Concomitant hypo-hyperdontia with an endocrine etiology

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ABSTRACT

The simultaneous occurrence of hypodontia and supernumerary teeth in the same individual is termed as “concomitant hypohyperdontia” and it is an uncommon condition with the etiology still unknown. Presented here is a very rare case of simultaneous presence of multiple supernumerary teeth and multiple missing teeth (bilateral maxillary second premolars and bilateral mandibular second molars) involving both jaws with a history of subclinical hypothyroidism. Systemic diseases could probably play a role in the etiologic occurrence of co-existent partial anodontia and supernumerary teeth.

Key words: Concomitant hypo-hyperdontia, hypothyroidism, supernumerary tooth, tooth agenesis

INTRODUCTION

Concomitant occurrence of both hypodontia and hyperdontia in the same individual is a condition of mixed numeric variation and its occurrence is extremely rare. The presence of this hypo-hyperdontia in the same segment of an arch is an even rarer occurrence.[1]

A combination of bilateral agenesis of maxillary second premolars and mandibular second molars along with multiple supernumerary teeth with an underlying systemic condition as a probable etiology prompted the presentation of this case report.

CASE REPORT

A 12-year-old female child accompanied by her mother reported to the Department of Pediatric and Preventive dentistry with the complaint of retained upper front teeth. This was her first visit to the dentist. Medical history revealed that the child was diagnosed with subclinical hypothyroidism at the age of 10 years. She was under medication for 6 months, after which thyroid values returned to normal. The family and dental history were non-contributory. General physical examination and extra oral examination did not show any abnormality.

Intra oral examination revealed a mixed dentition [Figure 1]. Radiographic examination with the help of occlusal radiographs and orthopantomogram were carried out [Figures 2 and 3].

The occlusal radiograph and Orthopantomogram helped us to identify the buccal position of both the unerupted supernumerary teeth. A triangular surgical flap was elevated from permanent maxillary right lateral incisor to maxillary right first premolar, and the three supernumerary teeth were extracted with minimal bone removal. Extraction of primary right maxillary canine was also carried out. Flap was approximated with 3-0 silk sutures. Patient reported for review on the 7th day and sutures were removed and satisfactory healing was achieved [Figure 4].

DISCUSSION

Simultaneous occurrence of tooth agenesis (hypo/oligodontia) and presence of supernumerary teeth in a
patient with subclinical hypothyroidism has never been reported.

Similar case reports with hypo-hyperdontia without any history of subclinical hypothyroidism have been summarized in Table 1.\[2,3\]

The prevalence of agenesis of teeth was seen in the following order: Mandibular second premolars are most frequently missing (2.9-3%), followed up by maxillary lateral incisors (1.6-1.8%), maxillary second premolars (1.4-1.6%), and mandibular incisors (0.2-0.4%) while the absence of other teeth are relatively rare. Prevalence of agenesis of mandibular second molar is 0.1-0.3%.\[4\]

Thyroid deficiency can lead to delayed and prolonged proliferation of cells of the nervous trigeminus was resulted in decreased rate of neuron production. Dental trigeminal nerve fiber growth and pattern are strictly integrated with tooth morphogenesis. Failure of the nerve to establish the lingual branch can result in the absence of mesenchymal dental follicle. In thyroid deficiency, there is a decrease in the vascularization of dental structures with hampered proliferation and histo-differentiation of the epithelial tissues.\[5\]

In 2003, Yo Taguchi et al. reported five cases of anomalous eruptions of the maxillary second premolars that related to late development of the germs. One of his cases showed that the probability of maxillary second premolar to have started mineralization when the patient was around 10-11 years.\[6\] This was in accordance to the presented case; these late developing teeth could have been retarded due to the effects of hypothyroidism, which the child had developed. Further research would be needed to precisely document the onset of hypothyroidism, doses of medication, and the teeth that were affected.\[9\]

According to Rajab and Hamdan (2002), the prevalence of supernumerary teeth in general Caucasian population for the permanent dentition ranges from 0.1% to 3.8%. The prevalence for supernumerary teeth in the canine region is rare (2.5%) and prevalence of multiple supernumeraries is reported in 1.5% of cases. The frequency of three supernumerary teeth in a single subject was 2%.\[7\] The present case with three supernumerary teeth in the maxillary canine region appears to be rare.

The presence of supernumerary tooth is the most common cause for failure of eruption of the underlying permanent tooth. Munns (1981) and Mitchell (1989) stated that the earlier the offending supernumerary tooth is removed, the better is the prognosis. The underlying teeth will erupt spontaneously following the removal of obstruction.\[7\] In the presented case as well, the removal of supernumerary tooth was carried out and the periodic review is being carried out to check for the spontaneous eruption of right maxillary canine [Figure 5].

![Figure 1: Pre-operative photograph (Occlusal view)](image1)

![Figure 2: Maxillary occlusal radiograph (The arrow marks show the position of the supernumerary teeth)](image2)

| Table 1: Summary of case reports with concomitant hypo-hyperdontia without any underlying hypothyroidism |
|---------------------------------|----------------|----------------|----------------|----------------|---------------------------------|
| Author                        | Year | Age | Gender | Hypodontia | Hyperdontia | Arch involved | Medical condition |
| Spyropoulos et al.\[1\]         | 1979 | 16 years | Female | 15,14,12,22,24, 25,35,37,44, 45 | Supernumerary lower incisor | Bi | - |
| Gibson et al.\[2\]              | 1979 | 9 years | Female | 15,25,35,45 | Supplemental 22 | Bi | - |
| Acerbi et al.\[1\]              | 2001 | 12 years | Male | 15,25,34,35,45 | Mesiodens | Bi | Downs syndrome |
| Anthonappa et al.\[1\]          | 2008 | 12 years | Female | 31,41 | Supplemental 23 | Bi | - |
| Lertsirivorakul\[2\]            | 2009 | 9 years | Female | 15,25,35,45,37, 36,46 | Supplemental 22 | Bi | - |
| Sharmila et al. (present case)  | 2011 | 12 years | Female | 15,25,37,47 | Three supernumerary teeth in relation to 13 | Bi | Hypo-thyroidism |

*Bi: Bilateral
A primary tooth may be retained intact when it is non-mobile, functioning, meets aesthetic standards, and when there is no compelling orthodontic need for extraction. The advantages of retaining a healthy primary tooth include the psychological benefits of keeping their own tooth and the ability to maintain the surrounding bone and soft-tissue.[8] Bjerklin and Bennett (2000) stated that, it is not possible to predict the probability of survival of the primary molar at a very early age but that the prognosis for the molars after 20 years of age is good.[9] Hence, in the presented case we planned to retain both the maxillary second primary molars, which showed no mobility and met patient's esthetics. Periodic review and recall has been planned to monitor risk of infra occlusion and root resorption of maxillary second primary molars.

The management of Concomitant hypo-hyperdontia warrants a multi-disciplinary approach due to the reason that no standard treatment protocol for this condition exists.[1]

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