Orthodontic management of non-syndromic multiple supernumerary teeth

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Abstract

Hyperdontia amounts to an odontostomatologic anomaly wherein, there is an increase in tooth number irrespective of the location. This case report represents a form of hyperdontia characterized by bilateral multiple supernumerary teeth in both the jaws without any evident familial history.

Keywords: Hyperdontia, non-syndromic, orthodontic management

Introduction

Supernumerary teeth or hyperdontia, are defined as teeth that exceed the normal dental formula, regardless of their location and morphology.[1] Supernumerary teeth were first reported between Anno Domini 23 and 79.[2] Such teeth are relatively common, as reflected by the many studies published in the literature, describing this pathology and establishing prevalence of supernumerary teeth in the permanent and temporary dentition of 0.5-5.3% and 0.2-0.8%, respectively. In addition, the disorder is more common in males than in females, with a proportion of 2:1.[3,4] Non-syndromic multiple supernumerary teeth (>5) are very rare with incidence of lesser than 1%.[3,4] The male to female ratio reported by Yusof[5] is 9:2. The etiology is unknown, although a number of theories have been proposed: Atavism, tooth germ dichotomy, hyperactivity of the dental lamina and genetic factors comprising a dominant autosomal trait characterized by low penetrance.[6,7] Multiple supernumerary teeth are associated with few syndromes namely cleft lip and palate, cleidocranial dysostosis, Gardner’s syndrome, chondroectodermal dysplasia, etc., Supernumerary teeth may erupt normally, stay impacted, appear inverted or assume an ectopic position or an abnormal path of occurrence.[4] Their development might precipitate a variety of complications such as crowding, delayed eruption, diastema development, cystic lesions and resorption of adjacent teeth. Therefore early diagnosis, proper evaluation and appropriate treatment are essential. Supernumerary teeth may be single, multiple, unilateral or bilateral, erupted or unerupted in one or both jaws. Rarely, it can occur in all the four quadrants of the jawbone. Supernumerary teeth may closely resemble the teeth of the group to which it belongs, i.e. molars, premolars or anterior teeth, or it may bear little resemblance in size or shape of the teeth with which it is associated.[8] The supernumerary tooth, which bears resemblance to the tooth with which it is associated is called supplementary teeth.[9] Supernumerary teeth that erupt ectopically either buccally or linguually to the normal arch are sometimes referred to as peridens. Classification of supernumerary teeth is based on the form and position.[9]

| Classification based on the form | Classification based on position |
|---------------------------------|---------------------------------|
| Conical supernumerary           | Mesiodens                      |
| Tuberculate type                | Paramolar                      |
| Supplemental type               | Parapremolar                   |
| Odontome                        | Distomolar                     |

The aim of this report is to document a case of non-familial occurrence of multiple supernumerary teeth occurring as an isolated non-syndromal trait and to discuss the treatment modalities. This case report describes the clinical and radiographic characteristics, the type of treatment provided to a patient with non-syndromic multiple hyperdontia diagnosed in a Service of Department of Orthodontics and Dentofacial Orthopaedics, Manipal College of Dental Sciences, Mangalore, Manipal University.

Case Report

This paper reports a case of a 23-year-old man who reported with a chief complaint of spacing in the anterior maxillary region [Figure 1a]. An intraoral examination showed two supernumerary teeth on the palatal aspect of the maxillary premolar region bilaterally and one supernumerary tooth on
the buccal aspect of the right maxillary molar region, thus constituting three fully erupted supernumerary teeth in the maxillary arch [Figure 1b] and a supernumerary tooth at the lingual aspect of premolars in the mandibular arch on the right side [Figure 1c]. There was no relevant medical history and the patient was otherwise healthy. Physical and extra-oral examinations revealed no additional abnormalities wherefore, conditions such as cleidocranial dysostosis, Gardner’s syndrome, ectodermal dysplasia and Apert’s syndrome were excluded. There was no familial history of supernumeraries elicited by the patient. A panoramic radiograph revealed three impacted supernumerary teeth in the mandibular posterior region, of which one was on the right side and two on the left side of the mandible [Figures 2]. The maxilla showed one impacted supernumerary tooth in the right premolar region and one on the left side between lateral incisor and canine, thus making five impacted supernumeraries in the oral cavity. This resulted in a dental formula of 40 teeth (32 normal, 8 supernumeraries [5 impacted and 3 erupted]). The treatment of the patient began with the extraction of erupted maxillary and mandibular supernumeraries followed by fixed appliance therapy. Straight wire appliance (0.022 Roth prescription) was used. The impacted supernumeraries were left in situ as they were not asymptomatic. Space closure was performed using class III elastics and echains [Figure 3]. A permanent lingual retainer was placed after debonding [Figures 4 and 5]. He was advised on the need for periodic recall and observation for any cystic changes with the impacted supernumeraries.

Discussion

Hyperdontia is considered to be multiple when there are one or more supernumerary teeth in two or more dental groups. Such hyperdontia is often associated with Gardner syndrome, Fabry-Anderson syndrome, Ehler-Danlos syndrome, facial fissures or cleidocranial dysplasia.\[^{1,6,7}\] In contrast, hyperdontia in the absence of such complex syndromes are rare. This type of hyperdontia appears to occur only in the permanent dentition, and usually involves the coexistence of supernumerary teeth in the anterior sector and premolar region—though there have been reports of cases involving all dental series in both maxillas.\[^{1,5,6,8}\] Symptomatic multiple buried supernumerary may have to be surgically removed after appropriate education of the patient and parent about the risk of damage to adjacent teeth and vital anatomical structures. Treatment planning depends upon the type or position of the supernumerary teeth and proximity to adjacent teeth/important anatomical structures. Hogstrum and Andersson suggest two alternatives
Figure 5: Post-treatment occlusal picture

for the timing of surgical removal of supernumerary teeth.[10]
One choice is to remove the supernumerary teeth as soon as they are discovered and the other is to defer extraction until the root of adjacent teeth is completed. If the eruption of a tooth is delayed due to a supernumerary tooth, it is advisable to extract the supernumerary tooth and give approximately 18 months for the delayed tooth to erupt failing, which surgical exposure and orthodontic traction can be considered. However, asymptomatic supernumerary teeth may be left in place and immediate removal indicated only if any of the aforementioned complications are evident. Periodic radiographic evaluation is also recommended since recurrence of supernumerary premolars has been reported following extraction.

Conclusion
Supernumerary traits have a strongly hereditary component without following a simple Mendelian pattern. Surgical removal of the supernumerary teeth is indicated if the eruption of the adjacent tooth has been delayed, altered eruption, displacement of the adjacent tooth is evident or pathologies such as cystic lesion and resorption of the adjacent tooth have occurred. If it is asymptomatic, it can be left in situ and kept under regular clinical and radiographic monitoring.

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