



Intentional replantation: case report of an alternative treatment for endodontic therapy failure

Reimplante intencional: relato de caso como uma alternativa para o tratamento dos insucessos endodônticos

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Recebido em 14/12/03. Aceito em 1/3/04.

Keywords:

replantation; resorption; unsuccessful endodontic treatment.

Abstract

The aim of this study was to present an alternative treatment after the occurrence of endodontic therapy failure. The authors report a clinical case of a second maxillary permanent molar, which was indicated for intentional replantation as an alternative treatment. Extraction was performed followed by apicoectomy of the three roots and radicular decontamination with citric acid (pH= 1) for 1 min; the roots were then retro-obturated with amalgam and the tooth replanted in the alveolus. The extra-buccal period lasted 15 min. Clinico-radiographical follow-up examinations were done at 2, 3 and 5 years and no symptoms or radicular resorption were found. There was bone neo-formation at the palatal root that had presented a periapical lesion. Intentional replantation can be indicated correctly as an alternative treatment for cases in which conservative endodontic therapy or surgical technique cannot be performed.

Palavras-chave:
reimplante; reabsorção;
insucessos do tratamen-
to endodôntico.

Resumo

O objetivo deste estudo foi apresentar uma alternativa de tratamento para os casos de insucessos na terapia endodôntica. Os autores demonstram um caso clínico de um segundo molar superior que foi indicado para o reimplante intencional. A exodontia foi realizada e logo após feita a apicectomia das três raízes, seguida pela descontaminação radicular com uma solução de ácido (pH = 1) por 1 minuto; as raízes foram retroobturadas com amálgama e o dente foi então reimplantado em seu alvéolo. O tempo extrabucal foi de 15 minutos. Um acompanhamento clínico radiográfico foi realizado em 2, 3 e 5 anos, em que nenhum sintoma de reabsorção radicular foi evidenciado e uma neoformação óssea foi localizada na região da lesão periapical que existia na raiz palatina. Conclui-se que o reimplante intencional pode ser indicado como uma alternativa de tratamento para os casos em que o tratamento endodôntico convencional ou cirurgias paraendodônticas não obtiveram sucesso.

Introduction

The intentional replantation technique is an alternative for the clinician in these situations, and can reach 85% survival in the first 5 years, with a mean survival of 10 years [7].

Intentional replantation can be defined as the extraction of a tooth followed by extra-oral endodontic therapy and the re-placement of the tooth in the alveoli. The main indication for replantation is when there is no other alternative to maintain the tooth in the oral cavity [15] and according to Weine [16] other indications of this procedure are: 1) when there is a perforation, or internal or external resorption and surgery is not possible; 2) when routine endodontic treatment is not possible such as in patients who are incapable of maintaining their mouth open for a long period of time; 3) when the root canal is sealed and there is a fractured instrument, calcification, or periapical radiolucency and routine surgery is not possible; 4) when there is a foreign body, such as a filling material, in the periodontal ligament or periapical tissue and surgery is not possible; 5) when previous treatment failed and surgical or non-surgical retreatment is not possible.

Thus, a case of a second maxillary molar is reported in which intentional replantation was indicated.

Case report

A 36-year-old male patient who had already had endodontic retreatment of the root canal of the second left maxillary molar was seen. Clinically, this tooth presented spontaneous, continual and intense pain;

the periapical mucosa was mildly edematous at the buccal region and the tooth was hypersensitive to percussion. Examination of radiographs brought by the patient showed the presence of a fractured instrument in the mesio-buccal root (which according to the patient occurred during the endodontic procedure) and over-filling of the palatal root (which occurred during the retreatment) (figures 1 and 2).

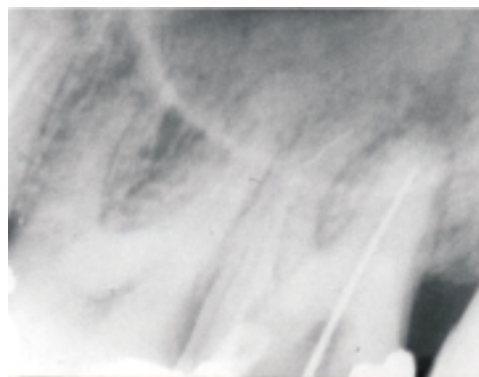


Figure 1 – Fractured file in the mesio-buccal root

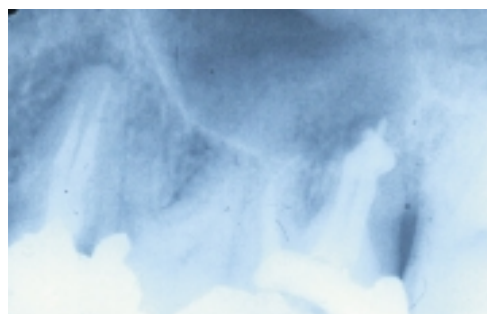


Figure 2 – Over-filling of the palatal root and pre-implant radiograph

After detailed anamnesis, intentional replantation was indicated due to anatomic difficulties (near the maxillary sinus) of this tooth for an apicoectomy and the fractured instrument and over-filling. The patient was informed of the risks and the benefits of this treatment and agreed to it.

The patient received antibiotics and anti-inflammatory medication (500 mg of amoxicillin, every 8 h for 7 days and 50 mg sodium diclofenac, every 8 h for 3 days) and was instructed to return 72 h later for the procedure. After this period the patient returned with decreased symptomatology and surgery was performed.

After sub-periosteal anesthesia, syndesmotomy and careful extraction were performed to avoid possible coronal and/or radicular fracture. The tooth was placed in a container with saline and the alveolus was carefully curetted and irrigated with saline and closed by gauze embedded in this solution. The tooth was manipulated only touching the crown and apicoectomy [9] (3 roots) and decontamination citric acid (pH = 1 for 1 min) were performed. The roots were then retrofilled with amalgam and the tooth was replanted and radiographed (figure 3).

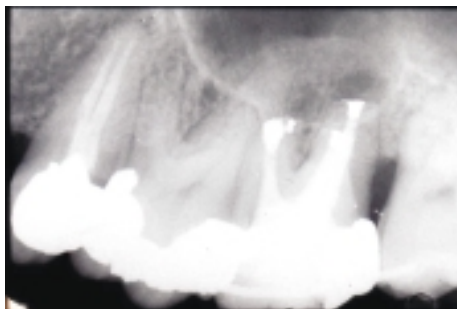


Figure 3 – Post-implant radiograph

The alveolus was not radiographed because the patient did not agree to be exposed to unnecessary radiation. The tooth was then immobilized by a semi-rigid splint, which remained in place for 2 weeks.

The tooth remained extra-buccally for only 15 min, which certainly influenced the case prognosis.

Clinico-radiographical follow-up

The first follow-up was two years after the removal of the splint (figure 4), followed by a 3-year (figure 5) and 5-year (figure 6) follow-up. There was periapical healing with no radicular resorption, but with a slight increase in the pre-existent periodontal problem, probably due to the change of restoration that did not have proximal adequate proximal contact.

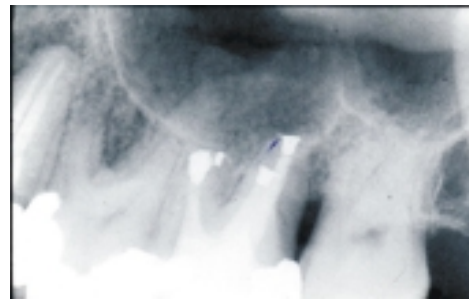


Figure 4 – Two-year follow-up

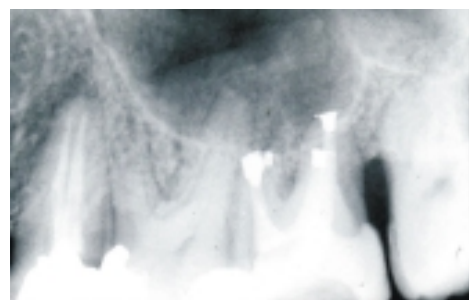


Figure 5 – Three-year follow-up



Figure 6 – Five-year follow-up

Discussion

Intentional replantation is a viable alternative in the case of unsuccessful endodontic procedures, however it must be accomplished as quickly as possible.

Magini *et al.* [11] reported that radicular or coronal fracture must be considered before this procedure evaluating the tooth with clinical and radiographical examinations, observing the resistance of the crown and root especially in terms of caries, extensive restorations or the presence of post-core systems. Therefore, this procedure must be performed with adequate criteria and correct planning [10].

After extraction and before replantation the alveolus must be delicately curetted and irrigated with

saline to prevent excessive bleeding [14]. De Deus [5] reported that this is fundamental for the prevention of ankylosis of the replanted element, also affirming that the re-integration and re-constitution of the pericementum is associated to the intensity of the trauma and the act of replantation (the less the trauma and the faster the operation, the higher the success rate).

Andreasen [1, 2, 3] reported that substitution resorption could occur after two weeks of replantation in two forms, according to the extent of damage: transitional substitution resorption in which an already established ankylosis disappears, and the permanent substitution in which the radicular surface is gradually substituted. This resorption is related to the extensive damage between the most intimate layers of the periodontal ligament of the root.

Grossman [7] reported successful healing in intentional replantation in 32-62% of the cases. In this study, he analyzed the time of surgery and the failure of treatment, thus, calculating the survival rate of the replanted tooth. After 5 years, an 85% success rate can be expected with a 10-year mean survival rate for the replanted tooth. Our case report presents a 5-year follow-up.

Citric acid was used only to decontaminate the remnant root surface; however, Register & Burdick [12,13] reported that when correctly used, citric acid causes superficial root demineralization capable of inducing cementogenesis and re-insertion of collagen fibers, and thus inducing a more efficient and quick peri-radicular healing.

Andreasen [1] cited two other studies [4, 6] that showed that retrograde obturation with amalgam is responsible for more resorption than gutta-percha. However, in our case we used amalgam due to the quickness in which the retro-obturation could be performed.

In spite of the fact that Ingle & Taintor [8] reported that posterior teeth do not need immobilization because they are normally well retained, we used semi-rigid immobilization for 15 days for better comfort for the patient in the post-operative period.

Andreasen [1] reported that in patients 10-30 years of age, inflammatory radicular resorption is significantly more frequent than in older patients. This is probably related to larger root canals and/or dentinal tubules that would easily allow the passage of bacteria and their endotoxins to the periodontium, however, the 36-year-old patient of this report had no problem.

Conclusions

Although intentional replantation is considered by many as an audacious procedure, it can be indicated correctly as an alternative treatment for cases in which conservative endodontic therapy or surgical technique cannot be performed.

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