HEALTH BASICS

Tooth anatomy

Tooth anatomy describes the layers, roots, and supporting tissues that form your teeth.

WHAT IT IS
The structures and tissues that make up teeth

WHERE IT COMES UP
Dental examinations, X-rays, treatment plans, and injury reports

WHY IT MATTERS
Helps explain dental problems and treatment choices

WHAT IT IS NOT
Not a disease or diagnosis

WHO TO ASK
A dentist or dental hygienist

HOW IT IS CHECKED
Dental examination and X-rays when needed

Overview

Tooth anatomy is the study of the structures that make up a tooth and hold it in place. It is not a disease or diagnosis.

Each tooth has a visible part called the crown and one or more roots below the gum. Several layers form the tooth itself. The surrounding gum, ligament, and jawbone support it.

People develop two sets of teeth. A full set of primary, or "baby," teeth usually contains 20 teeth. A full permanent set usually contains 32, including four wisdom teeth. Some people do not develop every wisdom tooth, and others have teeth removed.

Teeth also have different shapes for different jobs:

Knowing these basic parts can help you understand a dental X-ray, injury report, or treatment plan.

- Incisors have thin edges for biting
- Canines are pointed and help tear food
- Premolars crush and grind food
- Molars have broad chewing surfaces for grinding

How it works

The crown is the part of a tooth normally seen above the gum. Its shape depends on whether the tooth is used mainly for biting, tearing, or grinding. The crown's chewing or biting surface may have raised areas called cusps and narrow grooves called fissures.

The neck , also called the cervix, is the area where the crown meets the root near the gumline.

The root sits in a socket in the upper or lower jawbone. Front teeth often have one root, while teeth farther back may have more. Root number and shape can differ between teeth and between people.

Four main tissues form a tooth.

Enamel covers the crown. It is the body's hardest tissue and protects the softer layers below. Enamel contains no nerves or blood vessels. It cannot regrow after a piece is lost, although minerals from saliva and fluoride can help repair very early mineral loss before a true hole forms.

Dentin lies beneath the enamel and forms most of the tooth. It is less hard than enamel. Dentin contains microscopic channels that lead toward the centre of the tooth. If dentin becomes exposed, heat, cold, touch, or sweet foods may reach these channels and cause sensitivity.

Pulp is the soft tissue in the centre. It contains nerves, blood vessels, and connective tissue. The pulp chamber in the crown continues into narrow root canals. At the root tip, small openings allow nerves and blood vessels to enter and leave.

Cementum is a thin, bone-like tissue covering the root. Fibres from the periodontal ligament attach to it.

The periodontal ligament is a layer of strong connective tissue between the root and its bony socket. It holds the tooth in place while allowing a tiny amount of movement during chewing. It also helps the body sense pressure on the tooth.

The alveolar bone is the part of the jaw that forms the tooth sockets. The gingiva , commonly called the gum, covers this bone and creates a seal around each tooth.

Together, the root, cementum, periodontal ligament, bone, and gum are known as the supporting tissues of the tooth.

Why it matters for your health

The location of a problem often affects what care may be needed.

Damage limited to enamel may not be painful because enamel has no nerves. A problem that

reaches dentin may cause sensitivity. Inflammation or infection involving the pulp can cause more persistent pain and may require treatment inside the tooth.

Root anatomy is important during root canal treatment. A dentist or root canal specialist needs to locate, clean, and seal the canals within the roots. Curved, narrow, or additional canals can make this more complex.

The supporting tissues matter as much as the visible crown. Gum disease can damage the periodontal ligament and jawbone even when the crown looks normal. Gum recession can also uncover cementum or dentin, which are less resistant than enamel to wear and decay.

Tooth shape affects cleaning. Grooves on molars and tight spaces between teeth can collect dental plaque, a sticky film containing bacteria. Contact points between neighbouring teeth cannot always be assessed by looking into the mouth, so dental X-rays may sometimes be useful.

Primary teeth also have roots, nerves, and supporting tissues. They help with chewing, speech, and holding space for permanent teeth. Their roots usually shorten naturally as the permanent teeth prepare to emerge.

What can go wrong

Tooth anatomy is not itself a condition. However, several conditions and injuries affect particular tooth structures.

Tooth decay , also called dental caries, begins when acids produced by plaque bacteria remove minerals from enamel. If the process continues, it can form a cavity and spread into dentin or pulp.

Pulpitis is inflammation of the dental pulp. It may follow deep decay, a crack, repeated dental work, or an injury. If bacteria spread beyond the root, they can cause a dental abscess in the surrounding tissues.

Gingivitis is inflammation limited to the gums. Periodontitis is a more advanced form of gum disease that damages the ligament and bone supporting the teeth.

Cracks and fractures can involve enamel alone or extend into dentin, pulp, or the root. Their importance depends on their depth, direction, and location.

Dental erosion is loss of tooth material caused by acids not produced by bacteria, such as acids from food, drinks, or stomach contents. Tooth wear may also result from tooth-to-tooth grinding or physical abrasion.

Gum recession exposes part of the root. Because roots are not covered by enamel, they may

become sensitive and more vulnerable to decay.

An impacted tooth does not fully emerge into the mouth, often because it lacks space or is blocked by another tooth or bone. This commonly comes up when wisdom teeth are assessed.

A tooth may also be loosened, displaced, fractured, or completely knocked out by an injury.

What you can do

You do not need to identify each tooth layer yourself. A dental examination is the main way to assess visible teeth and gums. X-rays may be used when a dentist needs information about areas that cannot be seen directly, such as roots, bone, or spaces between teeth.

If you have a specific concern, note:

Ask your dentist to show you the area on a mouth diagram or X-ray. You can also ask which structure is involved and how that finding changes the treatment choices. Keep copies of dental X-rays and treatment records if you change dental practices.

Arrange routine dental follow-up for ongoing sensitivity, a chipped tooth, bleeding gums, a change in how your teeth meet, or pain that keeps returning. These concerns deserve assessment but are not always emergencies.

Seek urgent dental care for severe or increasing dental pain, spreading facial swelling, a loose permanent tooth after an injury, or a tooth that has been knocked out. A knocked-out permanent tooth is time-sensitive; handle it by the crown rather than the root and contact an emergency dental service promptly.

Call emergency services for facial or mouth swelling that makes breathing or swallowing difficult, uncontrolled bleeding, or a major injury involving the face or jaw.

- Which tooth or area is involved
- When the problem began
- Whether biting, temperature, or pressure affects it
- Any recent injury or dental treatment
- Whether there is swelling, bleeding, or a broken piece

Common questions

Are teeth bones?

No. Teeth and bones both contain minerals, but their structures differ. Enamel has no living

cells and does not remodel like bone. The jawbone around a tooth is living bone.

Why can a tooth hurt if enamel has no nerves?

Pain or sensitivity may come from exposed dentin, inflamed pulp, the ligament around the root, or nearby gum and bone. An examination is needed to identify the source.

Can damaged enamel grow back?

Lost enamel does not grow back. Very early mineral loss without a hole may be partly reversed through remineralisation, but a chip or cavity does not rebuild itself.

Does every tooth have the same number of roots?

No. Root number usually relates to tooth type and location, but individual anatomy differs. Dental X-rays can help show root shape and number.

Can an X-ray show the whole tooth?

X-rays can show roots, bone, decay between teeth, and some changes around the root. They are two-dimensional images, so they do not show every detail. Dentists interpret them alongside an examination and your history.

Why do baby teeth matter if they fall out?

Primary teeth support chewing and speech and help preserve space for permanent teeth. Decay or injury in a primary tooth can still cause pain or infection and should be assessed.

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