

Unerupted Primary Molar Teeth Positioned Inferior to the Permanent Premolar: A Case Report

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Abstract

Primary tooth impaction is a rare finding during the development of primary dentition. Several factors contribute to the impaction of a deciduous tooth. This report describes the diagnosis and treatment of a 10-year-old boy who presented an impacted second primary mandibular molar. This tooth, located inferior to the second premolar together with an odontoma, was positioned superior to the premolar teeth. Treatment consisted of surgical removal of the impacted deciduous tooth and odontoma and placement of a passive lower lingual holding arch. Periodic examination was indicated for follow-up. Early intervention was recommended to manage orofacial disfigurement and to avoid consequent problems.

Key Words: Primary Molar Tooth; Tooth Impaction, Total Impaction

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INTRODUCTION

Tooth eruption has been described as the movement of a tooth from its normal position within the alveolar process towards its functional position in the oral cavity [1]. This process is accompanied by multiple tissue changes, such as resorption and apposition of the alveolar bone and development of the root and periodontium [1, 2].

In some instances, anomalies in these physiological phenomena can cause impacted teeth. The impaction may be primary, meaning that the tooth has never erupted, or it may be secondary, meaning that the tooth was reimpacted after eruption [2]. 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 [3,4].

Ankylosis probably plays a leading role in the etiopathogenesis of impaction [5]. However, in some cases the etiology of tooth impaction is unknown or may have a genetic basis [3]. Recent studies have suggested that arrested eruption may relate to local disturbances in the periodontal membrane of the RANK-PANKL-OPG system [6].

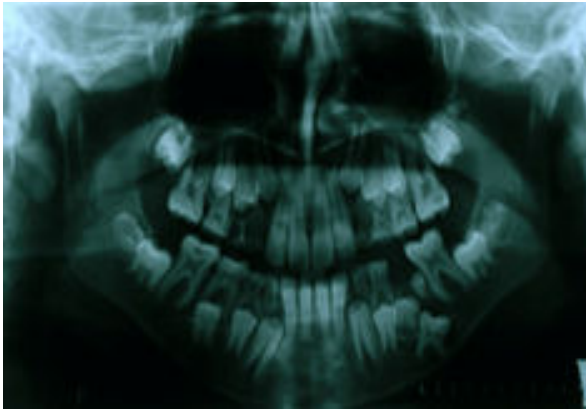


Fig1. Panoramic radiograph showing a totally impacted primary left mandibular second molar. The developing second premolar and an odontoma are positioned occlusally to the crown of the unerupted primary tooth

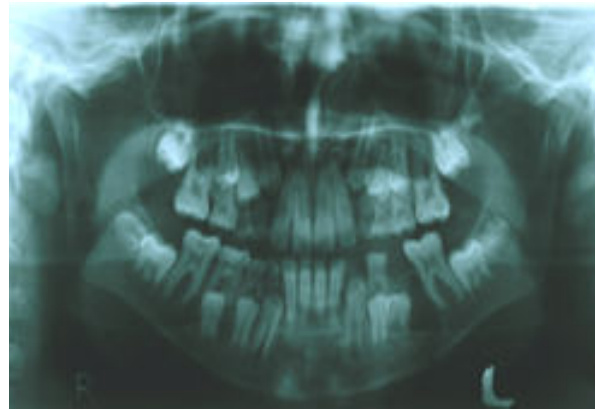


Fig 2. Panoramic radiograph after surgical extraction of the impacted primary left mandibular second molar and odontoma

Although the incidence of impaction of primary teeth is considered to be rare [5], unerupted and impacted premolars are a common finding in children [7]. Among all primary teeth the mandibular second primary molar has the highest incidence of semi-eruption or ankylosis [8]. Unerupted primary molars may cause problems in the dental arch such as space loss, tipping of adjacent teeth, supra eruption of the antagonist and failure of eruption of the permanent teeth underlying the primary teeth [3, 4, 6]. Total impaction is considered a very rare phenomenon with very few cases presented in the literature [4, 9]. Primary failure of eruption is diagnosed when the unerupted tooth is covered by an intact mucosa and radiographs reveal the tooth to be deeply buried in the jaw bone [10]. The purpose of this report was to present a case of an impacted second primary molar positioned inferior to its succedaneous permanent tooth.

CASE REPORT

A 10-year-old boy was referred to the Pediatric Dental Clinic at the Dental School of Shiraz University of Medical Sciences, Iran with the complaint of absence of one tooth on the left side of his lower jaw. No associated pain or discomfort was reported. The history did not suggest any hereditary etiology.

No symptoms of syndromes were evident and his history did not reveal dental trauma or infection. Clinical examination showed normal development of the dentition with the exception of a missing mandibular left second primary molar. There was no evidence of soft tissue swelling or discoloration of the surrounding dentition. A panoramic radiograph revealed normal dental development in all quadrants except on the mandibular left side. It showed two developing, unerupted teeth; namely, the mandibular left second primary molar and its second premolar (Fig 1). The deciduous molar was located on the left of the second premolar and mandible. A well-circumscribed radiopacity was visible near the coronal area of the premolar. Based on this information, surgical extraction of the unerupted primary second molar and the radiopaque mass was planned to facilitate the eruption of the second premolar (Fig 2).

The histopathology of the excised mass revealed an odontoma lesion. A passive lingual arch was placed in the lower arch as a space maintainer (Fig 3). The patient was given an appointment every six months for follow-up evaluation of the second premolar retention and any notable findings in the future and for subsequent orthodontic treatment. A follow up panoramic radiograph showed the second



Fig3. Occlusal view of lower passive lingual arch



Fig4. Panoramic radiograph showing the second premolar eruption path after 13 months

premolar eruption path after 13 months (Fig 4). Twenty three months after, a coil spring space-regaining appliance was inserted for distal tipping of the mandibular first permanent teeth due to interruption of patient follow up. After 31 months, the teeth had erupted in its normal position (Fig 5).

DISCUSSION

Severe infra-occlusion of deciduous molars has been observed relatively infrequently in children affecting only 2.5%-8.3% [9]. Furthermore, cases of impacted primary molars positioned inferior to the succeeding premolars have been reported as single cases only [9,11-14]. The abnormal position of the second premolar is due to early ankylosis of the second primary molar. Embryological studies have revealed that the tooth buds of permanent premolars develop in the palatine region of the upper arch and in the lingual region of the lower arch in relation to the enamel organ of the primary teeth. Under normal conditions, the permanent tooth bud is located near the occlusal surface of the primary molar. Then it changes its position shifting toward the root of the primary molar [6]. In the present case the permanent second premolar may have developed in a superior and lateral position with respected crown of the impacted primary mandibular second molar, as in the case reported by Borsatto et al [9]. Kjaer et al [6] estimated

that this arrest in eruption occurs before the age of 3 years when the permanent tooth bud in the initial stage is located laterally to the arrested primary molar. Other researchers suggested that noneruption of second primary molars could result from abnormal development of the primary molar germ or malposition of the second premolar angle before 1 year of age [13]. Sakai et al [15] reported eruption failure of a single mandibular right primary first molar in a 5-year-old boy. Two cases of totally impacted maxillary deciduous molars were described by Gunduz et al [16]. It is to be expected that an ankylosed unerupted primary tooth will become more deeply covered by the alveolar bone during growth [13]. Although extraction of infraoccluded primary molars should be avoided, because resorption and exfoliation will most often occur within the normal time frame, extraction of an unerupted primary molar is recommended. This is to permit normal eruption of the tooth, to prevent the unerupted tooth from interfering with the development of the premolar and to avoid the risk of cyst formation [14]. Treatment options for an impacted premolar include extraction of the primary tooth and patient follow-up without treatment, but with supervision of the eruption process [17]. Other treatment strategies are surgical exposure or surgical repositioning with or without orthodontic traction and surgical removal of the erupted premolar [7].



Fig5. The second permanent premolar teeth completely erupted

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