PRE-ENDODONTIC RESTORATIVE TREATMENT:
the first step to success in endodontic therapy

Restauração pré-endodôntica: o primeiro passo para o sucesso na terapia endodôntica

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Abstract

The aim of endodontic therapy is to clean and shape the root canal in order to obtain a tridimensional sealing of the endodontic space. For proper isolation of the tooth involved, using a rubber dam is absolutely necessary. Since many of the teeth which need endodontic therapy present deep carious lesions and massive destruction of the hard tissues of the tooth, placing the rubber dam is sometimes difficult or even impossible . In these cases, the first step before starting routine endodontic therapy is to eliminate all of the carious tissue and to reconstruct the hard structure of the tooth in order to get proper isolation and a good access cavity with four surrounding walls.

Keywords: Pre-endodontic treatment; Composite resin restoration; Gingivectomy; Endodontic therapy.

Resumo

O objetivo da terapia endodôntica é limpar e conformar o canal radicular para obter um selamento tridimensional do espaço endodôntico. Para o isolamento adequado dos dentes envolvidos, o uso do dique de borracha é absolutamente necessário. Uma vez que muitos dos dentes que necessitam terapia endodôntica apresentam lesões cariosas severas e massiva destruição dos tecidos duros, a colocação do dique de borracha é muitas vezes difícil e mesmo impossível. Nestes casos, o primeiro passo antes de começar a terapia de rotina endodôntica é eliminar todo o tecido carioso e reconstruir as estruturas duras do dente, com a finalidade de obter isolamento adequado e boa cavidade de acesso, com quatro paredes circundantes.

Palavras-chave: *Tratamento pré-endodôntico; Restaurações de compósitos; Gengivectomia; Terapia endodôntica.*

INTRODUCTION

The aim of endodontic therapy is to clean and shape the root canal in order to obtain a tridimensional sealing of the endodontic space (1). For proper isolation of the tooth involved, using a rubber dam is absolutely necessary. Because many of the teeth which need endodontic therapy present deep carious lesions and massive destruction of the hard tissues of the tooth, placing the rubber dam is sometimes difficult or even impossible. On these teeth, placement of a temporary coronal restoration during the endodontic treatment is practically impossible; therefore, even good therapy of the root canal space will be compromised due to recontamination by coronal microleakage. That is why, in these cases, the first step before starting routine endodontic therapy is to eliminate all of the carious tissue and to restore the hard structure of the tooth so that a proper isolation and a good access cavity with four walls can be made.

Many techniques described in the literature as pre-endodontic treatment can be used. Castellucci stated (2) that pre-endodontic treatment can be classified as restorative or prosthetic pre-endodontic treatment, periodontal treatment or orthodontic treatment (Table 1). The clinician can use one single technique, or combine two or more methods for reconstructing the tooth, before starting root canal therapy (3).

TABLE 1 - Pre-endodontic treatment

Periodontal treatment	Gingivectomy Gingivoplasty Gingivo-osteo-coronoplasty The apically repositioned flap
Restorative prosthetic treatment	Temporary crown and h ollowed post Temporary crown and removable post Temporary crown in posterior teeth
Restorative conservative treatment	Composites Glass ionomer cements Reconstruction of the 4th wall Orthodontic or copper band Pin-retained amalgam buildups
Orthodontic treatment	Extrusive therapy Corrective therapy

The aim of this article is to present, as a clinical case, the possibilities for reconstruction of a tooth structure using flowable light-cured composite resins (4) and gingivectomy-gingivoplasty for lengthening the clinical crown of the tooth.

Case report

A 65 year-old female patient was referred for endodontic retreatment on teeth no. 33 and 34 for prosthodontic reasons (Figure 1). Clinical examination of both teeth revealed two temporary crown restoration s and massive destruction of the hard tissues of the teeth.

FIGURE 1 - Clinical aspect of teeth 34 and 33- Endodontic retreatment for prosthodontic reasons is necessary

After removing the temporary restoration, all the remaining carious tissue was eliminated until only sound tooth structure remained. The endodontic access cavities needed to be restored with composite resins in order to obtain four-walled cavities for proper isolation and to preventing microleakage. However, even using the retraction cord on the gingival margin of the tooth, the vestibular gingival margin of the cavity could not be exposed, so the reconstruction could not be done (Figure 2).

FIGURE 2 - Aspect of teeth after removing the temporary coronal restorations. Note the estibular margin situated subgingivally that makes restoration of tooth structure impossible

The decision was made to perform a surgical gingivectomy for both of the teeth in order to gain a supragingival margin of the cavity where adhesion would be possible when using the composite resins. One week after the surgical procedure, the patient was examined again, and after the gingivectomy-gingivoplasty, the vestibular margin of the access cavity was placed 3-4 mm higher than the gingival margin on tooth no 34, and 1-1.5 mm higher on tooth 33. This allowed the restoration of both teeth (Figure 3).

FIGURE 3 - Clinical aspect one week after sugery

A self-etching, single step adhesive was used on all the tooth structure s that needed reconstruction, and the adhesive was light-cured.

To avoid destroying the canal entries during this phase, a pellet of white thermo - plasticized gutta-percha was placed in the pulp chamber (Figure 4). A sterile cotton pellet placed into the access cavity can also be used.

FIGURE 4 - Aspect of the reconstructed vestibular margin of the tooth. The tooth is ready for isolation with a rubber dam

After this, the reconstruction of the tooth structure in the vestibular area using a flowable composite resin was initiated. The reconstruction was finally finished with a football-shape d diamond bur. Placing the rubber dam allowed for endodontic retreatment of each tooth (Figure 5).

FIGURE 5 - Isolation with a rubber dam and clamp Endodontic therapy can now begin

DISCUSSION

One of the fundamental biological principles of root canal therapy is to control the infection from the endodontic space during the entire treatment (1, 5). This begins with proper isolation of the treated tooth with a rubber dam, removal of all caries lesion s and inadequate restoration to sound tooth structures, and, where necessary, restoration of the four walls of the access cavity. This allow s for good isolation of the tooth by correctly placing the rubber dam and prevent s recontamination of the endodontic space by coronal micro-leakage between appointments. Finally, the root canal is tridimensional ly sealed. Long -term success of endodontic therapy will be achieved by using simple but efficient methods that represent the pre-endodontic treatment.

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