impacted teeth always depend on various factors i.e. age, associated pathologic conditions and in agreement with the orthodontist, in order to achieve the ultimate aim of preserving the functional teeth and maintaining arch integrity. Proper treatment planning results in a successful outcome.

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