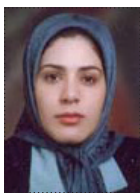


# Case Report: Simultaneous Presence of Primary and Permanent Teeth

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## ABSTRACT

Although the delayed exfoliation of primary teeth among children is a common dental problem, simultaneous presence of primary teeth and corresponding successors is a rare feature in adults. This paper reports an unusual case in which both permanent teeth (molars, premolars, and canines) and primary teeth were present simultaneously. This report describes questions concerning the etiology of overretention of primary teeth.

## 1. Introduction

A majority of uncommon dental abnormalities occur during childhood years. Dental anomalies are classified according to their abnormalities in number, shape, color, structure, texture, eruption, exfoliation, and position. Exfoliation of deciduous teeth is a normal and predictable physiological phenomenon [1].

Over-retained primary tooth is a condition in mixed dentition phase, when the permanent tooth is erupted while the primary tooth has not exfoliated yet. One

study reported that about 20.85% of children had over-retained primary teeth with highest prevalence in children of 10 years old. In this study, 66.23% of over-retained primary tooth occurred in mandible with highest prevalence in second lower primary incisor and 67.55% of over-retained primary teeth were causing malocclusion [2].

Prolonged retention of primary teeth is not an uncommon finding. The possible causes for this condition are 1) Absences of the permanent teeth, 2) The presence of dense sclerotic bone around the crown of permanent tooth, 3) Failure in normal resorption of roots of the primary tooth, and 4) Deviation in the eruption of the teeth

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due to systemic disorders [3, 4]. This article presents an unusual case of a nonsyndromic adult female with the simultaneous presence of primary and permanent teeth.

## 2. Case Report

A 19-year-old female was referred to the Department of Pediatric Dentistry, University of Medical Sciences, Kerman, Iran with a chief complaint of crowded teeth. Physical development of this patient was normal. There was no history of any genetic or dental anomalies in her family. No medical history or dentofacial trauma was reported by the patient.

Extraoral examination of this patient was noncontributory. Intraoral examination did not show any hard and soft tissue abnormalities. A clinical dental examination revealed the presence of the following teeth in her maxilla: 17, 16, 15, 14, 53, 12, 11, 21, 22, 23, 24, 65, 26, 27, and these teeth in mandible: 47, 46, 85, 45, 84, 44, 83, 43, 42, 41, 31, 32, 34, 36, 37. When the patient referred to us some over-retained teeth (63, 73, and 75) had been extracted (Figures 1, 2).

The crown size of all teeth was normal. The midline was on and both overjet and overbite were 1 mm. The position of maxillary canines was buccal (Figure 3). Molar relationship was class III and half cusp class II in right and left side, respectively.

Radiographic examination confirmed the presence of all teeth except maxillary third molars and unerupted maxillary left second premolar, canine, maxillary, and mandibular third molars (Figure 4). The laboratory tests (T3, T4, FreeT4, TSH, Alkaline phosphatase, Ca and P) were requested and the results were in normal range.



**Figure 2.** Mandibular view showing the over-retained right primary canine, first, and second molar.



**Figure 1.** Maxillary view showing the over-retained right primary canine.

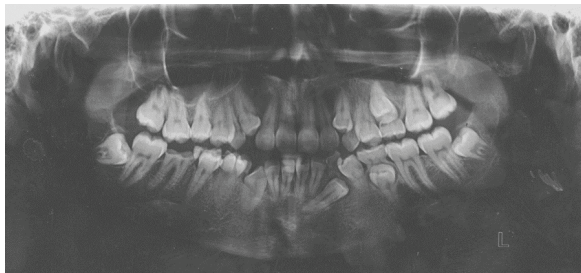
## 3. Discussion

The exact mechanism of primary tooth exfoliation could involve pressure resorption of the primary root invoked by the erupting successional tooth and or differentiation of monocytes of the periodontal ligament into odontoclasts. The odontoclasts then resorb the primary root in a similar manner to osteoclasts during bone remodeling or resorption without inflammatory response [5]. The possible causes that trigger this process are unknown. The majority of carious primary teeth undergo normal exfoliation without restoration [6].

The etiology of over-retained primary tooth is often crown misalignment of the successional permanent tooth, as it erupts relative to the root of the primary tooth [7]. According to some studies, the possible causes for overretention of primary teeth are rampant caries, the presence of a calcifying odontogenic cyst, intraluminal adenomatoid odontogenic tumor, monostotic fibrous dysplasia, and chronic malnutrition [1, 7]. Also, accumulative and quantitative effect of rampant caries



**Figure 3.** Midline was on and the position of maxillary canines was buccal.



**Figure 4.** Radiographic evaluation showed unerupted maxillary left second premolar, canine, maxillary and mandibular third molars.

may delay the beginning of the root resorption process. Chronic malnutrition reflected by a stunted growth pattern has been related to delayed exfoliation of primary teeth [8].

O'Connell et al. found that tooth eruption disorder is part of the hyper IgE syndrome. This disorder occurs because of delayed primary tooth exfoliation rather than a developmental delay in the formation of the permanent dentition. The persistence of Hertwig epithelial root sheath is unusual and may be related to the lack of resorption of the primary teeth. They found that 75% of patients older than 7 years reported problems with permanent tooth eruption, as evidenced by retained primary teeth or the need for optional extractions of primary teeth to allow eruption of their successors [9].

In this case, these reasons were ruled out. Based on several studies, the most likely explanation is genetic and hereditary predisposing factors as the etiology of dental anomalies (anomalies in number, size, position, shape, and timing of eruption). A wealth of evidence suggests that genes play a basic role in the etiology of many dental anomalies of clinical significance. Therefore, a common genetic defect may give rise to different phenotypic manifestations, including tooth agenesis, delayed development, and ectopic eruption [10]. The treatment plan of this patient was level alignment of her teeth and creation of space for the left mandibular canine. After 6 months, surgical exposure and force eruption would be performed if canine did not erupt spontaneously.

Overretention of primary teeth may cause dental disorders, so providing a meticulous history and careful clinical examination could prevent this condition. The clinical implications of genetically controlled patterns of dental abnormalities are very important in the early diagnosis and appropriate orthodontic intervention.

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## Conflict of Interests

The authors of this manuscript declared no conflict of interests.

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