Received date: 20 November 2023 / **Accept date:** 27 December 2023
DOI: 10.61139/ijdor.1393081

Ankylosed Primary Tooth Under the Premolar Germ: Clinical Findings and Treatment Planning

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Abstract

The impaction of primary teeth is not a common occurrence. In a patient who presented to our clinic, it was observed that the lower second primary molar was situated below the premolar germ. Considering information from previous studies, ankylosis in the primary tooth is presumed to be the underlying cause. After the extraction of the supernumerary tooth in the area, the patient will undergo long-term comprehensive monitoring.

Case Report (HRU Int J Dent Oral Res 2023;3(3): 163-165)

Key words: Ankylose, submerged, primary teeth, premolar.

Introduction

Tooth eruption refers to the process in which a tooth shifts from its typical location within the alveolar process to its functional placement in the oral cavity. (1). This phenomenon involves various tissue alterations, such as the resorption and apposition of alveolar bone, as well as the maturation of the root and periodontium. (1, 2). Abnormalities in these natural processes can result in impacted teeth, where impaction may be primary, indicating the tooth never emerges, or secondary, signifying that the tooth remains below the expected level even after eruption. (2). Factors at a local level that contribute to the impaction of primary teeth encompass trauma, ankylosis, congenital absence of permanent teeth, abnormalities in the periodontal membrane, odontomas, injuries affecting the periodontal ligament, premature eruption of the first permanent molar, insufficient eruption force, or a combination of these elements. (3, 4, 5). The frequency of impaction in primary teeth is considered rare (6), with unerupted and impacted premolar teeth being a common condition in children (7). Typically, impacted primary molars, particularly the mandibular second molar, are frequently affected, while the maxillary first molar is the least commonly impacted. The prevalence of impacted primary molars in children varies from 1.3% to 35% across different epidemiological studies. The exact cause of this condition remains unknown (8-11). However, recent histological and scanning electron microscopy (SEM) studies on extracted teeth have revealed that a significant proportion of these molars exhibit ankylosis. The specific cause of this ankylosis is uncertain, with genetics being identified as a contributing factor in a few cases. The rare occurrence of intraosseous inversion involves the primary tooth being positioned below the expected location of the permanent tooth. A review of the literature from the past two decades identified only four cases where unerupted primary molars were situated beneath the germ of the premolar. (12-15). Furthermore, there is a documented case of an ankylosed primary tooth with an unerupted permanent tooth positioned beneath it. (16).

Clinical Examination

A 12-year-old female patient visited the Şanlıurfa Oral and Dental Health Hospital for routine treatment. The patient had pain in the lower first permanent molar and no systemic diseases. Dental history obtained through anamnesis revealed no tooth infection or trauma. An informed consent form was signed by the patient's parent. Extraoral and intraoral clinical examination revealed the absence of the right mandibular primary molar and the presence of a supernumerary tooth resembling a premolar in the same area (Figure 1). Panoramic and periapical radiography showed that the right second primary molar had changed position with the germ of the permanent second premolar (Figures 2, 3).

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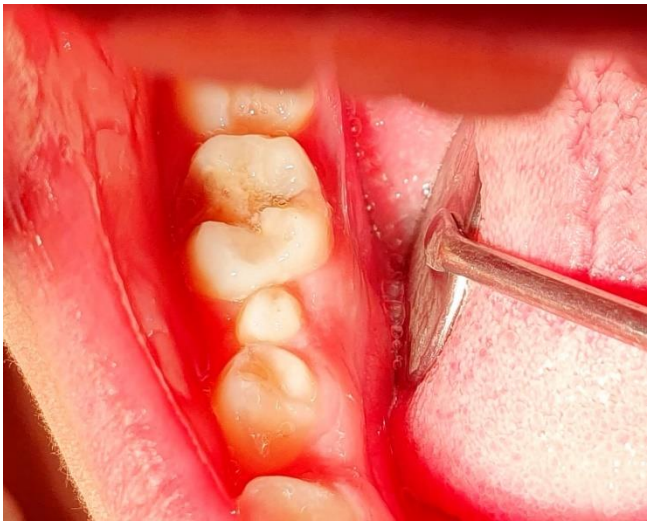

Figure 1

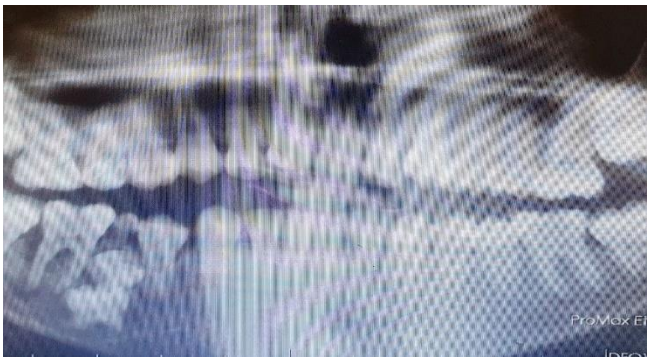

Figure 2

Figure 3

Treatment

The patient's painful lower right mandibular molar and supernumerary tooth were extracted (Figure 4). A follow-up appointment was scheduled for three months later to monitor the eruption status of the premolar and primary molar teeth. The patient was informed that the teeth might need to be extracted if they do not erupt spontaneously and that orthodontic treatment might be required in the future.

Figure 4

Discussion

The impaction of primary molars is relatively rare in children and affects only 2.5-8.3% of cases (17). Most reported cases of impaction in the literature are from permanent teeth. While the absence of primary teeth is rare, impaction of the second primary molars is more common than other impactions. Cases of impacted primary molars positioned beneath permanent premolars have only been reported as individual cases (18,19,20). The primary etiological factor is associated with the premature ankylosis of the second primary molars. It is established that the dental follicle of the upper permanent molars with larger crowns develops in the palatal region, while for lower molars, it develops in the lingual region. The active eruption of primary molars occurs once crown calcification is complete, and root calcification has commenced. Initially, the premolar tooth is situated near the roots and later assumes a position between the roots during normal development. (17). Nonetheless, the initiation of ankylosis in the primary tooth can disturb this coordinated progression. The premolar tooth may undergo development in a lingual direction towards the crown or eventually ascend in close proximity to the crown of the ankylosed primary molar. Consequently, the premolar's development initiates at the level of the occlusal plane and lingually, concluding the pre-eruption phase positioned at the apical region of the roots of the primary molars. (20).

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Conclusion

The incidence of impaction in primary teeth is very rare. In the case we studied, the impaction of the primary tooth beneath the premolar germ suggests the possibility of ankylosis. This case underscores the importance of radiological examination. Necessary appointments have been made for the patient's long-term follow-up.

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