

Management of Multiple Impacted Supernumerary Teeth in a Non-Syndromic Patient using Cone Beam CT

David Ditto S* and Akhila R

Department of Pedodontics and Preventive Dentistry, Meenakshi Ammal Dental College, Chennai, India

Abstract

Supernumerary teeth can present in various forms and in any region of the mandible or maxilla, but have a predisposition for the anterior maxilla. They can cause a variety of complications in the developing dentition. The occurrence of multiple supernumerary teeth in a non syndromic patient is extremely rare and it becomes a difficult task when they are found to be impacted. Here we present a modified treatment plan and management of such a patient using CBCT.

Keywords: Multiple supernumerary; Management of impacted supernumeraries

Introduction

Development of the tooth is a continuous process with a number of physiologic growth processes and various morphologic stages interplay to achieve the tooth's final form and structure [1]. Interference with the stage of initiation or any momentary event may result in single or multiple missing teeth or supernumerary teeth [2].

A supernumerary tooth is one that is additional to the normal series and can be found in almost any region of the dental arch [3]. The most common location of supernumerary teeth is at the premaxillary region and it may cause pathological conditions such as failure of eruption of the maxillary incisors, displacement or rotation of the permanent tooth [4]. The incidence of supernumerary tooth in the primary dentition is said to be 0.3%-0.8% where as in permanent dentition it is 1.5%-3.5% [5]. The low prevalence of ST in primary dentition is because it is under reported [6]. A ST can be overlooked as it is often of normal shape (supplemental type), erupt normally and appear to be in proper alignment and can be mistaken for germination or fusion anomalies [7]. There is no significant sex distribution in primary supernumerary teeth however, in permanent dentition; males have been shown to be affected more than females [2,8].

Supernumerary teeth can differ according to their location in the dental arch as mesiodens, paramolar and distomolar however; these types can vary in their morphological forms such as conical, tuberculate, supplemental or odontome [9]. A conical ST is small, peg shaped (coniform) teeth with normal root, and a tuberculate (multicusped) ST is short barrel shaped teeth with normal crown appearance or invaginated but rudimentary root. A supplemental ST resembles one of the normal series of tooth (duplication) and they appear at the end of a tooth series. Most of the supernumerary in the primary dentition are of supplemental type and seldom remain impacted. An odontome of ST type having irregular shape and are often referred to as any tumor of odontogenic origin. Most authorities however accept the view that the odontome represents a hamartomatous malformation rather than a neoplasm. Two separate types of odontomes have been described: the diffuse mass of dental tissue which is totally disorganized is known as a complex composite odontome whereas the malformation which bears some superficial anatomical similarity to a normal tooth is referred to as a compound composite odontome [10].

Multiple ST rarely occurs without being associated with syndromes [11]. The condition is infrequent and normally asymptomatic. The diagnosis is usually made as a result of a casual finding during routine panoramic X-ray studies. Prophylactic surgical removal of the ST

with resolution of complications is generally the treatment of choice [1]. The emergence of cone-beam computed tomography (CBCT) has expanded the field of oral and maxillofacial radiology. CBCT imaging provides three-dimensional volumetric data construction of dental and associated maxillofacial structures with isotropic resolution and high dimensional accuracy [12]. Conventional radiographic images are frequently used to detect supernumerary teeth. However, the accurate measurements and the determination of the precise location of the tooth cannot be visualized through conventional radiographs for the clinician to make an informed decision on which tooth or teeth to be extracted, the optimal surgical approach and help to minimize damage to the adjacent tooth. Hence recent developments in 3D imaging systems have enabled dentists to better visualize supernumerary teeth with better contrast and more details [13]. Hence Cone beam computed tomography (CBCT) can give us an improved and more accurate diagnosis and treatment plan for patients with multiple ST. The present case report describes the rationale for surgical intervention and management of multiple ST in a non- syndromic patient using CBCT.

Case Report

An 11 yr old boy was received in the outpatient department of pediatric and preventive dentistry with the chief complaint of unerupted upper front teeth. On oral examination, both the central incisors were found to be impacted. Routine radiographic examination revealed the presence of 5 unerupted teeth (3 supernumerary and 2 central incisors). Clinical history of the patient showed no data for any local or general illness and any signs or symptoms of an associated syndrome and a careful check for a family history of supernumerary teeth is done to point the presence of a genetically determined syndrome. To rule out any associated syndrome with the clinical findings a thorough general examination was done. There were no signs of partial or total absence of the clavicles or open sagittal sutures which ruled out any chances of cleidocranial dysostosis. On further investigations, gardiner syndrome

*Corresponding author: Ditto D Sharmin, Department of Pedodontics and Preventive Dentistry, Meenakshi Ammal Dental College, Chennai, India, Tel: +91-9486190456; E-mail: dr.dittosharmin@gmail.com

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was omitted as there was no multiple Adenomatous polyposis of the large intestine or multiple osteomas of the facial bones or any cutaneous epidermoid cysts. Therefore, the patient was diagnosed with multiple supernumerary teeth without the evidence of any syndrome.

Clinical and radiological review of the parents and siblings of the patient did not show any evidence of ST. Initially an OPG was taken, which showed the mere presence of 3 supernumerary teeth of which 2 were super imposed with 11 and 21. For a better diagnosis and proper location of the ST, an additional advanced investigation of CBCT was also performed.

Treatment was planned for the surgical removal of two tuberculate ST and one conical ST. However during the surgical procedure, only two tuberculate ST could be removed where as the conical ST was left behind as it was found to be deeply impacted. The patient was under review for 24 more months to attain required migration of the left out supernumerary tooth. Once when satisfactory migration was noted, the third conical supernumerary tooth was surgically removed without any intra operative or post operative complications. The patient was discharged with no post- operative complications. After 2 weeks spontaneous eruption of 11 and 21 were noticed.

Discussion

Supernumerary teeth may erupt normally, remain impacted, appear inverted or assume an abnormal path of eruption [14]. Supernumerary teeth with a normal orientation will usually erupt. It has been reported that 73% of primary supernumerary teeth erupts where as only 13-34% of permanent supernumerary teeth were found to be erupted [15]. Several theories have been put forward concerning the causes of supernumeraries, the most widely accepted of these is the hyperactivity theory, which implies that the supernumerary teeth are the result of excessive but organized growth of dental lamina. Remnants of excessive dental lamina or palatal extensions of the active dental lamina are induced to develop additional tooth bud which results in supernumerary teeth [16].

Multiple supernumerary teeth are more common only when a syndrome is involved. Yusof suggested that it may be rare to find multiple supernumerary teeth without an associated syndrome [17]. Common syndromes showing multiple supernumerary teeth along with other conditions include Gardiner's syndrome, cleidocranial dysostosis, and cleft lip and palate [18]. Acton advises checking for evidence of syndromal involvement in all cases exhibiting multiple supernumerary teeth [19].

Management always depends on the type of supernumerary teeth and its position, relation to other tooth and its effects on adjacent teeth. Extraction is not always the treatment of choice. Unerupted supernumerary teeth that are symptomless do not appear to be affecting the dentition in anyway and those which are found by chance are sometimes best left and kept under observation [20].

Most of supernumerary teeth presents with one or more of the following complications such as,

- Prevention or delay of eruption of associated permanent teeth
- Displacement or rotation of permanent teeth
- Crowding
- Incomplete space closure during orthodontic treatment
- Dilacerations, delayed or abnormal root development of associated permanent teeth

- Root resorption of adjacent teeth
- Complication with supernumerary itself
- Late- forming supernumerary teeth [21]

Hence, it is always wise to remove it.

In this case report, the ideal treatment plan of removing all the supernumerary teeth in a single visit was not performed, instead only the two tuberculate ST was removed in the first visit where as the third ST was left behind as it was found to be highly placed and close to the roots of the permanent central incisors near the nasal floor. Hence, to avoid an oral antral communication and damage to the roots of permanent central incisors, the 3rd ST was allowed to migrate and then surgically removed after 24 months.

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