Treatment of Dens Invaginatus in a Maxillary Canine Case Report

Manoel D. SOUSA NETO, Wagner Grandini ZUCCOLOTTO, Paulo Cesar SAQUY, Sylvestre Arnaldo GRANDINI, Jesus Djalma PÉCORA

1Faculdade de Odontologia de Ribeirão Preto, Universidade de São Paulo
2Faculdade de Odontologia, Universidade de Ribeirão Preto
Ribeirão Preto, SP, Brasil

The authors report a case of Oehler's type III dens invaginatus, 15 years after surgical treatment had been performed.

Key Words: dens invaginatus, dens in dente, therapy.

Introduction

Dens invaginatus is most commonly found in the maxillary permanent incisors, particularly the lateral incisors, although posterior teeth and supernumerary teeth are sometimes affected. Single invaginations that occur bilaterally are not uncommon (Hunter, 1951), and multiple teeth with dens invaginatus in the same patient have also been reported (Burton et al., 1980; Pécora et al., 1987).

Pécora et al. (1990) report the varied nomenclature for this anomaly (dens in dente, dilated odontome and gestant anomaly), which occurs probably due to the lack of knowledge as to the cause of this alteration. The various names reflect the different opinions as to its etiology.

Despite the greater incidence of dens invaginatus in the maxillary lateral incisor, it may occur in any other tooth. Costa et al. (1990) report a case of dens invaginatus in the second maxillary molar in which endodontic treatment was impossible due to the localization of the tooth.

Oehler (1957) described dens invaginatus as occurring in three forms: Type I, an enamel line of minor form occurring within the crown of the tooth and not extending beyond the cemento-enamel junction; Type II, lined form which invades the root as a blind sac and may communicate with the dental pulp; Type III, a severe form that extends through the root and opens in the apical region without communicating with the pulp.
The objective of the present study is to report a case of Oehlers type III *dens invaginatus*, 15 years after treatment.

**Case Report**

A 16 year old male was seen at the clinic complaining of a fistula in the buccal region of the maxillary right canine (Figure 1B).

Clinical examination showed the presence of a palatal micro-tooth, proximal to the mesial side of the right maxillary canine.

Examination by palpation revealed pain in the vestibule. The right maxillary canine responded positively to vertical percussion and negatively to thermal tests (heat and cold).

Radiographic examination showed the presence of Oehlers type III *dens invaginatus* in the maxillary right canine and a micro-tooth on the distal maxillary, right central incisor.

Apicocuretage and retrofilling were performed to close the canal (Figure 1A).

With the removal of the bone table, which was partially destroyed, and the pathologic tissue, the apex of the maxillary right canine was localized, which presented 2 foramina. The mesial canal showed bleeding. The cavity was prepared and retrofilling with amalgam was performed (Figures 1C, 2A).

The operative area presented purulent exudate 1 month later and antibiotic therapy was started and the micro-tooth was removed.

Figure 1 - A, Radiograph showing the right maxillary canine with type III *dens invaginatus*. B, Clinical examination showing the presence of a fistula in the buccal mucosa above the canine. C, Apical surgery with retrofilling with amalgam.
The patient returned to the clinic 15 years after the original surgery. Clinical examination showed bone loss with exposition of a large part of the root of the right maxillary canine (Figure 2B, C). The tooth did not show mobility. Periapical radiographic examination showed bone loss in the buccal region. Prophylactic treatment was performed with a rubber cup and pumice stones and the retrofilling amalgam was polished.

Figure 2 - A, Radiograph showing the retrofilling with amalgam immediately after apical surgery. B, The case 15 years later. Observe the loss of the buccal bone table. C, Radiograph 15 years after original treatment.

Discussion

*Dens invaginatus* constitutes a challenge for endodontic treatment, since it presents a complicated system of root canals. The difficulty is increased in frontal teeth.

Oehlers types I and II *dens invaginatus* do not present difficulty in conventional endodontic treatment. The invagination is contained in the interior of the root canal, without reaching the apical region. Maisto (1973), Tagger (1977), Cole et al. (1978) and Pécora et al. (1987, 1990) report cases of types I and II *dens invaginatus* in which the invagination was removed, transforming the tooth into one with a single canal by conventional treatment.

Type III *dens invaginatus* causes greater difficulty for treatment and Weine (1982) and Leonardo et al. (1982) report that the endodontic treatment of *dens invaginatus* is difficult, preferring surgical intervention with retrofilling. In the present case, the canal was not obturated, because this information was not available at the time.

De Smit and Demaut (1982) propose the association between conventional endodontic treatment of the invagination and the retrofilling of the apical region in cases of type III *dens invaginatus*.
Hata (1987), Bolanos et al. (1988) and Kulild and Weller (1989) report the necessity of performing conventional endodontic treatment with the retrofilling of the foramen of the principal canal in the area of the invagination.

Pécora and colleagues report that endodontic treatment is always necessary because the invagination of the enamel favors the penetration of microorganisms into the interior of the pulp tissue, due to communication with the buccal cavity (Pécora JD, Sousa Neto MD and Costa WF, unpublished data).

The treatment first performed in this case was retrofilling with amalgam, which was the material of choice by most dental surgeons at that time (Lucks, 1974), without apical sealing.

Despite the fact that in this case only retrofilling without endodontic sealing was performed, we can consider the result to be satisfactory, since the dental element maintained normal function for 15 years, not presenting any mobility, despite the exposition of the buccal bone table in the apical region.

References

Bolanos OR, Martell B, Morse DR: A unique approach to the treatment of a tooth with dens invaginatus. J. Endodont 14: 315-318, 1988


Lucks S: Practical Endodontics. Lippincott, Philadelphia 1974

Maisto OA: Endodontia. Mundu, Buenos Aires 1973


Weine FS: Endodontic therapy. Mosby, St Louis 1982

Correspondence: Dr. Manoel D. Sousa Neto, Departamento de Odontologia Restauradora, Faculdade de Odontologia de Ribeirão Preto, USP, 14050 Ribeirão Preto, SP, Brasil.

Accepted August 20, 1991