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# Pretreatment: Preparation Techniques for Endodontic Therapy

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## INTRODUCTION

To perform endodontic therapy properly, the operative field must be adequately isolated with a rubber dam. Positioning the dam is not always easy.

More often than not, the dentist is confronted with the need to treat teeth destroyed by large carious lesions. He must therefore know how to anticipate and deal with any problems that may arise in the course of isolating the operative field.

Root canal therapy does not begin with the positioning of the dam, but rather with the restorative and periodontal procedures required to simplify and enable the positioning of the rubber dam.<sup>16</sup>

An early problem that can arise relates to the characteristics of the tooth requiring endodontic treatment. These can be analyzed in detail. Based on clinical and radiographic examinations, one can determine whether the tooth is endodontically intact – that is virgin – or whether intervention in fact amounts to retreatment of a previously devitalized tooth (Tab. I).

Table I

### Diagnostic scheme

- |                               |   |
|-------------------------------|---|
| - virgin tooth                | $\left\{ \begin{array}{l} \text{- healthy} \\ \text{- previously restored} \end{array} \right.$ |
| - tooth requiring retreatment |   |

While it is true that endodontic therapy is rarely required in anatomically intact virgin teeth, it may be necessary in two situations:

- 1) when a healthy tooth has to be treated endodontically for periodontal (e.g., root amputation) and/or prosthetic reasons (since the preparation of the crown would involve the pulp)
- 2) when a healthy, preserved tooth presents a lesion of endodontic origin associated with pulp (e.g., secondary to trauma).

The first situation occurs quite frequently, since periodontics more often succeeds in maintaining the individual roots of teeth that have been subjected to a serious loss of periodontal support. The second situation is quite rare.

In these cases, no preparation (“pretreatment”) is required for endodontic therapy. One may simply position the rubber dam, disinfect the occlusal surface of the isolated tooth, and proceed directly to the preparation of the access cavity.

The only possible procedure that might be considered to be part of the preparation for endodontic therapy is ensuring that the dam clamp “grips” the tooth tightly. This may be required when one is called upon to treat intact teeth that have barely erupted, when the height of contour is apical to the gingival crest.<sup>15</sup> In such a case, it might be helpful to apply small ribbons of composite to the buccal and lingual cervical areas of the teeth after acid-etching so as to create an undercut to which the clamp may be anchored securely and stably (Fig. 10.25).

Normally, one finds oneself intervening for the first time on endodontically virgin teeth that have previously been reconstructed or that have large carious lesions involving the pulp.

If one must retreat a tooth that has already been subjected to endodontic therapy, one is dealing with a tooth with a partial or complete reconstruction of variable extent in its no-longer-intact coronal portion. The smallest restoration which one might face is one

which solely reconstructs and obturates the endodontic access cavity that had been created previously.

At this point, one must ask oneself whether it is necessary to remove the existing restoration *in toto* or in part, whether the tooth is endodontically virginal but has a previous reconstruction, and whether the tooth requires retreatment (and therefore obviously has already been reconstructed to some degree).

The various clinical situations that may present can be simply described as follows:

- a) Cases in which it is prudent to completely remove the existing restoration before beginning endodontic therapy:
  - when the restoration (restorative or prosthetic) does not seal adequately
  - when there is a carious lesion beneath the previous restoration
  - when there are posts or screw posts (in this case, the restoration must be removed in an early phase and the means of anchorage in a second one)
  - if, following the establishment of the access cavity, the obturation or crown do not remain in place.
- b) Cases in which it is not necessary to completely remove the existing restoration before beginning endodontic therapy:
  - when one is certain that there is no carious lesion below the existing reconstruction (e.g., after having performed a complex amalgam restoration on a tooth with a vital pulp, it becomes necessary to treat it endodontically for symptomatic or other reasons; in this case, having performed the reconstruction and “ensuring” that no carious tissue has been left, it may be convenient to leave the restoration in place)
  - when, in a retreatment, there are no radicular anchorages and the pulp chamber is not obturated with amalgam, composite, or glass-ionomer cement
  - when one has to try to preserve a properly-performed prosthetic restoration (e.g., crown or onlay): in this case, the restoration is preserved by trying as much as possible to limit the preparation of the access cavity
  - this situation can occur when, for instance, one must endodontically treat a prosthetically-treated tooth that presents symptoms of pulpitis shortly after cementation of the prosthesis.

The sole purpose of this list of possibilities is to describe the various situations that may present clinically.

It goes without saying, however, that good clinical

sense and experience should indicate whether previous restorations need to be removed. One need not necessarily follow rigid, pre-established criteria.

## PRETREATMENT

The necessary prerequisite for proper endodontic therapy is the preparation of an adequate access cavity and restoration of the tooth so as to enable isolation of the field with a rubber dam. The teeth that one is called to treat almost never have an intact crown; more often than not they have cavities due to carious lesions or have old, leaking, and often not very retentive restorations.<sup>18</sup> In these cases, it is often difficult, if not impossible, to undertake endodontic therapy and complete it *lege artis*, both because of the impossibility of positioning the rubber dam – the necessary protection for acceptable endodontic therapy – and because of the difficulty of achieving a hermetic temporary filling between the various visits. Therefore, it is necessary to “pretreat” the tooth, so as to make the therapy possible.

What is normally called “pretreatment” in Endodontics may be defined thus: “The whole of all those techniques that prepare for endodontic therapy and that make possible and/or simplify optimal isolation of the operative field”.<sup>28</sup>

In short, what must be done prior to beginning definitive endodontic therapy can be summarized by three points:<sup>28</sup>

- remove all carious tissue
- remove inadequate restorations
- restore the contour of the tooth.

These three procedures have the following six objectives:<sup>18,19</sup>

1. Prevent contamination of the endodontic space by the bacteria present in the carious tissues.
2. Ensure that the walls of the endodontic cavity do not let any liquid leak through and that there is no chance of infiltration of saliva from the oral cavity to the endodontic cavity or, vice versa, of percolation of medications or irrigating solutions from the endodontic space to the oral cavity.
3. Enable and facilitate the positioning of the rubber dam.
4. Reconstruct the pulp chamber so that there is an adequate space for the irrigating solutions and temporary medications. One must recall that, during the cleaning and shaping procedure, the pulp chamber must never be dry; on the contrary, it