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From Plaque to Cavities: Understanding the Stages of Tooth Decay



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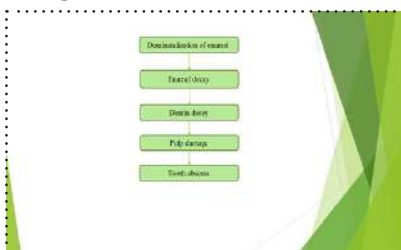
FROM PLAQUE TO CAVITIES: UNDERSTANDING THE STAGES OF TOOTH DECAY

Have you ever noticed blackish discoloration on your tooth? Have you ever been awake due to unbearable pain in your tooth in the middle of the night? Tooth decay results in cavities that appear as holes in your teeth. It can cause pain, infection, and even tooth loss if ignored.

Introduction:

A cavity can be defined as a hole that results from tooth decay. The outer surface of the tooth is known as enamel. Our mouth is loaded with lots of bacteria. Some bacteria are beneficial while some may be harmful. The oral bacteria combine with food particles to form a soft sticky film called plaque. The bacteria within the plaque utilize starch & sugars, forming acids. These acids can attack your enamel, making the tooth weaker. There are minerals like calcium that keep the tooth strong. Acid attack on enamel can cause loss of these minerals leading to the formation of dental caries.

Progression of dental caries



Demineralization: When the tooth is exposed to acids produced by the bacteria, the enamel will lose minerals. This leads to the appearance of white spots that can be considered an early sign of tooth decay.

Enamel decay: As the caries progresses, the white spots turn to brown. Cavities start to develop on your tooth that need to be filled by the dentist.

Dentin decay: Dentin is a softer tissue that lies beneath the enamel. When caries reaches dentin, it progresses at a faster rate. Dentin has small tubules that contain nerves. Hence, you might experience sensitivity while consuming hot/cold foods.

Pulp damage: The pulp contains nerves & blood vessels that keep your tooth vital. It is the innermost layer of your tooth. When the pulp is affected, it starts to swell. The pressure will be exerted on the nerves which leads to pain.

Tooth abscess: As the decay progresses, the bacteria invade and cause infection. The inflammation can result in pus formation called an abscess. The symptoms include swelling of your gums, jaw, and face, swollen lymph nodes in the neck, and fever. The abscess requires proper treatment as the

infection can spread to other areas of the neck and head. Removal of the affected tooth is indicated in some cases.

Causes of tooth decay:

✓ The bacteria present in your oral cavity feed on sugary food, drinks, & milk, and convert carbohydrates into acids.

✓ Acids, bacteria, saliva, and food particles mix to form plaque that coats the tooth surface.

✓ Lack of flossing and brushing



Dental caries (Pinterest)

Risk factors:

- ✓ Recession of gums
- ✓ Family history
- ✓ Dry mouth
- ✓ Intake of frequent sugary foods

Types of dental caries:

- **Smooth surface:** Slowly progressing caries that affect the tooth enamel. This form of caries can be prevented and reversed with proper oral hygiene. Young individuals usually develop this form of tooth decay.

- **Pit & fissure decay:** These cavities develop on the top part of the chewing surface. Usually, this form of caries occurs among teenage people and progresses quickly.

- **Root decay:** Root caries occur in individuals with gum recession who have exposed roots. The roots are exposed to acid and dental plaque. You might require consultation with a periodontist if you are prone to gum recession.



Symptoms:

Diagnosis:

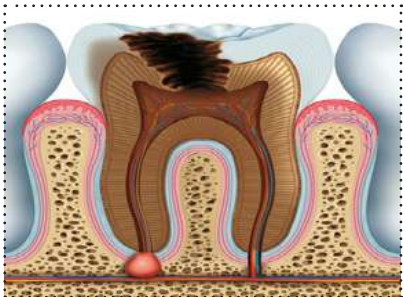
Regular dental check-ups are necessary to diagnose tooth decay. The signs include white, brown, and blackish discoloration of the tooth. If the decay is advanced, it can lead to the infection of the innermost layer called the pulp. The person might experience sensitivity, and pain when the pulp is infected. Instruments like dental probes can be used to evaluate the caries. The dentist can take an X-ray to confirm the extension of the caries.

Treatment:

Initial demineralization	<ul style="list-style-type: none">• The early stage can be reversed with fluoride treatment.• It is applied in the form of varnish or gel.• Fluorides strengthen the enamel by making it resistant to the acids.
Enamel decay	<ul style="list-style-type: none">• The caries can be removed using a tool called aerotor. After removing caries, the dentist fills it with a material. Amalgam, GIC, and composite are the materials used to fill a tooth
Dentin decay	<ul style="list-style-type: none">• Early detection can be managed with normal filling.• If the decay progresses, and pain continues, root canal treatment followed by crown placement is indicated.
Pulp damage	<ul style="list-style-type: none">• Root canal treatment and crown placement is indicated
Tooth abscess	<ul style="list-style-type: none">• Root canal treatment/removal of the affected tooth.• Antibiotics are prescribed in severe cases of infection

Root canal treatment:

The root canal treatment (RCT) is indicated when the pulp becomes inflamed or infected. Many people think that RCT is an invasive procedure. It is a very simple, and painless procedure that can save your tooth! Imagine, how difficult it would be to chew your favorite food without teeth. With this procedure, your tooth will last longer followed by proper maintenance.



Notice the progression of caries approaching pulp. The patient experiences pain that can be treated with RCT (Pinterest).

Step 1: Administering local anesthesia

The dentist administers a local anesthetic to your gums. You might feel mild pain similar to an ant bite which will subside quickly.

Step 2: Removal of infected pulp:

Once the tooth is numb, you will not feel any sensation. A small opening will be made on the tooth until pulp exposure. The dentist removes it using tools called files. The files are used to clean all the canals/pathways in your tooth. The dentist coats the area with a topical antibiotic to ensure the prevention of reinfection.

Step 3: Cleaning and shaping:

X-rays are taken to determine the healing of caries. Once the canals are cleaned, the dentist will seal them with a material called gutta-percha followed by the prescription of antibiotics. A temporary material is used to fill the opening that protects the canals from salivary contamination.



The canals are sealed with a material called gutta-percha (Pinterest)

Step 4: Permanent filling

The patient can be recalled after 1 week to place a permanent filling.

Step 5: Crown

A crown can be placed over the tooth to ensure long-lasting survival.

Conclusion:

Tooth decay is preventable but can be serious and lead to discomfort, infection, and tooth loss if left untreated. Proper oral hygiene, regular dental check-ups, and a balanced diet are essential to keep your teeth healthy. Taking small steps today can ensure your smile stays healthy and bright.★

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