

CURRENT DATING STATISTICS AND TREATMENT OF PULPITIS

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Annotation: Pulpitis is inflammation of the dental pulp, or tissue in the center of a tooth. The dental pulp comprises soft connective tissue, nerves, and the blood supply for the tooth.

Pulpitis causes pain, swelling, and sensitivity. A bacterial infection from a cavity is typically the cause. This article will look at what it is, as well as the symptoms, causes, diagnosis, and treatment options.

Key words: pulpitis, trauma, dentin.

Pulpitis is inflammation of the dental pulp. It is how a dentist might describe 'toothache.'

The pulp inside a tooth consists of vascular tissues, blood supply, nerves, and connective tissue. When the pulp is inflamed, a person may experience pain from the tooth's nerve.

Pulpitis can be reversible or irreversible.

Increased sensitivity to stimuli, specifically hot and cold, is a common symptom of pulpitis. A prolonged throbbing pain may be associated with the disease.^[2] However, pulpitis can also occur without any pain.

Reversible pulpitis is characterised by intermittent, brief discomfort initiated by a hot, cold or sweet stimulus. The pain evoked is of short duration and there is no lingering or spontaneous pain. The pain ceases within a short period after removal of the stimulus. With a reversible pulpitis, sleep is usually not affected and no analgesics are necessary. Usually, no atypical change is evident on the radiograph. Pulp vitality tests are positive and it is possible to preserve a healthy vital pulp.

Irreversible pulpitis, in contrast, is characterised by a constant severe pain that arises without provocation. Characteristics may include sharp pain upon thermal stimulus, lingering thermal pain, spontaneity, and referred pain. Sometimes, the pain may be accentuated by postural changes such as lying down or bending over. If a stimulus is applied, the pain persists for minutes or hours after removal of the stimulus. These indicate that the vital inflamed pulp is not capable of healing and it is often indicated for the pulp to be removed as it is too damaged. Sleep may be disturbed and over-the-counter painkillers are often taken in an attempt to provide relief, but are usually ineffective.

Pulpitis may be caused by bacteria from dental caries that penetrate through the enamel and dentin to reach the pulp, or it may be mechanical, a result of trauma, such as physical damage to the tooth.

Inflammation is commonly associated with a bacterial infection but can also be due to other insults such as repetitive trauma or in rare cases periodontitis. The inflammation of dental pulp is mainly caused by an opportunistic infection of the pulp by a commensal oral microorganism. To reach the pulp, the most common route of the microorganism is through dental caries as well as from trauma, dentinal cracks and exposed dentin. Exposed dentin gives the microorganisms access to the pulp of the tooth through the dentinal tubules. In the case of penetrating decay, the pulp chamber is no longer sealed off from the environment of the oral cavity.

When the pulp becomes inflamed, pressure begins to build up in the pulp cavity, exerting pressure on the nerve of the tooth and the surrounding tissues. Pressure from inflammation can cause mild to extreme pain, depending upon the severity of the inflammation and the body's response. Unlike other parts of the body where pressure can dissipate through the surrounding soft tissues, the pulp cavity is very different. It is surrounded by dentin, a hard tissue that does not allow for pressure dissipation, so increased blood flow, a hallmark of inflammation, will cause pain.

The infection can also come from the apical foramen of the root. Cells in the dental pulp trigger an immune response from the invasion of foreign microorganisms. The inflammation of the pulp is a side effect of the immune response and causes pain.

Pulpitis can often create so much pressure on the tooth nerve that the individual will have trouble locating the source of the pain, confusing it with neighboring teeth, called referred pain. The pulp cavity inherently provides the body with an immune system response challenge, which makes it very difficult for a bacterial infection to be eliminated.

If the teeth are denervated, this can lead to irreversible pulpitis, depending on the area, rate of infection, and length of injury. This is why people who have lost their dental innervation have a reduced healing ability and increased rate of tooth injury. Thus, as people age, their gradual loss of innervation leads to pulpitis.

Reversible pulpitis

In reversible pulpitis, there is typically mild inflammation in the pulp, and people have short-lived pain.

If a person is experiencing reversible pulpitis, a tooth may have a cavity, but it is not deep yet, and so there is an absence of bacteria in the pulp.

With the reversible form of pulpitis, eating something sweet or cold may cause pain, but this pain goes away once the stimulant is gone.

The tooth pulp is typically healthy and, with treatment, it is possible to save the tooth and for the nerve to heal.

Irreversible pulpitis

Irreversible pulpitis is one of the most frequent reasons for a person to seek emergency dental treatment.

Irreversible pulpitis occurs when bacteria spread to the nerve, and there is significant inflammation of the pulp.

Irreversible pulpitis typically causes intense pain that may be spontaneous, lingering, and radiating. Irreversible pulpitis pain may be so severe that it wakes a person up at night.

Someone with irreversible pulpitis may have difficulty pinpointing the exact location of the pain. However, 40% of teeth with irreversible pulpitis may also be painless.

Irreversible pulpitis can lead to an infection at the end of the tooth if the bacteria in the pulp cause the nerve to die. This is called pulp necrosis, or pulp death.

If necrosis occurs, a pocket of pus may form at the end of the tooth's root, known as a periapical abscess, or dental abscess. It can cause severe pain, especially when biting.

Left untreated, the infection can spread to other parts of the body, including the brain.

Symptoms

Pulpitis causes:

pain, which may be sharp or throbbing
sensitivity to sweet, hot, or cold foods and beverages
inflammation

The severity of these symptoms depends on the type of pulpitis.

Reversible pulpitis typically causes mild symptoms, such as sensitivity and nonlingering pain to cold. Irreversible pulpitis, on the other hand, may cause severe pain. With irreversible pulpitis, the pain lasts for a long time, even after the stimulant has gone.

Signs and symptoms of infection may also accompany irreversible pulpitis if the inflammation progresses, and may include:

a fever

an unpleasant taste in the mouth
 bad breath (halitosis)
 difficulty eating
 swelling in the face or cheek
 swollen lymph nodes

Causes

According to a 2016 systematic review Trusted Source, the most common cause of pulpitis is when bacteria irritate the dental pulp through an area of tooth decay, including dental caries.

Other causes of pulpal inflammation include:

trauma or injury to a tooth
 grinding or clenching the teeth
 repeated, invasive dental procedures

These irritants typically first cause reversible pulpitis. If the pulp continues to be inflamed, the pulpitis becomes irreversible, which may eventually lead to the pulp dying.

Diagnosis

A dentist can diagnose pulpitis from a person's symptoms, an examination of the teeth, and possibly X-rays.

In some cases, the dentist may perform other tests, such as:

A sensitivity test: The dentist will check to see if cold or hot stimuli cause pain and discomfort.

Tooth tap test: The dentist taps gently on the tooth with a lightweight instrument to check the level of inflammation.

Electric pulp test: The dentist may use a tool to deliver a small electrical charge to the pulp. If the person can feel the charge, the pulp is responding normally, and the pulpitis may be reversible. These tests can help the dentist to determine the extent of the damage, and possibly save the pulp.

Treatment, The treatment will depend on whether the pulpitis is reversible or irreversible.

Reversible pulpitis If the pulpitis is reversible, the pain and discomfort should resolve once the person treats the underlying cause of the inflammation.

If damage to the tooth, such as with a cavity or a fracture, is causing the pulpitis, a dentist may repair the tooth to protect the pulp.

The pulp should heal and return to its normal, healthy state once a dentist has removed the source of the irritation. **Irreversible pulpitis** Irreversible pulpitis means that something has damaged the nerve beyond repair, and the inflammation in the pulp cannot be reversed. The dentist will typically perform a root canal treatment to remove the dying pulp. Alternatively, a dentist may remove the entire tooth, although this is not typically the first line of treatment if they can save the tooth. A dentist will not recommend systemic antibiotics as a treatment for irreversible pulpitis. This is because antibiotics will not alleviate the pain and heal the nerve inside the tooth.

Prevention

To prevent pulpitis, people can ensure that they practice good oral hygiene to remove unhealthy bacteria from their mouth and teeth.

To help maintain healthy teeth and gums, a person should:

see a dentist regularly
 seek immediate attention for tooth pain or sensitivity
 brush teeth twice daily
 floss daily
 limit or avoid sugary foods

Individuals who have bruxism, which occurs when a person grinds or clench their teeth in their sleep, may want to consider wearing a mouth guard at night.

Complications

If left untreated, pulpitis can lead to a periapical abscess, otherwise known as a dental abscess, which is a localized infection in the bone or soft tissues. A person may notice a pocket of pus beside their tooth. Cellulitis may occur if the infection spreads to local tissue spaces and causes widespread swelling.

Symptoms may include:

swollen glands and lymph nodes

painful rash

fever

chills

difficulty swallowing

trismus, or difficulty opening the mouth

If a person develops cellulitis, they can take antibiotics to treat it. If a person experiences any of the symptoms above, or sees changes in mental state and has difficulty breathing, they should seek emergency medical help.

Individuals should see their dentist at the first sign of pain, sensitivity, or inflammation in the mouth. It is also important to see a dentist regularly for checkups and cleanings. The outlook for pulpitis depends on the extent of the damage. Reversible pulpitis may resolve with treatment of the cause or irritant. Irreversible pulpitis requires a root canal treatment or removal of the tooth to resolve the pain and sensitivity. Early intervention for pulpitis can improve the outlook. A dentist may be able to perform a simple treatment, such as a filling to heal the pulp before the condition becomes irreversible.

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