Case Report

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Severe re-impacted deciduous tooth in 25-years-old female with permanent dentition associated to high-risk oral-sinus communication surgery: a rare case report

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Introduction and importance: The total re-impaction of primary tooth is a very uncommon phenomenon and few cases have been reported in the literature. "Re-Impaction of deciduous tooth " is a rare phenomena involving more often mixed denture than permanent dentition.
Case presentation: A completely re-impacted deciduous tooth in an adult patient presented an occlusal tooth decay. The presence of the decay cavity indicated that this tooth had once been erupted. After the removal, the tooth anatomy confirmed that it was deciduous tooth.
Clinical discussion: The etiologies remain diverse but the local contributing factors local factors include odontomas, ankylosis, congenitally missing permanent teeth, trauma. The early diagnosis by knowledge of the clinical and radiological image of re-impaction allows early detection, which in turn prevents subsequent complications
Conclusion: The clinicians must be aware that late discovery managing re-impacted and severely infraoccluded deciduous tooth is in risk of causing permanent injury.

Key words: Case report, decidious tooth, dentoalveaolar surgery, oral surgery, paediatric, Re-impaction

Introduction

Re-impaction of a teeth has been defined "as a condition in which a previously erupted tooth becomes submerged in the tissues "[J.J Pondborg]. A tooth is considered re-impacted if its intact marginal ridges are more than 0.5 mm below the intact marginal ridges of the adjacent normal teeth[1]. The condition most often affects deciduous molar teeth, and uncommonly the permanent teeth[2]. Other terms used in the literature similar to re-impaction are: secondary retention, half retention, submergence ,re-inclusion[1].

The prevalence of impacted primary teeth was found to be from 1.3 to 8.9% of the population with a significantly higher incidence between siblings[3]. In general, primary mandibular molars are affected 10 times more than primary maxillary molars[4]. Re-impaction usually occurs in the mixed dentition stage. Many consequences are possible following submergence including: delayed exfoliation, impaction and/or delayed eruption of the permanent successor/tipping of adjacent teeth /over-eruption of the opposing teeth/caries and abscess formation in the submerged tooth.

This phenomenon it is very uncommon in adult population. In fact careful monitoring, and treatment at the first sign of any undesirable sequelae, can prevent problems later.

The purpose of the present case study was to describe a rare primary second molar re-impaction discovered in a young women with permanent denture.

A patient is presented in whom re-impaction of maxillary second deciduous molar was ignored necessitating extensive surgical intervention with postoperative morbidity. This case report has been reported in line with the SCARE 2023[5].

HIGHLIGHTS

- "Re-Impaction of deciduous tooth" is a rare phenomena involving more often mixed denture than permanent denture.
- The etiologies remain diverse but the local contributing factors local factors include odontomas, ankylosis, congenitally missing permanent teeth, trauma.
- The early diagnosis by knowledge of the clinical and radiological image of re-impaction allows early detection, which in turn prevents subsequent complications.

Case report

A 23-year-old female presented to the Oral Surgery Department in Dental consultation and treatment centre in Rabat . She was referred by her orthodontist for germectomy of wisdom tooth, and the removal of right impacted maxillary second premolar.

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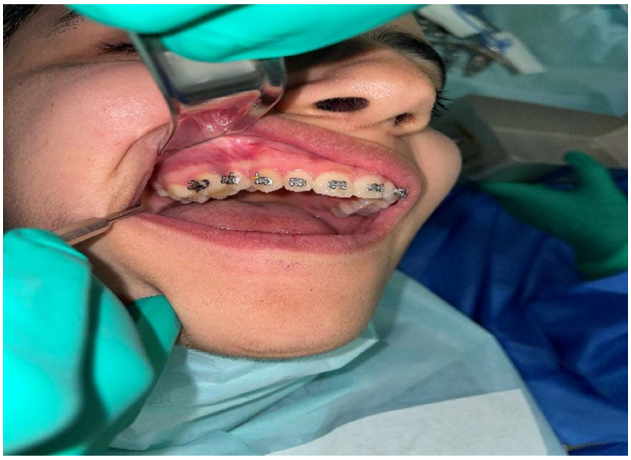

Figure 1. Intraoral view showing the absence of the premolar and slight mesial inclination of the maxillary right first molar and a distal inclination of the first premolarc.

Intraoral examination revealed the presence of a diastema between the first molar and right canine due to the absence of the two premolars. We also noticed the mesial inclination of the maxillary right first molar and a distal inclination of the first premolar [Figure 1]. Nevertheless the vestibular palpation did not detect any curve.

The orthopantomographic examination revealed the impacted tooth (Fig. 2A). A cone-beam computed tomography (CBCT) revealed a tooth with three divergent roots and the intramaxillary sinus position of two roots (palatal and vestibular) (Fig. 2B). The crown of the tooth was located in a superior and vestibular position in relation to the apex of the buccal root of the first upper molar (Fig. 2C).

Under local anaesthesia, an intrasulcular incision going the maxillary right third molar to the maxillary right canine with mesial discharge allowed the lifting of a mucoperisoteal flap and the exposure of the high impacted tooth. A bone excision was done to allow dislocation and surgical removal of the tooth was effected (Fig. 3A and Fig. 4). The re-impaction caused a large bone defect, and the maxillary sinus cavity could be visualized after the tooth removal (Fig. 3B). Moreover the extern anatomy of that the tooth is similar than the anatomy of a decidious molar. Indeed we can see crown shape is more conservative than second permanent premolar. The cusps of are less developed as those permanent premolar. The number of roots of the tooth removed is 3 (Fig. 5A). The three-root variant was the most common in the maxillary decidious first molar[5]. Moreover it presented an occlusal decay cavity (Fig. 5A). A silky cleansing of the site was performed with elimination of the granulation tissue . A saline rinse to cleanse .The site of extraction and hermetic sutures were performed after to reposition the flap to its initial site (Fig. 4). The defect was closed using a simple suture without extending a flap . Indeed the case involved fully impacted teeth and the extraction socket could be covered without extending the flaps. The surgical procedure was performed by a Doctor of Dental Medicine (DMD), practicing in the oral surgery department Dental consultation and treatment centre in Rabat, as a resident physician since 2019. [(Editor: Please provide additional details regarding the surgical procedure (e.g. surgical operator, level of surgical experience etc.)]. Postoperative antibiotic (amoxicillin, 1.5 gm for 7 days) and mouthwash (chlorhexidrine digluconate, 0.2% for 7 days) were administered. The analgesic was prescribed for 3 days. Postoperative healing was uneventful and it was complete after 4 months. The patient then declared that an ectopic palatal premolar was previously removed. A photo taken prior to this event shows that the removed tooth the second premolar, which supports our diagnosis of re-impaction (Fig. 5B).

Discussion

Anomalies in physiological eruption phenomena, like in our case, can cause impacted teeth.

Tooth impaction is defined as a condition where the tooth failed to erupt due to a mechanical blocking and the tooth remains un-erupted beyond its normal time of eruption, which is a relatively common phenomon in both primary and permanent denture , also called primary failure of eruption (PFE)[4,6]. The impaction may be secondary, where the teeth previously erupted tooth becomes again embedded in the oral tissues due to several factors, it is the re-impaction. As mentioned earlier the secondary retention or re-impaction of a tooth is a rare phenomenon[6,7]. The presence of abrasion facets, carious attack of the crown or even fillings, indicates that these teeth have previously been erupted.

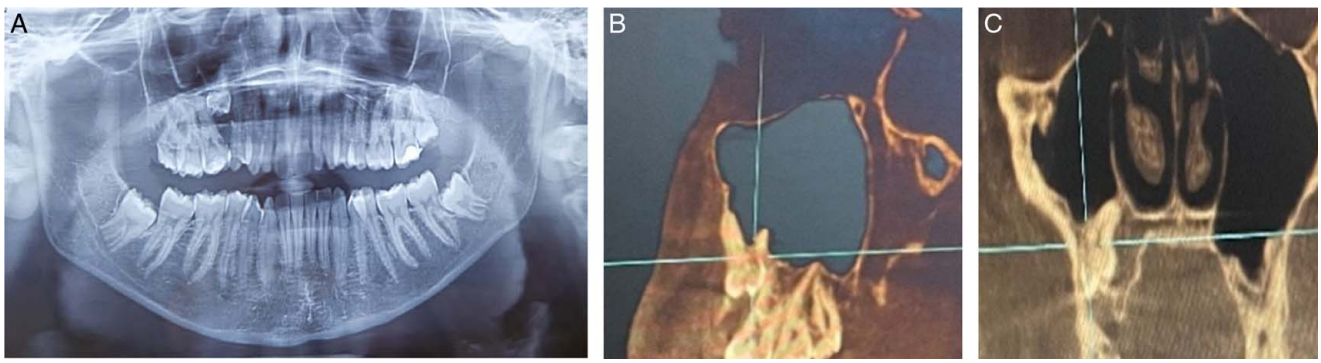

Figure 2. (A) Panoramic radiograph showing an impacted tooth between the right first permanent molar and right first premolar. (B) At the cone-beam computed tomography examination, showing the intermediate position in the maxillary bone, (C) and the intramaxillary sinus position of the roots.

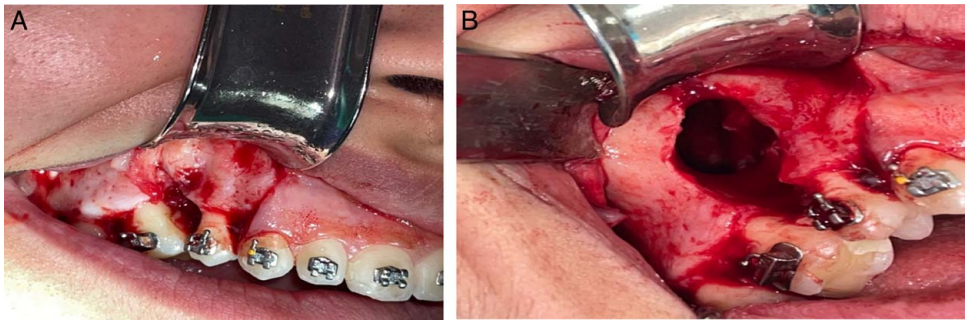

Figure 3. (A) Mucoperisotal flap allowing the exposure of the high impacted tooth. (B) Maxillary sinus cavity visualized direct after the tooth removal.

Re-impaction is considered a very rare phenomenon and there are very few presented cases in the literature. Most of the cases described have been seen in children with mixed dentition[6–10]. Even more unique in permanent denture which is the case described above, since the discovery was made fortuitously in adulthood, in permanent dentition.

The disturbances during the process of eruption usually causes re-impaction or submerged deciduous tooth. Submerged teeth consist of various types from mild to severe and may involve from one to several teeth[8,9].

The re-impaction starts from a few millimetres infra-occlusions to became completely covered by mucosa. In mixed denture it is not advisable to extract all submerged deciduous teeth, as most will exfoliate naturally after 6 months[10,11]. Nevertheless, if left, submerged teeth can have adverse effects on the: adjacent teeth, periodontium and occlusion. Removal of re-impacted deciduous tooth is indicated in cases of[12]: progressive deep infra-occlusion below the gingival margin, severe tipping of adjacent teeth, ectopic eruption of the permanent successor[13].

Indeed in our case, the phenomon result in ectopic eruption of the second premolar. Early removal of the submerged deciduous teeth might have enabled the permanent successor to erupt normally.

The aetiology of re-impaction is unclear but most likely multifactorial. Local factors contributing to impacted primary teeth include odontomas, ankylosis, congenitally missing permanent teeth, defects in the periodontal membrane, trauma, injuries of the periodontal ligament, precocious eruption of the first permanent molar, defective eruptive force or a combination of these factors[7,9,11]. From all the cited factors, ankylosis seems to be involved in the majority of cases, or at least it is a coexisting factor, and that is why it is considered synonymous with the description of re-impaction[6,7]. Failure of deciduous tooth resorption may cause ectopic movement of the permanent successor. However, some authors, Thilander and Jacobasson SO (1968)[11,12,13–19]. considered failed of resorption of the primary tooth to be a consequence rather than a cause of impaction.

Re-impaction of premolar teeth is associated with many complications[1,9]. Submerged teeth have a high potential to cause malocclusion by inclination of proximal teeth or extrusion of antagonistic teeth.

Impacted teeth tend to be in proximity to anatomical structures, mandibular canal, mental foramen, incisive canal, nasal cavity, and maxillary sinus like in our case. Therefore, these teeth are risky during the surgical procedure or the infections of anatomical regions in which they are adjacent[6,7].

Panoramic radiography is employed as the primary imaging technique for the evaluation of impacted teeth and involved lesions. Nonetheless superposition of the anatomical structures in Bi-dimensional radiography sometimes can prevent the accurate diagnosis. CBCT is an advanced imaging technology that overcomes many of the limitations of conventional 2D imaging. In the examination of impacted teeth CBCT provides precise and accurate information better than conventional radiographs in terms of relation of the impacted tooth with the adjacent tooth, nasal floor, maxillary sinus, and mandibular canal in three dimensions. It is important to evaluate the 3-dimensional position of the impacted tooth to the roots of the adjacent teeth to determine the proper treatment plan[12–20].

For permanent dentition, in case of permanent impacted teeth, the treatment decision can be extraction, orthodontics or abstention and follow-up. There is no general approach to assessing impacted teeth[12–14]. An impacted tooth associated to pathology or symptom should be removed. Symptoms can be marginal bone loss, maintained the diastema, like in the current case, between the maxillary molar and the first premolar. Removal was necessary to the orthodontic closing of the space.

Thus the extraction of impacted teeth associated with significant anatomical points can be risky. So if there is no pathology

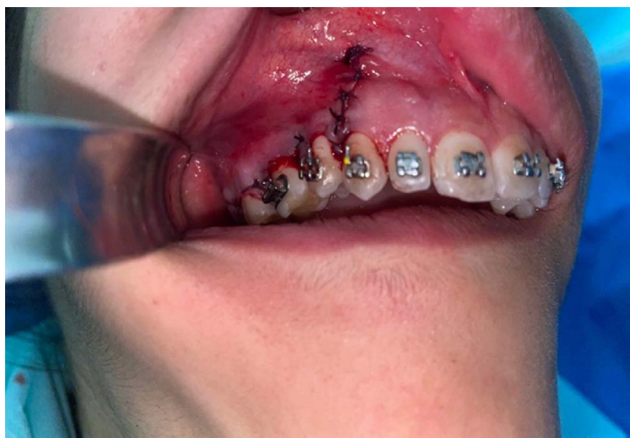

Figure 4. Hermetic sutures were performed to reposition the flap to its initial position.

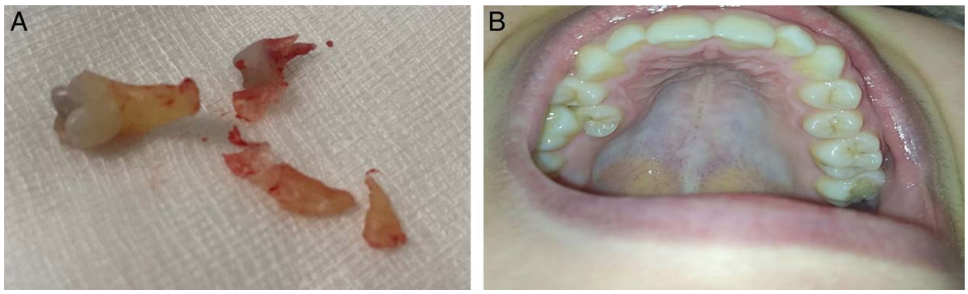

Figure 5. (A) The tooth crown present an occlusal decay cavity and resembles the decidious maxillary molar with three roots rather than the second permanent maxillary premolar. (B) Previous ectopic eruption second maxillary premolar due to the re-impaction.

or symptom, impacted teeth should be followed up. Prophylactic removal is a public health hazard and has to be avoided seriously[13]. Asymptomatic teeth should be followed for at least 2 years and the decision to extraction should not generalize and had to be assessed separately for each case[14].

For patient in mixed or even deciduous dentition , the treatment decision is different . Early removal in stage of moderate infra-occlusion [Figure 6] will prevent from the second retention of deciduous tooth and the retention or ectopic eruption of the permanent successor[11]. With severe infraocclusion [Fig. 6], extractions are recommended as early as possible to use spontaneous mesial migration of permanent molar. Because severe infraocclusion increases the tiping of neighbouring teeth, surgical removal may present difficulties[16]. Thus, with early ankylosis and infraocclusion, the extraction of these ankylosed deciduous molars must be considered even with the successor missing, because a serious negative development can be expected[16,17].

To avoid any unwanted invasive treatment supervision of the eruption process is recommended[18]. Therefore with the permanent successor in a normal position to resorb the ankylosed deciduous tooth, spontaneous shedding of the ankylosed deciduous molar may be delayed by about 6 months when compared with a normal contralateral molar. After this date, extraction of the ankylosed submerged tooth is necessary, to avoid of the risk for unilateral masticatory function and growth restriction, which might later lead to temporomandibular joint problems or facial asymmetry[16,17].

The early diagnosis by knowledge of the clinical and radiological image of re-impaction allows early detection, which in turn prevents subsequent complications[16–18].

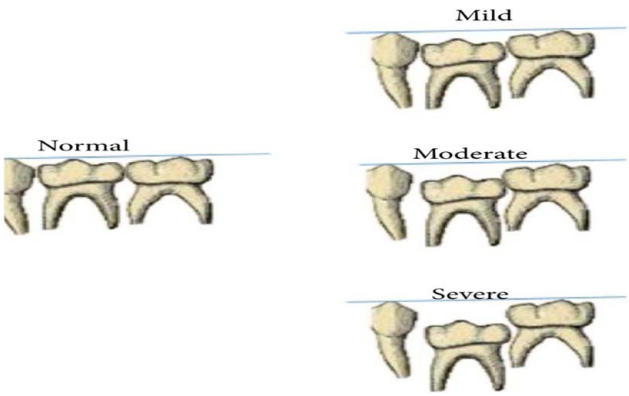

Figure 6. Classification of the infraocclusion by Brearley and Mc Kibben[6]. Mild infraocclusion: The occlusal surface of the molar is located at ~1 mm below the occlusal plane, compared to the not-ankylosed teeth in the same quadrant. Moderate infraocclusion: The occlusal surface is located below the level of the contact point with one or two of the neighbouring teeth. Severe infraocclusion: The occlusal surface is located at the proximal gingival tissue level of one or both neighbouring teeth.

Conclusion

Impaction and failure of eruption in primary molar might be associated with a disturbance in the development of the permanent successors. It is important that all clinicians , paediatrics , oral surgeons, orthodontists and maxillofacial surgeons are aware of the un-erupted teeth in patients with impacted teeth. Any absence of permanent or deciduous teeth, which have not been previously extracted, should be noted.

Ethical approval

Not involving patients. Not applicable because it is a case report and not a study. Ethics approval was not necessary.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request". I Jihane KIDARI give my consent for this information about MYSELF relating to the subject matter to appear in the journal, associated publications or images.

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Author contribution

H.S. contributed to the literature review , and to the writing of the manuscript. B.C. contributed to the literature, the supervision, correction and validation of the manuscript.

Conflicts of interest disclosure

The authors declare that they have no financial conflicts of interest with regard to the content of this report.

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