ORTHODONTIC RELOCATION OF IMPACTED MANDIBULAR SECOND PREMOLAR: A CASE REPORT

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Abstract

The mandibular second premolar is one of the most frequently impacted teeth. The recommended treatment is to extract the second primary molar with or without removing the bone along the eruption path, to uncover the tooth surgically and move it into the arch by orthodontic treatment. This paper reports the orthodontic management of an impacted left mandibular second premolar after uncover the tooth surgically which erupted into occlusion within 12 months.

Key words: Impacted teeth, Mandibular 2nd Premolar, Orthodontic management.

Introduction

An impacted tooth is one that is embedded in the alveolus so that its eruption is prevented or the tooth is locked in position by bone or the adjacent teeth.[1] Mandibular second premolars rank third in frequency of impaction after third permanent molars and maxillary permanent canines.[2] The overall prevalence rate in adults has been reported to be 0.5% (the range is 0.1% to 0.3% for maxillary premolars and 0.2% to 0.3% for mandibular premolars). Premolar impactions may be due to local factors such as mesial drift of teeth arising from premature loss of primary molars; ectopic positioning of the developing premolar tooth buds; or pathology such as inflammatory or dentigerous cysts. They may also be associated with over-retained or infraocclusal ankylosed primary molars or with syndromes such as cleidocranial dysostosis.[3]

Case Report

A young girl, aged 14 years, reported with a chief complaint of absence of teeth in lower left back tooth region. Her medical and dental history were not significant. She had no history of dental extractions or orthodontic treatment. Clinical examination revealed that all permanent teeth, excluding the mandibular left premolar and third molars were present. [Figure 1]

Figure 1 – Intra-oral view

Radiographs confirmed the presence of mandibular left second premolar and it was transversely impacted. [Figure 2,3]

Figure 2 – Intra-oral periapical view in relation to 35

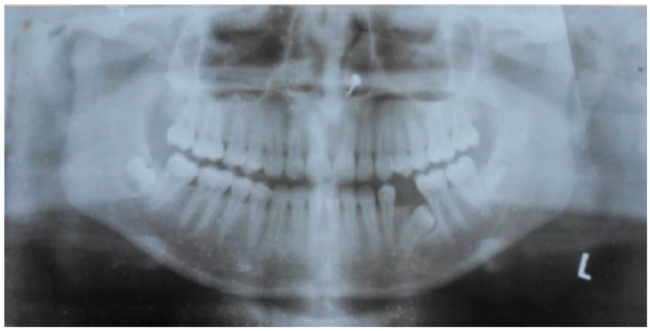

Figure 3 - OPG

A surgical closed-flap eruption procedure was carried out under local anesthesia. An orthodontic MBT mini bracket was bonded to the premolar at the time of surgery. [Figure 4]

A conventional fixed appliance was then used to commence traction of the impacted premolar using elastomeric chain attached to the brackets. [Figure 5]

After 3 months tooth was upright and visible into oral cavity with continuing root development [Figure 6 A-B]. Alignment of the impacted premolar was completed without complication. Total orthodontic treatment time was 12 months. Normal premolar root development is continuing and progress is reviewed annually [Figure 7 A-B]

Figure 4 – Exposing 35 after flap reflection.

Figure 5 – Traction of 35 with E-chain attached to bracket.

Figure 6 – Follow up after 3 months

Figure 7 – Post operative view after 12 months

Discussion

An impacted tooth is one that is prevented to erupt in its normal functional position by bone, tooth or fibrous tissue (Andreasen, 1997). Tooth impaction is a frequently observed anomaly of eruption in dental practice.[1,2]

Treatment options for impacted teeth include observation, intervention, relocation and extraction. On occasion, there may be some interaction between these treatment options. Observation involves no treatment other than monitoring the patient clinically and radiologically.[4] it involves following a child or adolescent for a specific time, which can be divided into preimpaction and postimpaction periods. Intervention may involve simple extraction of a tooth or teeth, usually primary. Occasionally a permanent tooth extraction may be warranted depending on the etiology of the impaction and the specific tooth impacted. Intervention may include a brief period of orthodontic treatment to eliminate the impaction. Relocation refers to either surgical repositioning of the impacted tooth or, more commonly, orthodontic eruption of the impacted tooth. Orthodontic relocation, illustrated in this patient, may be more demanding in terms of time but results in fewer long-term complications.[5]

Kokich[3] describes the surgical and orthodontic management of impacted teeth and identifies the position and angulation of the impacted tooth, length of treatment time, available space and the presence of keratinized gingiva as critical factors that will affect prognosis and treatment outcome. Operational complications, none of which occurred in this case, include injury to adjacent periodontium, injury to adjacent teeth, nerve damage, multiple exposures of the impacted teeth and failure of the orthodontic bond when performing a closed-flap eruption procedure.

In selecting an appropriate treatment option, the underlying etiological factors, space requirements, need for extraction of primary molars, degree of impaction and root formation of the impacted premolar should be considered. Factors such as the patient's medical history, dental status, oral hygiene, functional and occlusal relationships and attitude toward and compliance with treatment will influence choice of treatment options.[6]

Conclusion

This case report illustrate the tremendous potential for treating impacted mandibular premolar, even under the most unfavourable circumstances. Patient age, early loss of primary and permanent molars, disruption to dentoalveolar bone development, severity of impaction, premolar root form at presentation: none of these factors proved an obstacle to successful treatment.

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