

BDJ Team CPD

CPD questions April 2021

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Article: An introduction to endodontics

An introduction to endodontics

Peter V. Carrotte¹ introduces the basic principles of endodontics and explains the difference between endodontics and root canal treatment.

Introduction

For most patients the thought of having to have a 'root canal' causes fear and doubt. All members of the dental team need to be fully informed of exactly what this involves in order to put their minds at ease. Obviously the dentist will already be quite familiar with these procedures, and the dental nurse will have a fairly good understanding. However, other members of the dental team may not be quite so sure.

This is an explanation of the processes involved so that all members of the team can familiarise themselves with the procedures and the terminology associated with them.

What is root canal treatment?

Root canal treatment is carried out when the tooth pulp, the soft tissue core of the tooth containing the blood supply, nerves and connective tissue necessary for the tooth's growth and health, becomes damaged or is no longer viable. This is usually caused by bacteria entering the pulp through a deep cavity or fractured filling. Root canal treatment involves removing the damaged pulp, shaping the root canal space so that the entire root canal system can be treated and disinfected, and then filling the space with a root canal sealer.

Figure 1 shows a diagram of the clinical situation. Figure 2 shows a radiograph of a tooth that needs root canal treatment, and Figure 3 shows a successfully treated tooth.

What is the difference between root canal treatment and endodontics?

Although the two terms are often used as if they mean the same, root canal treatment is in fact just one part of endodontic treatment. Whenever restorative dental treatment is carried out the dentist has to protect the pulp from damage. The total care of the pulp is called endodontics. For example, if there is a deep cavity, the dentist will seal the denture surface and may place a small amount of calcium hydroxide on an exposed part of the pulp to promote natural healing and keep the pulp alive. This would be endodontic treatment, but not root canal treatment.

Why would a patient need root canal treatment?

Root canal treatment is usually prescribed to relieve pain and there are three basic, possible conditions that may be diagnosed:

- A tooth that has been badly and irreversibly damaged by a stimulus such as a hot or cold shock that the pulp is slightly inflamed. This would be diagnosed as reversible pulpitis. Pulpitis means that the nerve is inflamed, but reversible means that if the cause is removed and treated in an early and appropriate manner (for example the damage will be repaired). However, if the pulp is damaged and does not recover, then irreversible pulpitis is a possibility. This is where the pulp is no longer viable and root canal treatment will remove the pulp and the pain.
- If the irreversible pulpitis is severe the pulp may die and become necrotic. The infection produced by the inflammation leads

There are three classic stages to root canal treatment: isolation and access shaping (usually called obturation).

1. Which of the following would not be a reason for carrying out a root filling?

- reversible pulpitis
- irreversible pulpitis
- periapical periodontitis
- dental abscess

2. Although all the following are important reasons for using rubber dam, which is the most important?

- to stop the patient talking and having to rinse out
- to make treatment easier and more comfortable
- to stop saliva and other infections entering the root canal
- to stop the patient talking and having to rinse out

3. What prognosis for successful treatment after five years would you give to a patient having a root treatment for a case of irreversible pulpitis?

- over 90%
- between 80% and 90%
- between 70% and 80%
- less than 70%

4. Although all the following are important in the obturation phase of the root treatment, which has been shown to be the most important?

- a good apical seal
- three dimensional filling of the root canal system
- a filling that is within 1 mm of the radiographic apex of the tooth
- a good coronal seal

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'Success in root canal treatment is complicated'

The criteria of success are then:

- Resolution of symptoms
- Resolution of any signs (such as a sinus tract)
- Healing and reduction in size of any radiographic lesion
- The tooth must, of course, still be in function.

The dental literature is full of research reports into the success of root canal treatment. A brief summary suggests that for a new case where there is little infection (such as an irreversible pulpitis) success over five years should be about 90%. When a radiographic lesion is present (periapical periodontitis) this falls to about 80%. If this treatment fails and the tooth is to be retained the five-year prognosis would be around 70%. However, this is related to the satisfaction of all four of the criteria of success.

If all are satisfied, but the tooth is symptomatic, as seen in Figure 5, we must consider the concept of functionality. If the tooth is functional, with no symptoms, then the root treatment really has a failure! From this perspective, and accepting that in reality all dental treatment will eventually fail, patients can be reassured that root canal treatment is normally successful. It is certainly better than extraction!

This article was originally published in *BDJ* in Spring 2016. With thanks to the author for updating the text.

CPD Questions

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