MAYO CLINIC

Cavities/tooth decay

Overview

Cavities are permanently damaged areas in the hard surface of your teeth that develop into tiny openings or holes. Cavities, also called tooth decay or caries, are caused by a combination of factors, including bacteria in your mouth, frequent snacking, sipping sugary drinks and not cleaning your teeth well.

Cavities and tooth decay are among the world's most common health problems. They're especially common in children, teenagers and older adults. But anyone who has teeth can get cavities, including infants.

If cavities aren't treated, they get larger and affect deeper layers of your teeth. They can lead to a severe toothache, infection and tooth loss. Regular dental visits and good brushing and flossing habits are your best protection against cavities and tooth decay.

Symptoms

The signs and symptoms of cavities vary, depending on their extent and location. When a cavity is just beginning, you may not have any symptoms at all. As the decay gets larger, it may cause signs and symptoms such as:

- Toothache, spontaneous pain or pain that occurs without any apparent cause
- Tooth sensitivity
- Mild to sharp pain when eating or drinking something sweet, hot or cold
- Visible holes or pits in your teeth
- Brown, black or white staining on any surface of a tooth
- Pain when you bite down

When to see a dentist

You may not be aware that a cavity is forming. That's why it's important to have regular dental checkups and cleanings, even when your mouth feels fine. However, if you experience a toothache or mouth pain, see your dentist as soon as possible.

Causes

Cavities are caused by tooth decay — a process that occurs over time. Here's how tooth decay develops:

- **Plaque forms.** Dental plaque is a clear sticky film that coats your teeth. It's due to eating a lot of sugars and starches and not cleaning your teeth well. When sugars and starches aren't cleaned off your teeth, bacteria quickly begin feeding on them and form plaque. Plaque that stays on your teeth can harden under or above your gum line into tartar (calculus). Tartar makes plaque more difficult to remove and creates a shield for bacteria.
- **Plaque attacks.** The acids in plaque remove minerals in your tooth's hard, outer enamel. This erosion causes tiny openings or holes in the enamel — the first stage of cavities. Once areas of enamel are worn away, the bacteria and acid can reach the next layer of your teeth, called dentin. This layer is softer than enamel and less resistant to acid. Dentin has tiny tubes that directly communicate with the nerve of the tooth causing sensitivity.
- **Destruction continues.** As tooth decay develops, the bacteria and acid continue their march through your teeth, moving next to the inner tooth material (pulp) that contains nerves and blood vessels. The pulp becomes swollen and irritated from the bacteria. Because there is no place for the swelling to expand inside of a tooth, the nerve becomes pressed, causing pain. Discomfort can even extend outside of the tooth root to the bone.

Risk factors

Everyone who has teeth is at risk of getting cavities, but the following factors can increase risk:

- **Tooth location.** Decay most often occurs in your back teeth (molars and premolars). These teeth have lots of grooves, pits and crannies, and multiple roots that can collect food particles. As a result, they're harder to keep clean than your smoother, easy-to-reach front teeth.
- **Certain foods and drinks.** Foods that cling to your teeth for a long time — such as milk, ice cream, honey, sugar, soda, dried fruit, cake, cookies, hard candy and mints, dry cereal, and chips — are more likely to cause decay than foods that are easily washed away by saliva.
- **Frequent snacking or sipping.** When you steadily snack or sip sugary drinks, you give mouth bacteria more fuel to produce acids that attack your teeth and wear them down. And sipping soda or other acidic drinks throughout the day helps create a continual acid bath over your teeth.
- **Bedtime infant feeding.** When babies are given bedtime bottles filled with milk, formula, juice or other sugar-containing liquids, these beverages remain on their teeth for hours while they sleep, feeding decay-causing bacteria. This damage is often called baby bottle tooth decay. Similar damage can occur when toddlers wander around drinking from a sippy cup filled with these beverages.
- **Inadequate brushing.** If you don't clean your teeth soon after eating and drinking, plaque forms quickly and the first stages of decay can begin.
- **Not getting enough fluoride.** Fluoride, a naturally occurring mineral, helps prevent cavities and can even reverse the earliest stages of tooth damage. Because of its benefits for teeth,

fluoride is added to many public water supplies. It's also a common ingredient in toothpaste and mouth rinses. But bottled water usually does not contain fluoride.

- **Younger or older age.** In the United States, cavities are common in very young children and teenagers. Older adults also are at higher risk. Over time, teeth can wear down and gums may recede, making teeth more vulnerable to root decay. Older adults also may use more medications that reduce saliva flow, increasing the risk of tooth decay.
- **Dry mouth.** Dry mouth is caused by a lack of saliva, which helps prevent tooth decay by washing away food and plaque from your teeth. Substances found in saliva also help counter the acid produced by bacteria. Certain medications, some medical conditions, radiation to your head or neck, or certain chemotherapy drugs can increase your risk of cavities by reducing saliva production.
- **Worn fillings or dental devices.** Over the years, dental fillings can weaken, begin to break down or develop rough edges. This allows plaque to build up more easily and makes it harder to remove. Dental devices can stop fitting well, allowing decay to begin underneath them.
- **Heartburn.** Heartburn or gastroesophageal reflux disease (GERD) can cause stomach acid to flow into your mouth (reflux), wearing away the enamel of your teeth and causing significant tooth damage. This exposes more of the dentin to attack by bacteria, creating tooth decay. Your dentist may recommend that you consult your doctor to see if gastric reflux is the cause of your enamel loss.
- **Eating disorders.** Anorexia and bulimia can lead to significant tooth erosion and cavities. Stomach acid from repeated vomiting (purging) washes over the teeth and begins dissolving the enamel. Eating disorders also can interfere with saliva production.

Complications

Cavities and tooth decay are so common that you may not take them seriously. And you may think that it doesn't matter if children get cavities in their baby teeth. However, cavities and tooth decay can have serious and lasting complications, even for children who don't have their permanent teeth yet.

Complications of cavities may include:

- Pain
- Tooth abscess
- Swelling or pus around a tooth
- Damage or broken teeth
- Chewing problems
- Positioning shifts of teeth after tooth loss

When cavities and decay become severe, you may have:

- Pain that interferes with daily living
- Weight loss or nutrition problems from painful or difficult eating or chewing

- Tooth loss, which may affect your appearance, as well as your confidence and self-esteem
- In rare cases, a tooth abscess — a pocket of pus that's caused by bacterial infection — which can lead to more serious or even life-threatening infections

Prevention

Good oral and dental hygiene can help you avoid cavities and tooth decay. Here are some tips to help prevent cavities. Ask your dentist which tips are best for you.

- **Brush with fluoride toothpaste after eating or drinking.** Brush your teeth at least twice a day and ideally after every meal, using fluoride-containing toothpaste. To clean between your teeth, floss or use an interdental cleaner.
- **Rinse your mouth.** If your dentist feels you have a high risk of developing cavities, he or she may recommend that you use a mouth rinse with fluoride.
- **Visit your dentist regularly.** Get professional teeth cleanings and regular oral exams, which can help prevent problems or spot them early. Your dentist can recommend a schedule that's best for you.
- **Consider dental sealants.** A sealant is a protective plastic coating applied to the chewing surface of back teeth. It seals off grooves and crannies that tend to collect food, protecting tooth enamel from plaque and acid. The Centers for Disease Control and Prevention (CDC) recommends sealants for all school-age children. Sealants may last for several years before they need to be replaced, but they need to be checked regularly.
- **Drink some tap water.** Most public water supplies have added fluoride, which can help reduce tooth decay significantly. If you drink only bottled water that doesn't contain fluoride, you'll miss out on fluoride benefits.
- **Avoid frequent snacking and sipping.** Whenever you eat or drink beverages other than water, you help your mouth bacteria create acids that can destroy tooth enamel. If you snack or drink throughout the day, your teeth are under constant attack.
- **Eat tooth-healthy foods.** Some foods and beverages are better for your teeth than others. Avoid foods that get stuck in grooves and pits of your teeth for long periods, or brush soon after eating them. However, foods such as fresh fruits and vegetables increase saliva flow, and unsweetened coffee, tea and sugar-free gum help wash away food particles.
- **Consider fluoride treatments.** Your dentist may recommend periodic fluoride treatments, especially if you aren't getting enough fluoride through fluoridated drinking water and other sources. He or she may also recommend custom trays that fit over your teeth for application of prescription fluoride if your risk of tooth decay is very high.
- **Ask about antibacterial treatments.** If you're especially vulnerable to tooth decay — for example, because of a medical condition — your dentist may recommend special antibacterial mouth rinses or other treatments to help cut down on harmful bacteria in your mouth.
- **Combined treatments.** Chewing xylitol-based gum along with prescription fluoride and an antibacterial rinse can help reduce the risk of cavities.

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