

The evolution of the root canal: Why you no longer need be afraid"

By Poornima Jayaraman

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71-year-old Oliver Witte, has had so many root canal treatments in his life, he's lost track of exactly how many. "My health is great," Witte says. "But my teeth? They are rotten!"

Witte, a lecturer and graduate student at Southern Illinois University, recently underwent root canal treatment for an abscessed tooth. He figures he probably bit into something hard and the root of his tooth cracked. The abscess then took a while to develop. He realized something was wrong when he began to experience pain and made an appointment with his dentist.

"A root canal treatment is most often an emergency procedure that can successfully repair and ultimately save the tooth," says general dentist, Otmane Lahlou, DMD, of University Place Dental in Carbondale.

Lahlou, whose bread and butter comes from doing fillings, extractions and crowns, performs an average of a dozen root canal treatments every month. He refers complicated cases to endodontists, who are specialists in saving teeth.

According to the American Association of Endodontists (AAE), over 21 million endodontic procedures are performed each year in the United States alone. Out of these, more than 16 million are root canal treatments.

Daniela K. Shields, DMD, an endodontist at Seitzinger and Shields in Paducah, Ky. is experienced in dealing with dental emergencies. Shields has a busy schedule, completing as many as eight root canal treatments a day, not including consults and sutures.

"A root canal is recommended when the tissue inside the mouth becomes diseased and can no longer heal itself," she says. The tissue she refers to is the pulp or nerve chamber which lies inside the hard outer shell of each tooth. The pulp tissue can get damaged or infected by a fracture, crack or deep tooth decay.

A root canal is often indicated, if:

- You have spontaneous pain or throbbing while biting into something.
- You have sensitivity to hot and cold foods.
- You have severe decay or an injury that creates an abscess (infection) in the bone.

During the root canal treatment, the inflamed pulp and infected nerve tissue, which is the source of tooth pain, is removed and in the process bacteria and dead tissue is taken out as well. The inside of the tooth is then cleaned, filled and sealed.

According to Lahlou, 60-70 percent of patients will receive a crown once a root canal is completed, in order to strengthen the tooth and protect the inside of the tooth from future bacteria.

What happens when a root canal becomes infected?

A root canal should last as long as your teeth provided they are well taken care of.

"The reason they may abscess is because bacteria goes back in," Shields says. "Once you get a root canal done, make sure you see your endodontist or dentist after six months to check if your crowns are in good shape."

But in case they do become infected, Shields says there are several options. "These days the type of filling material that goes inside the root canal can be removed, the canals can be re-cleaned and refilled," she says. "The other option is surgical retreatment of the tooth - by physically cleaning out the tip or apex of the tooth and resealing it from the apical end."

"Anytime you can conventionally retreat a tooth, that's the route we take," Shields says. "If we're looking at extraction, implants work beautifully in most cases."

According to the AAE, dental implants require extracting the tooth followed by multiple surgeries to insert a metal post in the jaw and affix a porcelain crown to the post. These surgeries often can take three or more visits to complete, and can be timely and costly.

A recent systematic review of studies published by The International Journal of Oral and Maxillofacial Implants, compared root canal treatments and dental implants - two of the most common treatment options -- and found virtually equal success, or survival rates, between both treatments.

Despite the similarity, the study authors conclude that the priority should always be to preserve the natural tooth before extracting and replacing with an implant.

If it's not the most posterior tooth, a final option would be to put a bridge in. A dental bridge is a false tooth known as a pontic, which sits between two porcelain crowns, to fill the area left by a missing tooth. The two crowns holding it in place are attached onto your teeth on each side of the false tooth

Do root canals equal pain?

"Anything that happens inside your mouth is magnified," Witte says. "For the dentist your mouth may be a small space to work in, but for me it's the Grand Canyon!"

Despite the horror stories circulating about root canal treatments, the truth is most root canals are virtually painless today and can be completed in just one visit. A recent survey found that patients who have experienced root canal treatment are six times more likely to describe it as "painless" than patients who have not experienced a root canal treatment. In fact they are no more uncomfortable than getting a filling replaced, providing they are performed by a skilled endodontist.

Looking back in time, standard dental practice in the 1700s was to pull natural teeth instead of saving them. Primitive root canals consisted of cauterizing or searing the tooth with a hot iron and covering it with foil. Thankfully we have come a long way since those days.

"Years ago root canals were difficult procedures to do - both for the endodontist and the patient," Shields says. "The materials, instruments, techniques and procedures weren't as good as they are now. Also, the need for a root canal procedure wasn't recognized until an emergency procedure was required."

"These days, patients are more in tune with their teeth. Our diagnostic capabilities are better. So we can catch it early before it becomes all inflamed and painful."

While undergoing root canal treatment, the patient is usually numbed with local anesthesia. He or she then goes through a virtually pain free procedure that uses advanced technologies, such as operating microscopes, ultrasonics and digital imaging, translating into a more positive patient experience.

Experts say digital radiography and other vision-enhancing technologies such as fiberoptic illumination and operating microscopes, have transformed root canal treatment, to such an extent that it's now an urban legend almost that root canals are painful.

However, your best bet is always prevention. "When you have kids, make it the most natural thing ever to brush teeth and floss, in the morning and at night," Lahlou says. "Also, make sure you visit your dentist every six months."

What to do when a tooth is knocked out

An athlete is 60 times more likely to suffer a dental injury from knocked out or avulsed teeth than a regular person, according to the American Association of Endodontists. The AAE urges all coaches and parents to make sure their children wear mouth guards for all sports including softball, track and field and gymnastics, since they prevent an estimated 200,000 injuries each year.

If your tooth is knocked out, here's what you can do to increase the likelihood that the natural tooth can be preserved:

1. Pick up the tooth by the chewing surface, not the root. Avoid handling the root to minimize injury.
2. If the tooth is dirty, gently rinse with water. Do not use soap or chemicals or scrub the tooth and do not dry by wrapping in cloth or tissue.
3. Reposition the tooth in the socket, if possible. Carefully push the tooth into the socket if possible and close mouth slowly. Hold the tooth in place with your fingers or by gently biting down on it.
4. Keep the tooth moist. If the tooth cannot be replaced in the socket, place it in a glass of milk or in the mouth next to the cheek. If these options are not practical, use water with a pinch of salt.
5. See an endodontist within 30 minutes. Seeking treatment from a root canal specialist can greatly improve the chances of successfully saving the tooth. Though it is possible to save the tooth even if it has

been outside the mouth for 30 minutes or more, the chances of success are less the longer the tooth is out of the mouth

Source: the American Association of Endodontists