

Case Report

## Management of Impacted Central Incisors Due to Supernumerary Teeth

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### ABSTRACT

Multiple impacted teeth is a condition which often requires a multidisciplinary management. This case report describes orthodontic treatment that required surgical exposure of multiple impacted permanent teeth as well as extraction of supernumerary teeth followed by ligation and traction of impacted teeth in to the oral cavity. The treatment was completed with a significantly improved functional and aesthetic result.

**Keywords:** Impacted maxillary central incisors, Supernumerary teeth, Surgical exposure, Orthodontic traction.

### INTRODUCTION

Impaction refers to a failure of a tooth to emerge into the dental arch, usually due to either space deficiencies or the presence of an entity blocking its path of eruption. <sup>[1]</sup> About 25% to 50% of the population are affected by dental impaction, most common being the maxillary canine impaction which is seen in approximately 1% to 3% of the population with a female to male ratio of 2:1. <sup>[2]</sup> Impaction could be because of inadequate arch space, anomalies in maxillary lateral incisors and genetic predisposition. <sup>[3,4]</sup>

Impacted or missing teeth can significantly lengthen the overall treatment time particularly in the maxilla and is further increased when it is associated with supernumerary teeth. <sup>[4]</sup> 80% to 90% of all supernumerary teeth are found in the maxilla, majority of these are located in the anterior region. <sup>[5]</sup> Impaction of maxillary incisor occurs less frequently than the maxillary canine, it brings concerns to

parents in the early mixed dentition period. <sup>[6]</sup>

When supernumerary teeth are impacted they can cause crowding, tooth displacement, diastema, retention or impaction, delayed eruption or ectopic eruption, root resorption of adjacent teeth, aesthetic problems, neuralgic manifestations and dentigerous cyst formation with significant bone destruction. <sup>[5]</sup> Hence intervention and proper treatment planning has to be carried out as early as possible. Careful treatment planning is required when an impacted tooth is moved by orthodontic treatment. Impacted teeth can be properly positioned with orthodontic traction. <sup>[7]</sup> Surgical removal of the soft tissue present over impacted tooth will usually induce the eruption process. <sup>[8]</sup>

### CASE REPORT

The following case report illustrates a 13 year old female patient who reported with a chief complaint of missing upper

front teeth. According to the medical history, the child was physically healthy and had no history of dental trauma. Neither systemic disorders nor hereditary patterns of hyperdontia were reported in her family. Intraoral examination showed Angle's class I malocclusion with missing maxillary permanent central incisors, retained deciduous right lateral incisor and ectopically erupted maxillary right canine. OPG revealed impacted maxillary central

incisors, with two supernumerary teeth in relation to maxillary central incisors [fig 1]. Cephalometric radiograph revealed class III skeletal base due to retrognathic maxilla and prognathic mandible with average growth pattern. CBCT images showed horizontally impacted supernumerary teeth in relation to maxillary anterior region and permanent maxillary central incisors above and palatal to the supernumerary teeth [fig 2].



Fig1:Pre-treatment intra-oral, extra-oral photographs and OPG



Fig 2: CBCT showing impacted supernumerary and permanent maxillary central incisors

### Treatment objectives:

The main treatment objective was guided eruption of the impacted permanent maxillary central incisors to obtain a functional occlusion and improved aesthetics. A multidisciplinary treatment approach was planned, with extraction of retained deciduous maxillary right lateral incisor, surgical removal of the supernumerary teeth in relation to maxillary central incisors, orthodontic traction and alignment of unerupted permanent maxillary central incisors. Aligning and levelling of ectopically erupted maxillary right canine.

### Treatment Progress:

Patient was advised for extraction of retained maxillary right lateral incisor before placement of fixed orthodontic appliance. Fixed mechanotherapy with 0.022x0.028 inch slot preadjusted edgewise appliance (MBT prescription) was bonded to the available teeth. 0.016 inch NiTi archwire was placed for aligning and levelling excluding maxillary right canine. After initial aligning and levelling, maxillary arch was stabilised with 0.018 inch stainless steel archwire. Extraction of supernumerary teeth in relation to maxillary central incisors was advised.

Simultaneously surgical exposure of impacted maxillary central incisors was carried out. Two-thirds of the crowns of the permanent maxillary central incisors were surgically exposed. Ligature wire attachments on begg brackets were bonded to the labial surface of the surgically exposed central incisors.

The raised flap, which included the attached gingiva, was fully repositioned in its former position. Piggyback was given with 0.014 inch NiTi over 0.018 inch stainless steel wire for forced eruption of maxillary central incisors by using closed eruption technique [fig 3]. It took around 6-7 months for complete eruption of central incisors, the incisors were bonded with MBT brackets [fig 4]. Open coil spring was placed between maxillary right lateral incisor and first premolar to create space for ectopically erupted maxillary right canine.



Fig 3: Piggyback given with 0.016" NiTi

Once all teeth were aligned and levelled, archwire was changed subsequently from 0.018 inch stainless steel to 0.017x0.025 inch NiTi and then 0.019x0.025 inch stainless steel for proper expression of tip and torque.



Fig 4: After orthodontic traction of 11 and 21

### Treatment results:

A well-interdigitated Angle's class I molar and canine relationship was obtained on both sides at the end of treatment [fig 5]. Well aligned maxillary anteriors with acceptable overjet, overbite and aesthetically pleasing smile. Brackets and bands were removed. The upper and lower arch retention was managed with a Hawley removable appliance. Patient was advised to wear the appliance full time during first 6 months followed by night time wear for next 6 months.



Fig 5: Post treatment intraoral and extraoral photographs

### DISCUSSION

Supernumerary teeth are defined as those in addition to the normal series of deciduous or permanent dentition. They may be present anywhere in the dentition. They may appear as a single or multiple

teeth, unilaterally or bilaterally, erupted or impacted and in mandible/maxilla or both the jaws. When associated with permanent teeth it may cause delayed or failure of eruption of permanent teeth.

Surgical removal of supernumerary teeth and orthodontic treatment for correction of impacted permanent teeth is required in cases which cause hindrance for eruption of permanent teeth. Extraction should be performed carefully to prevent damage to adjacent permanent teeth. The clinician should be careful to avoid complications such as damaging nerve and blood vessels during manipulation of the tooth, perforation of maxillary sinus, pterygomaxillary space, orbit and fracture of maxillary tuberosity. Clinicians must also be alert as sometimes supernumerary teeth are fused with the adjacent tooth structure at crown or root level, which may make the extraction difficult.

Supernumerary teeth can also be kept under observation without extraction when satisfactory eruption of related teeth has occurred with no associated pathology and not causing any functional and aesthetic interference.

Impacted permanent teeth due to presence of supernumerary teeth has to be intervened surgically and orthodontically. Several reports have successfully treated impacted maxillary anterior teeth by proper crown exposure and orthodontic traction. [6] In the present case report patient was treated with closed eruption technique which helped maintain the attached gingiva. Studies have shown that close eruption technique be the treatment of choice when the tooth is impacted in the middle of the alveolus. [1,6]

## CONCLUSION

Absence of teeth in the anterior region draws attention due to aesthetical reasons. Hence anterior impactions can be diagnosed and treated early. Radiographic examination helps to find out the location, position and any pathology associated with

the impacted teeth. Impactions can be corrected orthodontically but sometimes surgical intervention is necessary to bring impacted teeth into occlusion specially when associated with supernumerary teeth and its presence can further complicate the treatment mechanics involved in the correction. Hence early diagnosis and timely intervention is recommended that aims to extract supernumerary teeth, thereby facilitating eruption of permanent teeth either by closed or open eruption technique.

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