

Multiple supernumerary teeth associated with an impacted maxillary central incisor: Surgical and orthodontic management

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Abstract

Various anomalies in the size, shape, number, structure and eruption of the teeth are often observed clinical conditions. Supernumerary teeth can be found in almost any region of the dental arch, and most of the times they are asymptomatic, and are routinely found during radiographic evaluation. The most common cause of impacted maxillary incisors is the presence of the supernumerary teeth. This paper describes a case of multiple supernumerary teeth associated with an impacted permanent maxillary central incisor in an 11-year old child along with its surgical and orthodontic management.

Keywords: Central Incisor, closed-eruption, impaction, supernumerary teeth

Introduction

During the development of occlusion of teeth, a pediatric dentist is often faced with some challenging situations where deviations from the normal eruption sequence, position or abnormalities in the morphology of the teeth are observed. Several cases of failure or delayed eruption of maxillary incisors have been reported. There are a series of factors that can influence the normal development of the occlusion and interfere in the correct alignment of the teeth and their harmonic relationship with the adjacent and antagonistic elements. Beyond these are the dental anomalies of number, such as, supernumerary teeth which is the most commonly reported cause of delay in the eruption of the maxillary incisors.^[1]

Supernumerary teeth are those teeth that are present in excess to the normal set of teeth. They were first described between 23 and 70 AD.^[2] The prevalence of supernumerary teeth varies

among different racial and ethnic groups. In the Caucasian population, the prevalence is between 1-3%.^[3] Of these, 90-98% occurs in premaxillary region. Asians have a slightly higher frequency of the supernumerary teeth, which is greater than 3%.^[4] Black children have a prevalence of 0.42%, while children of Hispanic descent were found to have a prevalence of 5.6%.^[5] The prevalence is between 0.15 and 1% in permanent dentition, with predilection of 2:1 for the male sex.^[6-9]

It is not only the mere presence of a supernumerary tooth that predisposes a tooth to delayed eruption. Their shape, number and position are some other determining factors that can play a role in the fate of the incisor eruption. There are four morphological types of supernumerary teeth: conical or peg shaped, tuberculate or invaginated, supplemental or incisiform and odontome like. The tuberculate or the invaginated supernumerary type has been shown to cause more cases of delayed eruption of the maxillary incisors.^[10-12] When the incisors do not erupt at the expected time, it is crucial for the clinician to determine the etiology and formulate an appropriate treatment plan. The most frequent complications generated by the presence of the supernumerary teeth in the anterior maxillary region are the prolonged retention of the deciduous teeth, delayed eruption of the permanent teeth, impaction of the permanent incisors, ectopic eruption, root dilaceration etc.

The objective of this paper is to present a challenging case of an impacted permanent central incisor which was obstructed by multiple supernumerary teeth along with its surgical and orthodontic management.

Case Report

An eleven year old male patient reported with a complaint of the presence of a small sized tooth in the upper front region of the jaw since 4 years. Extra orally the patient presented with a symmetrical face and with a convex profile. Intra oral examination revealed that he was in

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the late mixed dentition period with retained maxillary primary left central incisor (61) and non eruption of the left permanent central incisor (21) [Figure 1] and Angle's Class I molar relation. The radiographic examination consisting of intraoral periapical [Figure 2], occlusal and panoramic views with an orthopantomogram revealed an irregular radiopaque mass suggesting of an odontome like structure between 21, 61 and 22 along with impacted 21 close to the nasal floor. A preliminary diagnosis of impacted permanent left central incisor due to the odontome like structure was made. The treatment plan included surgical removal of the calcified mass and guided eruption of 21 using Closed-Eruption technique.^[13] The following treatment objectives were established for this patient:

1. Surgical removal of the calcified mass
2. Guiding the eruption of 21 and to align it orthodontically
3. To achieve good gingival attachment and symmetrical gingival margins for both the maxillary central incisors; and
4. To create a stable functional occlusion.

Under local anesthesia, a full thickness mucoperiosteal flap was reflected from 11 till 22. The bone covering the

odontome like structure was carefully removed and the calcified mass was retrieved along with the extraction of primary central incisor. Six supernumerary teeth were retrieved from the calcified mass, four teeth were conical in shape and two were in tuberculate form [Figure 3]. A final clinical diagnosis of an impacted maxillary central incisor due to multiple supernumerary teeth was made. The lingual surface of the exposed central incisor was etched, washed and a flat Begg bracket was attached to it. Elastomeric chain was engaged to the bracket on one side and the other end was left intraorally through the extraction socket [Figure 4]. The surgical area was thoroughly irrigated with betadine and normal saline, and the mucoperiosteal flap was sutured with 3-0 silk suture. The post-operative period was uneventful, healing was good and the sutures were removed after a period of one week.

Fixed orthodontic treatment with Begg appliance was planned in the maxillary arch. The maxillary first permanent molars were banded with round tubes. The maxillary right central incisor, right lateral incisor and left lateral incisor were bonded with flat Begg brackets. After the anterior



Figure 1: Retained maxillary left primary central incisor seen during the introral examination of the patient presented in the case



Figure 2: Intraoral periapical view showing an irregular radiopaque mass suggesting of an odontome like structure between 21, 61 and 22



Figure 3: Retrieved multiple supernumerary teeth from the calcified mass, total 6 in number with four teeth being conical in shape, and two having a tuberculate form



Figure 4: Attachment of traction device to the lingual surface of 21

teeth were aligned, a rigid base wire of 0.018" stainless steel (SS) Australian wire with a helix in the horizontal plane was placed in the maxillary arch. Light forces in the range of 10-15 gm were applied from the helix to the impacted tooth with the help of the other end of the elastomeric chain. Once the impacted tooth was sufficiently extruded



Figure 5: Torquing auxillary on the left maxillary central incisor



Figure 6: Intraoral periapical view showing aligned 21 and the fixed retention device bonded on the palatal surface of the maxillary incisors



Figure 7: Post orthodontic treatment photograph showing well aligned 21 and with acceptable gingival contour

and the labial surface was accessible, a bracket was bonded on the labial surface to continue further alignment. When all the anterior teeth were aligned, a torquing auxillary was used to torque the root of the left central incisor [Figure 5]. The appliance was debonded after a period of 9 months and a fixed retainer was bonded on the palatal surface of the maxillary incisors [Figure 6] for stability. During the follow-up period, the patient showed an acceptable gingival contour and adequate width of the attached gingiva in relation to 21 [Figure 7].

Discussion

Supernumerary teeth can be found in almost any region of the dental arch and can be erupted or unerupted, often found during routine radiographic examination. Multiple supernumerary teeth are rare in individuals with no other associated diseases or syndromes. This condition results from the interference during the initiation stage of tooth development. The etiology of this condition remains controversial; however, several hypotheses have been put forward such as dichotomy of the tooth bud,^[14] hyperactivity of the dental lamina^[15] and a phylogenetic relic of extinct ancestral tissue.^[1] They may be present both in the primary and permanent dentitions, and influence the adjacent permanent teeth by way of crowding, impaction, delayed eruption or ectopic eruption.

Several techniques are available for managing impacted teeth. In some cases, conservative management is the better solution, but most patients will require surgical and/or orthodontic manipulation. The method followed in this case is the closed-eruption technique^[13] in which a flap that incorporates the attached gingival tissue is raised and is fully replaced in its original position after the placement of traction devices. If the tooth is impacted in the middle of the alveolus or high in the vestibule near the nasal floor, the closed – eruption technique is the treatment of choice as it produces good long term esthetic results when compared to methods like excisional gingivectomy, and apically positioned flap technique.^[16] Various factors to be considered for successful alignment of an impacted tooth are: position and direction of the impacted tooth, degree of root completion and the presence of space for the impacted tooth in the arch.

Frequently, when an impacted central incisor is brought into the arch, there is a discrepancy between the gingival height and that of the adjacent incisor. Clinical experience has shown that light forces are more effective than heavy forces in moving the impacted and unerupted teeth and providing good gingival position and contour. In the present case, the force applied on the tooth was very light and measured in the range of 10-15 gm, and helped to provide an acceptable gingival contour and sufficient width of the attached gingiva after orthodontic treatment.

Conclusion

Impacted maxillary permanent left central incisor was successfully guided to its designated place in the arch by closed-eruption technique and showed good stability. The presence of multiple supernumerary teeth in such young children further justifies a routine radiological examination for early diagnosis and appropriate intervention to prevent any future complications.

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