

# RADIO “LOGICAL” REFLECTIONS

## Turned in on itself

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### PRESENTATION OF A CLINICAL CASE

A young boy named Max is referred to me by a pediatric dentist colleague for treatment of a class III malocclusion complicated by dental discrepancies of both number and

shape. He is 8 years old and presents a flat profile with thin lips and an insufficient anterior overbite/overjet. (Fig. 1 and 2).



*Figure 1*  
*Frontal intraoral view in occlusion.*



*Figure 2*  
*Patient's facial profile view.*

### DESCRIPTION OF HIS RADIOGRAPHIC FILMS

The panoramic view (Fig. 3) shows a complete dentition, with the exception of congenitally missing 12, and retention of 52 and 62, indicating a dental age of 8 to 9 years old (apexification of the first molars);

22 is in a high intra-alveolar position, and presents radicular immaturity and an anomaly in shape and structure. It appears widened mesio-distally with a spear-shaped crown, inside of which a median radiolucent

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Figure 3  
Digital panoramic view.

image is projected that resembles a pseudo-canal bordered by enamel build-up. The crown of 13 is in a

mesio-angular position, and appears on the radiograph to be between the non-resorbed roots of 52 and 53.

## WHAT DIAGNOSIS IS CALLED FOR?

The “*dens in dente*” or invaginated tooth is a relatively common dental malformation, with an average incidence rate of 2% in the general population. The affected teeth radiographically show an infolding of the enamel as well as the dentin that can penetrate deep within the pulp along the root and extend as far as the apex. Based on the topography of the invagination, Oehlers<sup>7,8,9</sup> has identified several forms:

- **type I:** a minor form, confined to the crown area, that does not extend beyond the cemento-enamel junction and is bordered by enamel;

- **type II:** the invagination extends beyond the cemento-enamel junction, and sometimes deep into the root but retains the shape of a blind hole. This pseudo-canal is bordered by enamel that can be thin and lack continuity; therefore, it can be in close proximity

to the pulp. In type II, the invagination is not in contact with the periodontium;

- **type III:** Here we are dealing with total invagination, extending from the crown so far as to perforate the root, creating a second foramen either at the apical area or laterally into the periodontium. There is no direct contact with the pulp. The invagination may be bordered by enamel, or not, and is uncommonly edged with cement.

These different types of malformations are created before the calcification of tissue; this organ, enamel, undergoes a plication and then an invagination, which penetrates to varying degrees into the dental pulp. This type of invagination may affect any tooth, both deciduous and permanent.<sup>4,6</sup> The most affected teeth are the lateral incisors, with a very high incidence of bilateral involvement.

Some rare cases of invagination of the molars, premolars and central incisors have been reported.

Teeth that have been affected by invagination are more susceptible to developing caries, because they promote the retention of debris on the one hand, and on the other they present

irregular surfaces that have either a very fine layer of enamel or none at all.

In the case under discussion, and given the lack of maturation of 22, that is still in the process of radicular growth, it is not possible at this stage to determine what type of invagination will afflict it.

## HOW SHOULD WE PROCEED AND WHAT IS THE POSSIBLE IMPACT ON ORTHODONTIC TREATMENT?

In view of the endodontic and periodontal complications for these teeth, extraction has long been recommended. Saving them was only proposed recently with the development of specialized root canal treatments, that are sometimes complicated (using a surgical microscope, ultrasonic endodontic instrumentation, obturating with MTA<sup>®1</sup>); today, it is recommended, when in doubt, to proceed with cross-sectional imaging (using CBCT cone beam computed tomography or scanner), that can help guide therapeutic decision making<sup>10</sup>. In the case presented above, this procedure can be performed once the tooth has erupted and/or has an apex.

- Type I and II invaginations do not present any special therapeutic difficulties. In certain situations, coronal obturation or even normal endodontic treatment limited to the invagination seems sufficient, and allows the vitality of the pulp to be maintained<sup>5</sup>.
- For type III invaginations, that create a communication between the periodontal space and the oral cavity, and where the pulp is frequently

affected, we almost routinely observe necrosis and development of a periapical lesion. The anatomical complexity of the invaginations and the porosity of their walls make cleaning and endodontic debridement somewhat risky.<sup>2</sup> One of the greatest difficulties concerns the apical region, that appears “immature”, and requires a limit to the extent of the obturation, and where achieving an apical closure is a challenge<sup>12,13</sup>. Therefore, some authors have recommended as a complement to conventional endodontic treatment, a periodontal surgical procedure, extraction followed by a planned re-implantation, and the surgical removal of the invaginated area of the tooth.

Given the tendency of our patient, with skeletal maxillary deficit, a rather flat profile and thin lips, saving the invaginated maxillary lateral incisor (22) and maintaining space for 12 seemed advisable. Just monitoring, without extracting, has been recommended and his parents were advised of the need for reevaluation of the situation depending on the prognosis once the incisor has erupted.

## CONCLUSION

Since the maxillary lateral incisors are the teeth most frequently affected by this type of malformation, they should be carefully examined both clinically and radiographically, especially in cases of unusual coronal morphology (widened, deep ribbon like grooves or foramen caecum). For such a patient, the occurrence of an isolated invagination necessitates a detailed examination of the same contralateral tooth.

The affected pulp of invaginated teeth can appear shortly after erup-

tion, and therefore an early diagnosis seems necessary in order to avoid complications from infection<sup>3</sup>.

Palatal invaginations of the cingular pits should be treated preventively with a *sealant* obturation and periodic scheduled re-examinations<sup>11</sup>.

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