

SEVERE REIMPACTION OF PRIMARY MOLAR IN A CARRIER OF THE VON WILLEBRAND DISEASE**Imen Raâdani*¹, Obaid Garouechi¹, Raja Fayala¹, Riadh Ray¹, Amira Benhadjamor¹, Marwa Hedhli¹, Ikdam Blouza¹**¹Dental Medicine Department, Military Teaching Hospital, Bizerte, Tunisia.***Corresponding Author: Imen Raâdani**

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ABSTRACT

Reimpaction is a clinical condition in which a completely erupted tooth is submerged in the alveolar bone, producing the clinical appearance of the infraocclusion. Studies report prevalence rates of infraocclusion to be from 1, 3% to 8,9% of the population. Infraocclusion is classified as slight, moderate or severe. This phenomenon is not clearly understood. Nevertheless, certain factors such as ankylosis, heredity, agenesis, traumatism, infection, or inflammation are involved. Once a diagnosis of an infraerupted tooth is made in the primary or mixed dentition, the course of treatment depends on whether the tooth is ankylosed and if there is a permanent successor present. The authors present a new case of reimpaction of primary molar in a carrier of the Von Willebrand disease. The prevalence, the uncertain etiology, diagnosis, treatment options of this phenomenon as well as the management protocol in patient with Willebrand disease are discussed based on a review of the current literature.

KEYWORDS: Reimpaction, infraocclusion, Von Willebrand disease.**INTRODUCTION**

Reimpaction defines the situation in which a tooth has completely erupted touching the occlusal plane and then submerged again into the alveolar bone, producing the clinical appearance of infraocclusion.^[1]

Infraocclusion is a clinical term, it describes a tooth situated below the normal occlusal plane. It can appear following reimpaction or partial eruption.^[1]

The etiology is controversial but may be due to a variety of factors.^[2,3] Undoubtedly, dental ankylosis is thought to be the major aetiological mechanism of infraocclusion.^[2]

Studies report prevalence rates of infraocclusion to be from 1,3% to 8,9% of the population with a significantly higher incidence between siblings.^[2,4]

The aim of the present report is to describe a new case of reimpaction of primary molar in a carrier of the Von Willebrand disease, to establish the prevalence, the uncertain etiology, diagnosis and treatment options for the reincluded primary molars and to discuss the management protocol in a carrier of the Willebrand disease.

PATIENT AND OBSERVATION

The patient, a 16-year old male, with Von Willebrand disease type 2 (with a minor phenotype despite a very low Willebrand activity rate), was referred by his dentist to the Department of Dental Medicine of Military Teaching Hospital of Bizerte. The patient denied any acute or chronic pain.

The extraoral examination did not reveal any facial asymmetry. The intraoral examination noted an absence of mandibular bone swelling, a normal mucosa and pain on palpation,

The dental examination revealed mesial version of the left mandibular first molar (the 36 tooth), absence of the left mandibular second premolar (the 35 tooth).

The panoramic radiograph showed a severe reinclusion of the 75 tooth and a deep inclusion of 35 tooth.

A cone-beam computed tomography (CBCT) was requested to check the relation between the 35 tooth and the mandibular canal as well as the mental foramen, and to define the surgical approach.

The decision to extract the impacted teeth was taken after collaboration with patient's hematologist. Patient's consent was obtained.

The hematologist recommended a protocol to be followed during the intervention. In fact, He recommended the intravenous injection of Immunate® (factor VIII and Von Willibrand factor) 30 minutes before the act by 2500 IU then 1250 IU at 12 hours and 24 hours after the extraction. The prescription of oral Tranexamic acid was recommended as an adjuvant treatment (3 grams per day for a week). The use of local means of hemostasis was also strongly recommended.

Under loco-regional anesthesia, a full-thickness buccal flap was detached, with a mesial relief incision. The trepanation of buccal cortical bone and the extraction of 75 were performed successfully. In contrast, the extraction of 35 was incomplete because of the operating difficulty as its depth and its relationship with the mental foramen.

The residual cavity was curetted and rinsed. An absorbable hemostatic gauze was placed at the cavity, then the flap was repositioned and sutured.

The patient respected the protocol recommended by his hematologist to avoid postoperative bleeding.

A slight Labio-mental paresthesia was recorded postoperatively and then completely disappeared at one month.

The patient was referred to an orthodontist to treat the tipping of the adjacent tooth.

DISCUSSION

Infraocclusion of the temporary molars is an arrest of the eruption to be in line with adjacent teeth in the vertical plane of occlusion without physical obstacle after emergence in the oral cavity.^[3,5] The infraerupted tooth remains at a stationary level while growth continues in adjacent teeth.^[3,4]

Studies report prevalence rates of infraocclusion to be from 1,3% to 8,9% of the population.^[2,4] Raducanu and al found a prevalence of reimpaction equal to 7.16%.^[1] The incidence of infraocclusions of the temporary molars varies from 1.3% to 38.5% depending on ethnic group and on age.^[4] Infraeruptions generally appear in mixed dentition around 8-9 years of age. Temporary molars are the teeth most affected and especially when the permanent tooth is agenetic. The second temporary mandibular molars are most often affected, then the first mandibular temporary molar.^[4]

The mandible is more affected by the reimpaction than the maxilla.^[4] Răducanu conducted a study on sample of patients affected by reimpaction (19 patients) and found that $\frac{3}{4}$ of the reimpacted molars are mandibular and the first inferior molar is the most affected tooth.^[1] As for Sidhu, the mandible is ten times more frequently affected than the maxilla at 6-11 years.^[6]

The level of infraocclusion varies, ranging from a few millimeters to the complete disappearance of the tooth under the gingival mucosa.^[4]

A simple classification of the infraocclusion has been described by Brearley and Mc Kibben:

- Slight infraocclusion : the occlusal surface of the molar is located at approximately 1 mm below the occlusal plane, compared to the not-ankylosed teeth in the same quadrant, it represents 67.75%, over 2/3 of the teeth infraoccluded presented slight reimpaction^[1]
- Moderate infraocclusion: the occlusal surface is located below the level of the contact point with one or two of the neighboring teeth, it represents 19.35%^[1]
- Severe infraocclusion: the occlusal surface is located at the proximal gingival tissue level of one or both neighboring teeth, it represented 12.90%.^[1,4]

The severe reimpaction of the temporary molars is found with roots more reabsorbed. In slight reinclusion, the roots are totally reabsorbed only in 7% of cases while in severe forms this percentage rises to 38%.^[4]

The reimpaction in the reported case was severe with resorption of roots.

The etiology of infraocclusion is controversial, it still not clear but the following factors are involved: ankylosis, absence of a permanent tooth, local factors such as traumatism, infection, inflammations, etc.^[7,8] that produce discontinuities or deteriorations of the periodontal ligament or the alveolar bone metabolism. Heredity has also been suggested since infraeruption of teeth has been observed in siblings.^[1,3]

Histological studies have shown areas of ankylosis on infraerupted teeth. The difficulty in extracting them, confirms this hypothesis. On the other hand, the etiology of this ankylosis remains poorly understood.^[4]

Multiple complications can occur as a result of an infraerupted tooth and therefore early diagnosis is important. In fact, without timely and effective treatment, the delay of the primary tooth exfoliation and the permanent tooth eruption may be encountered, occlusal disturbances may be faced.^[1,2] An infraerupted tooth can cause an insufficient development of supporting bone. This can complicate future dental treatment including placement of a dental implant and orthodontics.^[3] Insufficient bone may also result in periodontal pocketing, dehiscences, a root exposure of the adjacent teeth. The infraerupted tooth and adjacent teeth are also at increased risk of developing a carious lesion due to plaque accumulation surrounding the crown and difficult access for proper oral hygiene.^[3]

The occlusal consequences of these infraocclusions can be numerous: version of adjacent teeth ranging sometimes

until a complete closure of the space on the arcade, over-eruption of the antagonists teeth, lateral interposition of the tongue.^[2,4]

Moreover, Becker and Shochat detected a significant deviation in the dental inter-incisor midline toward the affected side.^[9]

In the present case, the reimpaction of the temporary molar was complicated by the version of adjacent teeth and a complete closure of the space on the arcade and a deep impaction of the permanent tooth.

As for the diagnosis of reimpaction, it is based on clinical and radiological data. Clinically, we may note: presence of infraocclusion, high tonality at percussion, loss of mobility insufficient development of the alveolar process and lack of response to orthodontic forces.^[1] In this case, the primary molar completely disappeared under the gingival mucosa.

Radiologically, we could find obliteration of the periodontal ligaments space^[2], signs of attrition, root resorption is concordant with age or delayed, presence or absence of the successor and its position inside the bone structure^[1]

Intraoral periapical, occlusal panoramic radiographs and sometimes Computed Tomography (CT) can be used to examine the space between the infraoccluded and the adjacent teeth. This latter has been shown to be preferable to the conventional techniques in terms of visualization of the impacted teeth and the localization of the inferior alveolar nerve.^[8]

Treatment decisions are mainly guided by the time of diagnosis, the presence or absence of successor tooth, resorption rate, and rate of progression of the infraocclusion. The most common treatment option was expectation with monitoring of the time of primary molars exfoliation and permanent teeth eruption and the development of permanent occlusion.^[1,2]

Extraction is recommended if there is a progressive, deep infraocclusion below the gingival margin, ectopic eruption of the permanent successor or caries and abscess formation.^[8] If the permanent successor is absent, the decision to extract or keep the infraerupted tooth depends on the dental condition of the tooth, the root resorption, the occlusion and the patient's preference. To prevent tipping of the adjacent tooth and overeruption of the opposing tooth, restoration of the occlusal surface is recommended. Restorative options include placement of composite resin buildup of the occlusal surface or a stainless steel crown.^[8] If a malocclusion is present, the patient should be referred to an orthodontist for evaluation as extraction of the non-ankylosed infraerupted tooth may influence future orthodontic treatment. Space maintenance may be required or an

appliance may be used to upright a molar which has tilted mesially.^[3,8]

If the tooth is not ankylosed, it has been suggested to wait for normal exfoliation. If the premolar is present, spontaneous but late eruption is possible.^[3,8]

In the present case, the deep infraocclusion below the gingival margin required the extraction and then the patient was referred to orthodontist to treat the occlusal disturbances.

Patients with a bleeding disorder have a higher risk of bleeding than the general population. They therefore require a suitable management protocol when performing dental avulsions.^[10] The patient in the reported case suffered from a hemorrhagic disease which was von willebrand disease.

Von Willebrand's disease is the most common constitutional hemorrhagic disease (incidence 1/1000).^[11] It is characterized by a quantitative or qualitative deficit in von Willebrand factor. It is transmitted in the autosomal mode and is expressed in a dominant or recessive mode depending on the type.^[11]

Willebrand disease type 1 is the most frequent it due to a moderate quantitative deficit, it is not very symptomatic: there is a variable hemorrhagic tendency, mainly involving the mucous membranes.^[10,11]

Von Willebrand disease type 2 due to qualitative deficits, sometimes it have a greater clinical expression. Type 2N variants, resulting from defective binding of von Willebrand factor to factor VIII, present as minor hemophilia.^[10,11]

The severe form (type 3) is recessive and very rare (incidence 1/1000000 births). It is characterized by an undetectable von Willebrand factor level and a very low factor VIII level (<5%).^[10,11]

Patients with coagulation factor deficiency should have intravenous replacement therapy with desmopressin or coagulation factors.^[10]

In the majority of cases of von Willebrand disease, administration of desmopressin allows a transient increase in the levels of von Willebrand factor and factor VIII, ensuring the control of bleeding.^[10,11]

Nevertheless, in type 3, in certain types 2, and in patients with severe bleeding or a contraindication to the use of desmopressin, administration of Willebrand factor concentrate of human origin is often necessary.^[11]

With the clinical protocol used (replacement therapy and local hemostatic measures), the frequencies of postoperative bleeding were similar to those of studies published in the literature. In fact, Piot *et al.* conducted a

study on patients with bleeding disorders (hemophilia or Willebrand disease). Replacement therapy was used in patients with severe bleeding disorders (severe-to-moderate hemophilia or Willebrand type 2-3) while desmopressin was used in good responders with mild hemophilia A, Willebrand type 1, and platelet disorders. Local hemostatic measures and antifibrinolytic treatment were used systematically. Ninety-three patients underwent 103 dental extractions, 2 of these patients had secondary bleeding requiring surgical hemostasis.^[12] Moreover, a prospective study conducted by Labored and al, included all patients needing dental extractions and who had blood hemostasis diseases. Thirty-seven patients were included. Bleeding occurred in thirteen patients (35.14%).^[10]

CONCLUSION

The prevalence of children affected by infraocclusion is not negligible. Dentists are in a unique position to diagnose patients with reimpacted teeth. Early diagnosis and treatment may prevent the appearance of complications and the need for extensive surgery. This help to prevent future orthodontic, surgical and prosthodontic treatment. If an infraoccluded or ankylosed primary tooth is observed, it should not be neglected to prevent a much complicated treatment plan with long-standing results. Patient's age, occlusal status, the development and condition of the affected tooth are the factors that should be considered in the therapeutic decision.

Competing interests

Declared none.

Authors' contributions

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Figure 1: Intraoral picture showing complete reimpaction of lower left primary second molar (75) and mesial version of tooth adjacent to it.^[36]

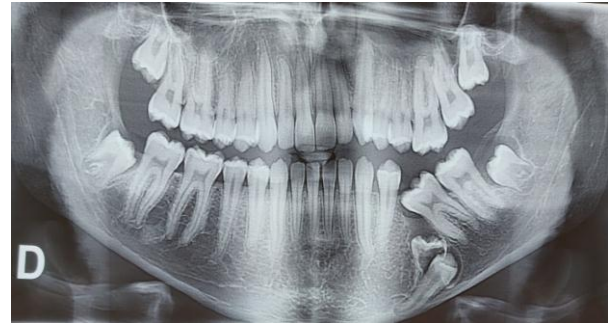


Figure 2: Orthopantomograph showing submerged mandibular primary left second molar (75) in alveolar bone with root resorption and also deep impaction of the second premolar (35)



Figure 3: Oblique coronal reconstruction of a CBCT showing the relationship between the impacted teeth and the inferior alveolar nerve.



Figure 4: Intraoperative picture showing the detachment of full thickness flap and trepanation of the buccal cortical bone.

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