

Temporary Cavity Restoration during Root Canal Treatment – Current Methods

An endodontic specialist is able to choose among several alternative methods to restore the cavity following root canal treatment, temporarily or permanently. We spoke to Dr. Claudia Barthel, senior physician at the Poliklinik für Zahnerhaltung at the Heinrich-Heine-Universität Düsseldorf (Outpatients' Department for Restorative Dentistry at the Heinrich-Heine University in Düsseldorf) about currently available materials for temporary cavity restoration, during and after root canal treatment. *The interview was conducted by Gerhard Frensel, a journalist specialising in dental medicine.*

Professor Barthel, you are a proven expert in the field of root canal treatment. How important are modern coronal restorative materials for the success of endodontic treatment?

Coronal Restorations play a major role in order to reach a very high quality level in endodontic treatment with success. Depending on the clinical situation, teeth almost always receive a coronal filling after a root canal treatment session, either temporarily or permanently. The dentists can choose between a wide range of different materials. If – what happens rarely – a tooth has to remain “open after treatment, this phase should not exceed one day.

Which dental materials can be principally used for coronal restorations during endodontic treatment, and what are their benefits and disadvantages?

For **temporary** coronal restorations there is, for example, Cavit®, which can be applied very easily. However, after only a few days -

according to our research- it already tends to become permeable. The same aspect applies to intermediate restorative materials, so-called IRM, which also can be used only for a few days. Glass ionomer cements exhibit a significantly longer durability and excellent impermeability. The higher price might be a disadvantage. Capsule systems, in particular, permit a rapid and safe procedure with a high degree of impermeability - the best solution in the case of temporary coronal restorations of less than four weeks.

For a permanent or long-term temporary coronal restoration, composite systems are the material of choice with regard to sealing properties. However, processing is more complex and expensive due to the adhesive bonding procedure.

What circumstances necessitate a temporary coronal restoration of a tooth during root canal treatment?

A temporary coronal restoration is always needed, either during single-session root canal treatments or during multi-visit treatments, which require a root canal dressing. It is also required to restore endodontically treated teeth prior to post insertion, and prior to placement of definitive restorations when a tooth remains under observation.

What are the decisive criteria for temporary filling materials?

Temporary filling materials must exhibit maximum impermeability to ensure the success of an endodontic treatment procedure. Any amount of bacterial leakage during or following treatment can cause re-infection. It would be unjustifiable to take complex steps to avoid bacterial infiltration during root canal treatment, only to allow re-infection when placing the temporary coronal restoration. In addition to impermeability, the functional and, especially in the case of

anterior teeth, aesthetic aspects must be considered. The selection of a compatible restorative material is further determined by the defined period of time it will remain *in situ*.

What is your personal choice of temporary restorative material?

Numerous studies on the quality of restorative materials are available, including a number of our own diverse published studies. I routinely use glass ionomer cement during endodontic treatment, because the overall composition of this material provides the best compromise of high safety and durability of temporary restorations together with an acceptable cost factor.

In the case of extended planning intervals, bonded composite systems are also a valid option - for permanent restorations or for observation periods until healing of the tooth is completed.

What durability do you anticipate from glass ionomer cement restorations, for example the new DENTSPLY DETREY ChemFil Molar Caps?

In general, I use glass ionomer cements for approximately 4 weeks to a maximum of 6 weeks, for reasons of impermeability, which, according to our studies, can no longer be guaranteed after this period of time. It should be noted that the permeability is not necessarily determined by innate material properties, but rather due to other factors. For example, the soft medical dressing material in the root canal or cavity can cause dysfunction. In any case, there are numerous parameters, which, in varying degrees of influence, limit the durability of a temporary restorative material. Duration of application of 4 weeks should be safe for glass ionomer cement restorations.

Cavit or IRM may indeed be less costly, but offer reliable sealing properties for only a limited period of time, which is much shorter

than that of glass ionomer cements such as Chemfil molar. Added to this, the patient himself presents an unknown factor if, based on unforeseen circumstances, he does not appear for further treatment after a few days, but much later instead.



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