IMPACTION OF A CENTRAL MAXILLARY INCISOR DUE TO SUPERNUMERARY TEETH. COMBINED ORTHODONTIC AND SURGICAL TREATMENT

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ABSTRACT

Impaction of a maxillary central incisor is a rare dental condition which is easy noticed by the patient and the general practitioners because it has a strong impact against dental and facial esthetics. In many cases this is due to the presence of one or more supernumerary teeth, easy recognized on radiographs. The absolute indication in these situations is the early removal of the supernumerary teeth in order to minimalize the damage in the anterior area. Almost in all cases the surgical phase should be followed by the orthodontic phase in order to bring the impacted tooth in the dental alignment, to establish the proper occlusion and function. In our paper we present the case of a 9 years boy with left central maxillary incisor impaction and 2 supernumerary teeth in the anterior area. The case is presented step by step until the final result at the end of the treatment with the upper incisor in place.

Key words: incisor impaction; supernumerary teeth

INTRODUCTION

Supernumerary teeth represent a number dental anomaly that can be found in population less frequent then congenitally missing teeth. According to Brook in a survey of 2000 schoolchildren, the supernumerary teeth were present in 0, 8% of primary dentition and in 2, 1% of permanent dentition(1). Most of the supernumerary teeth are not erupted and they can be discovered by chance on the radiograph or when they cause the impaction of a permanent teeth noticed by patients and practitioners as a delay in eruption. The most common supernumerary tooth is located in the maxillary midline and is called a mesiodens. The presence of a mesiodens is the most frequent cause for the failure of eruption of the maxillary central incisors, dental ankyloses, and displacement of the adjacent teeth(2,8). Impacted teeth can cause a series of potential problems such as other teeth root resorption and formation of cysts and odontogenic tumors and, additionally, in the anterior area there is an esthetic and functional concern(3). The treatment for dental impaction caused by supernumerary teeth uses a combined surgical and orthodontic approach. In our paper we will present two cases with central maxillary impaction due to supernumerary teeth treated in two stages: surgical phase first followed by orthodontic treatment in order to obtain the final result(4,5).
CASE PRESENTATION

A boy, aged 9 years, was referred by the general practitioner to us with the parents’ chief complaint: “delayed eruption of the left central maxillary incisor; the permanent lateral upper incisors had already erupted. No previous trauma to the dental or facial region was reported. The extra oral exam showed a symmetrical and balanced facial pattern and a convex profile.

The intraoral exam showed mixed dentition, missing 21 and lack of space for left upper central incisor eruption. Palpation of the maxillary labial alveolar bone at the midline revealed hard swelling (fig.1, A, B). The malocclusion was Angle’s class I, with permanent molars normally related and slightly reduced incisor overbite.

Orthopantomography (fig.2) revealed the presence of one big supernumerary tooth on the maxillary midline under the impacted central incisor. Considering that the anterior area is a complicated region and taking advantage of the new progresses in the imagistic techniques, we decided to recommend a CBCT exam for the incisor area. After CBCT examination we discovered a second supernumerary tooth horizontally placed in the middle of the hard palate with 180° rotation (fig.3).

Figure 2. Initial orthopantomography

Figure 3. Initial CBCT

TREATMENT OBJECTIVES

1. Surgically remove the supernumerary teeth
2. Begin orthodontic treatment with maxillary expansion and regain the space for missing central incisor
3. Bring the central incisor in dental arch alignment
4. Establish stable and functional occlusion and facial esthetics

In order to attain these objectives we decided to start with the surgical phase\(^{(6)}\). Under general anesthesia the surgeon removed the anterior supernumerary tooth (fig.4); considering the risk of nasal floor perforation during surgery for the palatal impacted supernumerary tooth, the surgeon decided to leave it in place and only to monitor it during and after treatment.

![Supernumerary tooth removed](image)

**Figure 4.** Supernumerary tooth removed

**TREATMENT PROGRESS**

The patient was during mixed dentition, so we decided to make the maxillary dental arch expansion with the aid of a removable appliance composed palatal acrylic plate with clasps for anchorage, orthodontic screw for maxillary expansion activated once a week and finger springs on right central incisor and left lateral upper incisor (fig.5, A to D).

![Removable orthodontic appliance for maxillary expansion](image)

**Figure 5.** Removable orthodontic appliance for maxillary expansion

At this stage we had two options: to wait the spontaneous eruption of the upper incisor (fig.6) or to surgically expose the incisor and to start it’s traction with orthodontic fixed appliance\(^{(7,8)}\).

![Incisor progress during orthodontic treatment with removable appliance](image)

**Figure 6.** Incisor progress during orthodontic treatment with removable appliance

The orthodontic treatment with removable appliance lasted 9 months. Meanwhile the upper incisor began to erupt spontaneously, rotated, but there is enough room for it on the dental arch (fig.7).
Figure 7. Eruption of the left upper incisor

Until the eruption of the premolars the molar width was maintained with a Gosgharian arch (fig.8) and the upper incisor continued to erupt. At the age of 11 we continued with an orthodontic pre-adjusted fixed appliance .022x.028 in order to correct incisor’s position, to align the dental arch and to settle the occlusion.

Figure 8. The Gosgharian arch

After one year the upper left central incisor is in place and the dental arches aligned (fig.9).

Figure 9. Treatment in progress

The CBCT exam for the second supernumerary tooth reveals no change in its position (fig.10) and it doesn’t represent at this moment any danger for the rest of the structures.

Figure 10. CBCT at the end of treatment
TREATMENT RESULTS

The total treatment time was 32 months. At the end of treatment the dental arches are aligned and the canine and molar relationship is class I Angle. Unfortunately, the patient’s oral hygiene was poor during the treatment despite all our efforts, so we had to stop the fixed appliance treatment before the final completion because of some “white spots” that appeared on teeth enamel (fig.11).

DISCUSSIONS

The article describes the clinical features, diagnosis and treatment of a case with central incisor impaction due to the presence of supernumerary teeth. In these cases early diagnostic is important because the best period for supernumerary teeth removal is mixed dentition period; at early age the surgical procedure is done with minimum damage to the teeth, periodontium and bone\(^9,10\). On the other side, early removal of the supernumerary teeth reduces the possibility of tooth dilacerations, tooth ankyloses and root resorption of the adjacent teeth\(^8\). In our case we exemplified this situation in which the impacted upper incisor recovered the ability to continue root formation and spontaneous eruption after supernumerary tooth removal. In more complex cases the impacted teeth are surgically exposed using a closed flap procedure or an apically positioned flap, an attachment is bonded on dental crown and traction forces of 90g. Once the tooth is brought on the dental arch, the orthodontic treatment continues normally.

CONCLUSIONS

1. Supernumerary teeth in the anterior maxillary area are the main cause for incisor impaction\(^11\).

2. Early removal of the supernumerary teeth reduces the dental and alveolar unwanted effects in the anterior area.

3. In all cases with tooth impaction due to supernumerary teeth there is at least one surgical phase followed by orthodontic treatment.
REFERENCES