Root Canal Treatment – information for patients

What is root canal treatment and why is it necessary?

Root canal treatment (endodontics) is a dental procedure used to treat infection at the centre of (root canal system) or underneath a tooth. The infection is caused by bacteria that live in the mouth and invade the tooth. This can happen after:

- tooth decay
- leaky fillings
- damage to teeth as a result of trauma, such as a fall

To treat the infection in the root canal, the bacteria need to be removed. This can be done by either:

- removing the bacteria from the root canal system (root canal treatment)
- removing the tooth (extraction)

However, removing the tooth isn't usually recommended as it's better to keep as many of your natural teeth as possible.

After the bacteria have been removed, the root canal will be filled and the tooth sealed with a filling or crown. In most cases the inflamed tissue near the tooth will heal naturally.

The procedure

Before having root canal treatment, your dentist may take a series of X-rays of the affected tooth. This allows them to build up a clear picture of the root canal and assess the extent of any damage.

Root canal treatment is usually carried out under local anaesthetic, a painkilling medication that numbs a specific area of the body. In some cases where the tooth has died and is no longer sensitive, it may not be necessary to use a local anaesthetic. Occasionally, teeth may be difficult to anaesthetise. On these occasions, your dentist can use special local anaesthetic techniques to ensure your treatment isn't painful.

Your dentist may place a rubber sheet (dam) around the tooth to ensure it is dry during treatment. The dam also prevents you swallowing or breathing in any chemicals the dentist uses.

Your dentist will open your tooth through the flat part at the top, or through the back of the tooth if an incisor – to access the soft tissue at the centre of the tooth (pulp). They'll then

remove any infected pulp that remains. If you have a dental abscess, which is a pus-filled swelling, your dentist will be able to drain it at the same time.

Cleaning and filling the root canal

After the pulp has been removed, your dentist will clean and enlarge the root canal so it can be easily filled. The root canal is usually very narrow, which makes it difficult to fill. Your dentist will use a series of small files to enlarge the canals and make them a regular shape so they can be filled. This part of the treatment may take several hours to complete, and may need to be carried out over a number of visits.

Your front incisor and canine teeth (biting teeth) usually have a single root containing one root canal. The premolars have one or two root canals, and back molar teeth (chewing teeth) have two or three roots, each containing either one or two root canals. The more roots a tooth has, the longer the treatment will take to complete.

If the treatment needs to be carried out over several sessions, your dentist may put a small amount of medication in the cleaned canal in between visits to kill any remaining bacteria. The tooth will then be sealed using a temporary filling.

Following this stage you may experience a little tenderness which can be eased with normal painkillers. If you experience more severe pain or swelling you must contact the practice for an emergency appointment. If you have symptoms from the infection, such as a raised temperature or large swelling, you may be given antibiotics to help manage and prevent further infection.

Sealing and fixing the tooth

At your next visit, the temporary filling and medication within the tooth is removed and the root canal filling will be inserted. This, along with a filling, seals the tooth and prevents reinfection. Again, you may experience a little tenderness following the treatment which should resolve within a day or two. If the symptoms persist or worsen, you will need to arrange another appointment.

Root-filled teeth are more likely to break than healthy unrestored teeth, so your dentist may suggest placing a crown on the tooth to protect it.

In some cases a root-filled tooth may darken, particularly if it has died as a result of injury like a knock to the tooth. There are several ways your dentist can treat discolouration, such as whitening the tooth using chemicals.

Results

Root canal treatment is usually successful at saving the tooth and clearing the infection. One review of a number of studies found 90% of root-treated teeth survived for 8-10 years. The study also found having a crown fitted to the tooth after root canal treatment was the most important factor for improving tooth survival rates.

If you practise good oral hygiene, your treated tooth should survive for a long time.

The survival of your tooth depends on a number of factors, including:

- how much of the natural tooth remains
- how well you keep your teeth clean
- the biting forces on the tooth

If an infection does return, however, the treatment can be repeated.

Alternatively, if treatment has already been carried out to a high standard and the infection remains, a small operation to remove the root tip (an apicectomy) may be carried out to treat the infection.

Risks and complications

As with any medical or dental treatment, it is impossible to guarantee 100% success. Even with an x-ray, the dentist can't know the exact configuration of the root canals before accessing them.

There are several factors which can affect the success of root canal treatment:

- the root canal configuration (position and shape) may make it difficult for the dentist to access right to the tip of the root canal(s) which means that all the nerve tissue may not be able to be removed
- some root canals can become "sclerosed", meaning that they have become too narrow or completely blocked, again preventing the dentist from accessing right to the root tip
- if too much tooth structure has been lost due to decay it may be difficult or impossible to provide an effective seal following root canal treatment – in this instance the tooth may need to be extracted
- once the tooth has been accessed the dentist may find that there is a hairline crack through the base of the tooth, often invisible to the eye or on an x-ray. In this instance the tooth could not be saved
- some infections are very persistent and do not clear up following root canal treatment, even with a course of antibiotics

If your dentist feels unable to provide the best outcome for your tooth themselves - for example if the configuration is complex, or the root canals sclerosed – or if they have already provided root canal treatment but it has not been successful, then they may suggest a referral to a specialist, called an endodontist. The specialist has more precise tools and microscopes to allow them to treat more complex cases. The endodontist is only available on a private basis.

Following root canal treatment teeth become much more brittle and prone to fracture. This can happen at any stage during or following the treatment. Your dentist may advise a crown as the best long-term solution to protect the tooth. A period of several months to ensure the tooth has completely settled is normally necessary before going ahead with the crown.