

# TOOTH SENSITIVITY & ROOT EXPOSURE

If you have ever experienced a sudden, sharp, quick pain or a mild tingling sensation while drinking a cold beverage, eating ice cream or while brushing your teeth, chances are high that you are suffering from dentinal sensitivity. These sensations may come and go, and they only last a few seconds. They might even change locations throughout your mouth.

## Where are these sensations coming from?

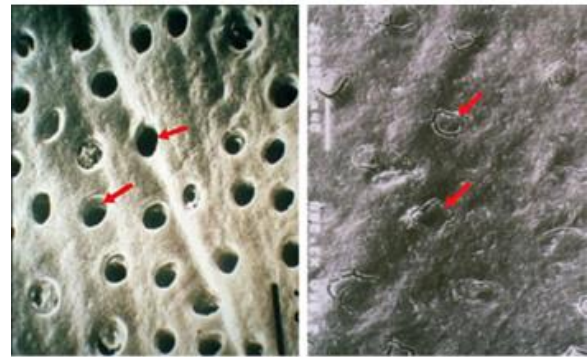
There are two main components that make up the tooth: the crown and the root. Each of these structures consists of layers of tissue.

The crown of the tooth is located above the gum line and consists of three layers of material. The outer, hardest layer is enamel, the middle layer is dentin (much softer than enamel), and the inner layer is the pulp which consists of nerves and blood vessels (the softest part).

The root of the tooth is located in the tooth socket. It is surrounded by the bones of the jaw and covered by gum tissue. There are three layers that make up the root structure: the outer layer is a very thin layer called cementum, the middle layer is dentin, and the inner layer is the pulp.

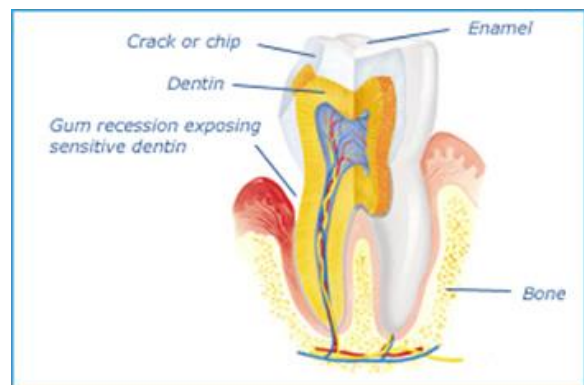
The dentin layer of the tooth consists of thousands of tiny fluid filled tubules that extend from the outside to the center of the tooth. The dentinal tubules are normally covered by a protective mineral smear that seals the tubule off from the surrounding

environment. When the dentinal tubules lose their protective smear they are considered “open.” If you have an open dentinal tubule and you have a cold drink, the fluid within the tubule will sense the drastic temperature change and send a message to the pulp. When the message reaches the pulp you may feel a brief, zing-like pain. The open tubule can also be sensitive to pressure during tooth brushing. Additionally, the exposed dentin is more susceptible to decay than harder enamel.



Open tubules

Closed tubules with smear layer



The most important thing in treating sensitivity is to determine its cause. The two main causes of dentinal sensitivity are:

- Abrasion
- Erosion

*Abrasion* commonly is a result of scrubbing too hard with your toothbrush. Follow the directions below to brush properly:

- Use an extra soft toothbrush.
- Run the toothbrush under warm water for 30 seconds to soften the filaments.
- Use a non-abrasive toothpaste (toothpaste that contains baking soda and is NOT whitening is least abrasive).
- Start by brushing the chewing surfaces of the teeth to spread the toothpaste around the mouth. Hold the toothbrush at a 45-degree angle and use small, short, circular strokes to brush the side surfaces.
- The best solution is to purchase an electric toothbrush. This will eliminate the “need” to scrub your teeth. If using an electric toothbrush, let the toothbrush do all the work.

*Erosion* of enamel happens when chemicals or acids are repeatedly exposed to the dentinal surface. This can happen with:

- Drinking acidic beverages, especially carbonated sodas (diet or regular) and sugary sports drinks.
- Exposure to stomach acids via acid reflux (GERD), vomiting due to morning sickness or bulimia.
- Prolonged swimming in an improperly chlorinated pool.

### **Solving the sensitivity**

After eliminating the cause, the goal is to seal off the open tubules and provide protection against decay.

### **Minor sensitivity and minimal recession**

- Use an over-the-counter product, such as Sensodyne, for a few weeks.
- Consider in-office treatment to seal the dentinal tubules.

### **Significant sensitivity or erosion**

- Use a prescription strength toothpaste to re-calcify the dentinal tubule and to also keep the root surfaces strong to help prevent cavities. These products include Prevident and MI Paste Plus.
- In-office treatment to seal the dentinal tubules.
- Have professionally applied fluoride varnish placed on root surfaces.
- In the most severe case, a tooth-colored filling can be applied directly to the root surface to cover and seal off the tubules.