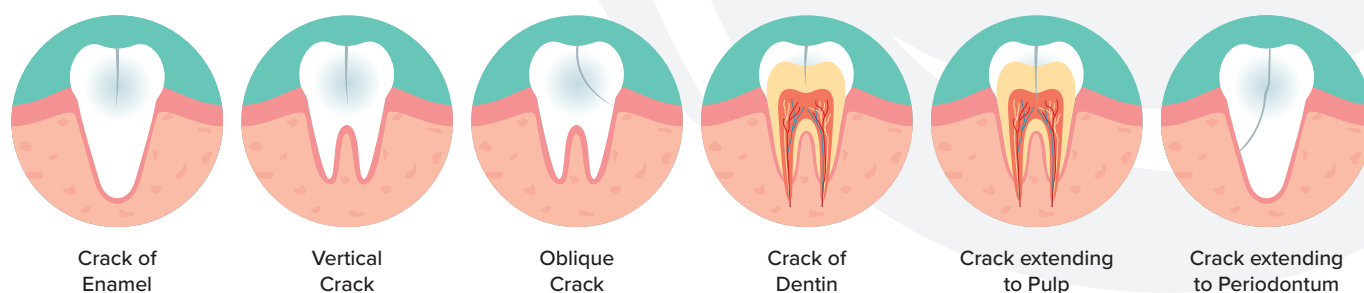


Cracked Tooth Syndrome: An advice sheet for dentists and dental teams

What are cracked teeth?

A cracked tooth is an incomplete fracture when a crack runs from the occlusal surface of the tooth down towards the root without breaking apart. Sometimes it goes below the gum line and into the root. The pulp of the cracked tooth is usually damaged. A cracked tooth is often caused by trauma or tooth wear from teeth grinding or clenching, which is often a symptom of stress. Cases of cracked teeth and tooth-related injuries, as well as cases of bruxism or teeth grinding, have increased during the COVID-19 pandemic. This may be, at least in part, due to pandemic-related stress damaging oral health.



Prevention

Although cracked teeth cannot be completely prevented, it is possible to take steps to make teeth less susceptible to cracking.

To minimize the risk of cracked teeth, dentists should recommend their patients to:

- Exercise caution when eating unpitted olives, cherries or seeded bread.
- Avoid chewing hard objects such as finger nails, pen tops and other habits.
- Avoid clenching or grinding their teeth.
- Use retainers or mouthguards to protect their teeth during sleep.
- Wear a mouthguard or face shield during sports.
- Reduce or avoid if possible psychological stress that increases clenching or grinding of teeth. To seek professional psychological support if required.
- Undergo evaluation and correction of occlusal interference.
- Attend regular dental appointments to allow for the examination of occlusal and contact points regularly.



Diagnosis

A cracked tooth means that the crack extends from the occlusal surface of the tooth vertically to the root. The tooth may not yet be split, but the crack can gradually propagate.

Suggested predisposing factors for cracked tooth syndrome (CTS) include previous cavity preparation, restorative material compaction or bonding procedures, tooth morphology, cervical tooth surface loss, function, parafunction, and trauma, all of which may lead to crack initiation or propagation. Psychological stress, including from the COVID-19 pandemic, can cause teeth clenching or grinding, which can lead to cracked teeth.

Early diagnosis is important for successful treatment. Cracks can be symptomatic, which would support a diagnosis of CTS or asymptomatic, which would not. Often there is a history of pain on chewing, and sensitivity that is elicited by thermal stimuli (mainly cold) or sweet food and drinks. There may also be history of bruxing, trismus, aching facial muscles, temporomandibular disorder (TMJ), loss or displaced of restorations, abrasion, abfraction, wear facets, general sensitivity, or tooth movement. A crack can lead to secondary involvement of the pulp or periodontium.



The tooth sleuth can be the tool to diagnose cracked tooth syndrome. With the thick end of the tooth sleuth, introduced to the examined tooth cusp, the patient is instructed to bite, squeezing the teeth together for a few seconds. If the tooth has a crack, the patient experiences pain on release of the pressure.

One of the ways in which it is possible to determine a cracked tooth is with transillumination, that is simply passing a strong beam of light through a sample and using the pattern of light transmission for diagnosis. When a tooth is cracked the light hits the crack and is dispersed, therefore it does not cross over and illuminate the side of the tooth beyond the crack.

The history, clinical examination and any tests should look to assess their potential involvement, whilst considering other aetiologies in the differential diagnosis.

Treatment

If the crackline has propagated to the pulp, the tooth can be treated with a root canal procedure and crown to prevent the crack from spreading.

However, if the crack extends below the gum line, it can be more challenging to restore. Therefore, early treatment is so important. A cracked tooth that is left untreated will gradually worsen, eventually leading to tooth loss.

A split tooth is often the result of the long-term progression of a cracked tooth. The position and extent of the crack, however, will determine whether any portion of the tooth can be saved. In some cases, endodontic treatment may be performed to save a portion of the tooth.

Vertical root fractures are cracks that start at the root of the tooth and spread towards the occlusal surface. They often show minimal signs and symptoms and therefore may go unnoticed for a while. Inflamed or infected localized gingivae to a single tooth may be a sign of a vertical root fracture and/or periodontal pockets or associated bone loss.

Despite treatment, some cracks can continue to progress and separate, resulting in tooth loss. Crown placement on a cracked tooth provides maximum protection but does not guarantee success in all cases.

Treating a cracked tooth is important because it will relieve pain and reduce the likelihood that the crack will get worse. After treatment, most cracked teeth continue to function and provide years of comfortable chewing.

However, the patient should be informed of a guarded prognosis of the tooth.

