

MERIT BADGE SERIES



DENTISTRY



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DENTIST
2006

BOY SCOUTS OF AMERICA®

Requirements

- Using X-ray (radiographic) films and with your counselor's guidance, study the tooth structure and look for decay. Then do the following:
 - Using the radiographs as a guide, draw a lower molar. Label its parts and surfaces. Show surrounding structures such as bone and gum tissues.
 - Show on your drawing where the nerves and blood vessels enter the tooth.
 - Show on your drawing where bacterial plaque is most likely to be found.
- Do the following:
 - Tell or write about what causes dental decay and gum disease. Tell how each of the following contributes to dental decay and gum disease: bacterial plaque, sugars, and acid.
 - Tell the possible causes for traumatic tooth loss, describe the types of mouth guards used to help prevent tooth trauma, and list the athletic activities during which a person should wear a mouth guard.
 - Explain the first-aid procedure for saving a tooth that has been knocked out.
- Arrange for a visit with a dentist. Before you go, ask whether your visit can include a dental examination and a plaque-control demonstration. Afterward, ask questions about things you want to know. Then tell your counselor what the dentist does during a checkup examination.



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- Do TWO of the following:
 - Name at least five instruments and five pieces of equipment a dentist uses.
 - With the help of a dentist, prepare a dental stone cast using a vibrator, a mixing bowl, a water measure, a plastic measure, model stone, and a spatula.
 - Keep a record of everything you eat for three days. Circle those items that may provide the sugars that bacterial plaque needs to make acid. List snacks that you should avoid to help maintain the best oral health.
- Discuss with your merit badge counselor the following:
 - How fluorides help prevent tooth decay and the ways fluorides can be provided to the teeth.
 - How the mouth is related to the rest of the body. Topics might include chewing, saliva, enzymes, nutrition, and speech.
- Do TWO of the following:
 - Make a model tooth out of soap, clay, papier-mâché, or wax. Using a string and a large hand brush, show your troop or a school class proper toothbrushing and flossing procedures.
 - Make a poster on the prevention of dental disease. Show the importance of good oral health.
 - Collect at least five advertisements for different toothpastes. List the claims that each one makes. Tell about the accuracy of the advertisements.
 - Write a feature story for your school newspaper on the proper care of teeth and gums.
 - Make drawings and write about the progress of dental decay. Describe the types of dental filling and treatments a dentist can use to repair dental decay problems.
- Find out about three career opportunities in dentistry. Pick one and find out the education, training, and experience required for this profession. Discuss this with your counselor, and explain why this profession might interest you.





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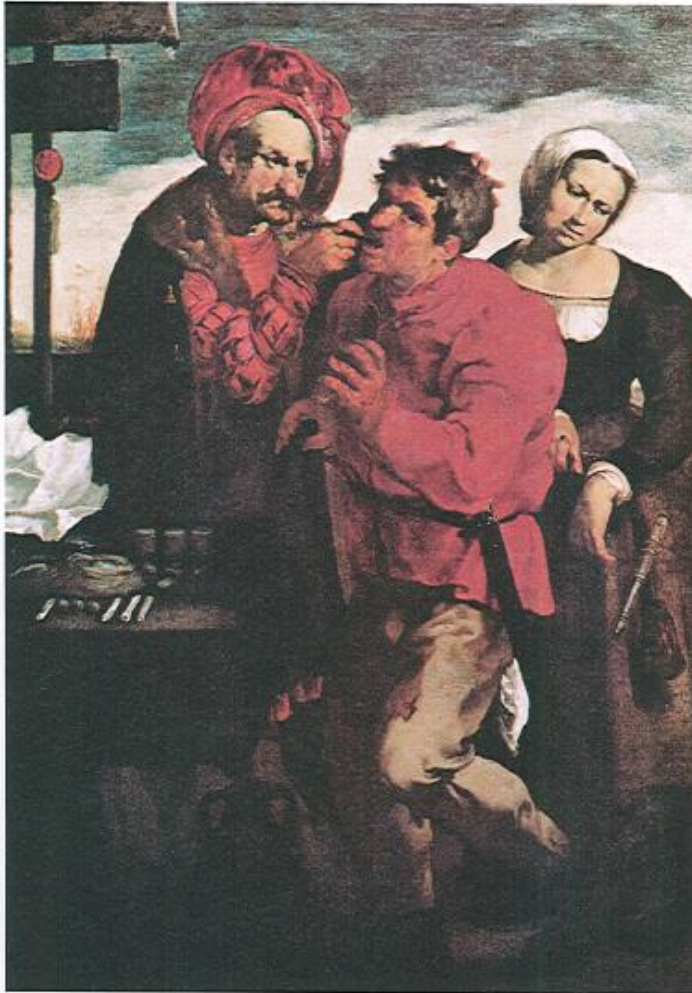
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The History of Dentistry

Since the earliest people got their first teeth, humans have suffered mightily from gum disease and tooth decay. Treating these dental problems often caused more pain than the disease itself, so it is no wonder that people feared—and still fear—the tooth-puller.

In many ancient cultures, the tooth represented vitality and immortality. When someone had a toothache, spiritual leaders would treat it with amulets, prayers, and incantations. Mystery and superstition surrounded the tooth's power to produce pain. Demons were blamed. And tooth worms. Many people believed that worms bored holes into the teeth and caused pain by thrashing about. Healers tried to smoke the worms out of the cavities or kill them with concoctions of urine and spider juice. This belief persisted into the Middle Ages.

Hippocrates (from ancient Greece, known as the Father of Medicine) suggested that people were prone to toothaches if their bodily fluids, or *humors*, were out of balance. He recommended treating infected teeth with cauterization and astringents, and even bloodletting. This idea of opening a vein to let blood out was popular even in the 1900s.

At one time medicine and dentistry were not separate professions. As the practice of bloodletting caught on, physicians decided it was “beneath them” to perform the procedure, thinking that it was the work of butchers. Priests were forbidden to shed blood, so barber-surgeons took to cutting hair and pulling teeth.

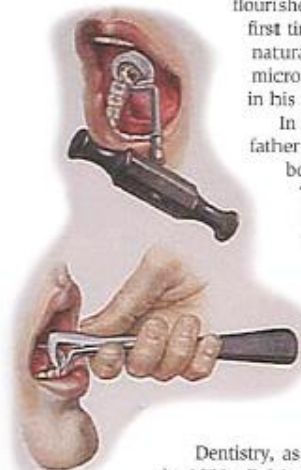
For thousands of years, gum disease caused by excessive wear from chewing coarse foods accounted for most tooth loss. But as civilizations developed and refined sugar found its way into the diet, tooth decay claimed more teeth. Sugar was expensive, so the wealthy were more likely than poor people to suffer from *caries*, or tooth decay.

During the Renaissance, when the arts and sciences flourished, lead and gold fillings were used for the first time to stop tooth decay. In 1683, the Dutch naturalist Anton van Leeuwenhoek looked into his microscope and discovered *animalcules* (bacteria) in his tooth scrapings (*plaque*).

In 1728, Pierre Fauchard, who is regarded as the father of modern scientific dentistry, published his book *The Surgeon-Dentist, or Treatise of the Teeth*. In it he put forth several ideas that are still current: the importance of keeping the teeth clean because oral health affects the whole body; the need for specialized dental education; the necessity of scaling teeth and cleaning the root surfaces to prevent gum or *periodontal* disease; the need to align teeth in the jaw; and instructions for using ivory in dentures, connecting them with springs, and coloring the artificial teeth.

Dentistry, as a distinct field of medicine, developed in the 1800s. Baltimore College of Dental Surgery, the first dental college in the world, was founded in 1840. At the same time, Horace Wells discovered that he could perform painless tooth extractions by giving nitrous oxide gas—laughing gas—to his patients. Then William Morton successfully used ether as a general anesthetic. In 1858, local anesthetics were given by injection of a drug made from cocaine.

In 1890, Willoughby D. Miller, an American dentist, discovered how plaque forms and can lead to the destruction of teeth. Other dentists began to teach preventive measures for getting rid of plaque and avoiding tooth decay and gum disease. X-ray photos of the teeth were taken for the first time in 1896.



Dental treatment has evolved rapidly in the past century. Adding fluoride to the public water supply has dramatically reduced the incidence of tooth decay. Dental drills and ultrasonic cleaning tools help make a visit to the dentist's office quick and more pleasant. We can be glad that the days of the tooth worm are behind us.



The development of things like newer and stronger bonding agents, technologically advanced orthodontic and facial surgical procedures, and safer anesthetics has made today's dentistry as sophisticated, accurate, and safe as any other modern field of medicine.

The Tooth

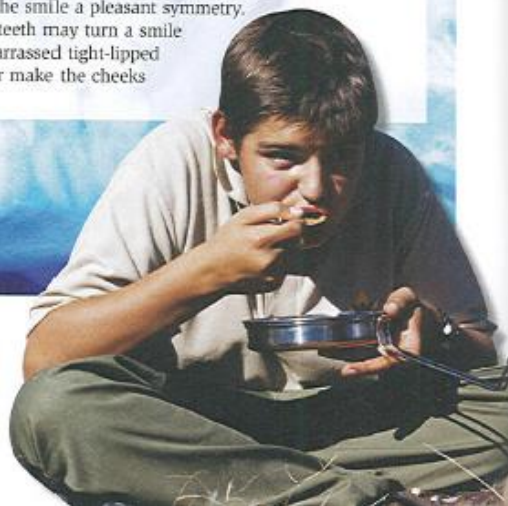
Your pearly whites do a lot more than just peek out from under that winning smile. Teeth have all sorts of duties, so the next time the dentist asks you to open wide, remember that healthy teeth will help you eat, speak, and look great!

Eating. The main function of teeth is to break food into small pieces that you can swallow safely and digest. The different shapes and structures of teeth allow for the different functions of biting, tearing, and grinding.

Speech. Although every normal child is born with a voice, he or she must learn to speak. The parts of the body designated for breathing, chewing, and swallowing work together to create speech. The teeth help to form words.

Appearance. Teeth help to form the shape of the face. The canines, or cuspids, at the corners of the mouth give the smile a pleasant symmetry. But missing teeth may turn a smile into an embarrassed tight-lipped expression or make the cheeks look hollow.

Humans are omnivores. We eat everything—animal and plant materials—so we need teeth that will grind a steak, crush a pinto bean, and slice off a piece of celery.



The Structure of the Tooth

The two basic parts of a tooth are the *crown* and the *root*. The tooth is a living structure, made up of four dental tissues: *enamel*, *dentin*, *cementum*, and *pulp*.

Parts of a tooth



The bones that hold the teeth consist of the upper bones of the mouth, called the maxilla, and the two lower bones of the mouth, called the mandible.

The Crown

The crown is the part of the tooth visible above the gum. An outer layer of enamel protects it from wear and decay. The hard surface on the top of the crown is for biting and chewing.

The Root

The root is the part of the tooth that is below the gum and holds the tooth in the bone. It makes up almost two-thirds of the total length of the tooth. In a healthy mouth, the root should not be visible. It is firmly embedded in a socket in the jaw and protected on its outer surface by a thin layer of hard tissue called *cementum*. Depending on its function, a tooth may have one, two, or (though uncommon) three roots.

Enamel

Composed of calcium and phosphate crystals, enamel is the hardest substance in the human body. It protects the dentin and pulp from the impact of grinding and chewing, as well as from corrosive acids and enzymes in the mouth. Because of its unique structure, enamel can withstand drastic temperature changes. For example, your tooth enamel won't crack if you eat a bowl of ice cream and then drink a mug of hot apple cider.

Even though enamel is hard, it is still vulnerable. When a tooth *erupts* (comes through the gum), the cells that make enamel die. Without living cells, enamel has no way to repair itself. So any defects that occurred when the enamel formed, or any damage sustained from decay or wear, will always remain.

Tooth enamel reacts with various minerals in the mouth and gets harder over time, which might be why children often have tooth decay (or caries), but people older than 20 rarely do.



A tooth is not really white. Enamel has a gray or bluish tint. It is semitransparent and reveals the color of the dentin underneath.

Dentin

Dentin is a bonelike tissue that makes up the main portion of the tooth. At the crown, dentin is covered with enamel; at the root, with cementum. It is a highly porous, slightly yellow substance that, when stained by foods, drinks, tobacco, or antibiotics, can turn orange, brown, or black. Dentin surrounds the pulp, except at the end of the root (the *apical foramen*) where the blood vessels and nerves enter the pulp cavity.

Cementum

Cementum is a thin, hard tissue that covers and protects the outer surface of the root. It is softer than enamel and similar to bone but without the blood vessels and nerves. It is attached to the fibers of the periodontal ligament, helping connect the root to the bone.

Pulp

Pulp is the soft tissue that occupies a space inside the tooth called the pulp cavity or chamber. The pulp extends down the roots of the tooth in the pulp canals, or root canals, to the apical foramen where the pulp tissue leaves the tooth and enters the bone. It contains sensory nerves, blood vessels, odontoblasts (a kind of cell), and fibrous connective tissue.

The blood cells and lymph vessels connect the tooth with the rest of the body; they supply nutrients for the dentin but can also spread disease and infection throughout the body. Odontoblasts are cells that make up the outer lining of the pulp and extend through narrow channels, or tubules, into the dentin. These cells continually form new dentin. The dentin tends to grow inward, making the pulp chamber and root canals smaller. Over time, the tooth becomes insensitive. However, if the pulp is damaged or dies, then the dentin will no longer be maintained, and the tooth will die.

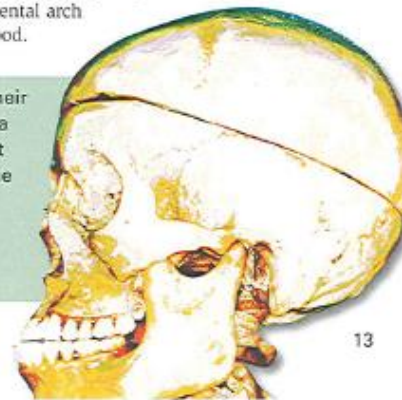
Different Teeth for Different Tasks

The shape of the tooth determines its function. The six front teeth in the upper and lower jaws have single, sharp edges—like knives. The 10 back teeth in each dental arch have large blunt surfaces for grinding food.

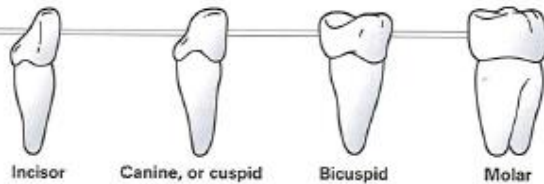
Humans chew mainly by moving their lower jaw up and down, with only a slight side-to-side motion. The front teeth slide across each other like the blades of scissors, and the back teeth meet with force to crush and compress the food like a compactor.



A dead tooth may or may not need to be extracted. If the tooth's pulp is damaged, you may need a root canal to prevent the tooth from dying.



THE TOOTH



Incisors

The four flat front teeth in both the upper and lower dental arches (the central and lateral incisors) have spade-shaped edges for cutting and slicing. Incisors typically have a single root.

Canines, or Cuspids

These four "doglike" teeth next to the lateral incisors each have a single *cuspid*, or point on the surface, for holding and tearing food.

The root of the canine is extra long and large to secure the tooth in the bone so it won't come loose from the tearing movements. The surface of the tooth is smooth and the cusp is rounded, so the canine tends to be self-cleaning. Because the tooth is resistant to decay and is firmly anchored in the jawbone, the canine is often the last tooth lost to age.

Bicuspids

Often called premolars, these first and second bicuspid share characteristics with molars and canines. They each have a large chewing surface, like the molar, and cusps (in this case, two), like the canine. These teeth crush and tear food. Bicuspids have one, two, or sometimes three roots.

Molars

The two or three teeth farthest back in the mouth are the molars (first, second, and third). These are the largest teeth, with broad surfaces and three to five cusps for grinding. The curving roots of the molars anchor the teeth deeply in the jawbone to withstand the tremendous chewing pressures exerted. The lower molars have two roots, and the upper ones almost always have three.

Meat-eating animals such as tigers have oversized cuspids for killing and eating their prey.



The canines, or cuspids, are also known as "eyeteeth." Folk wisdom held that the eyeteeth were connected to the eyes, and that pulling an eyetooth could make the patient blind.

The third molars, also called the *wisdom teeth*, most often appear during the late teens or early 20s.

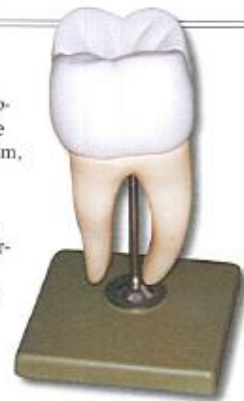
Support for the Tooth

The supportive tissues of the tooth are called the *periodontium*, which includes the *periodontal ligament*, the *alveolar bone*, and the *gingiva*, or gums. The cementum, periodontal ligament, and alveolar bone connect the teeth to the jaws. When one of these is damaged or missing, the tooth will loosen and eventually fall out. The supportive tissues actually get stronger from vigorous use. However, if a part of the mouth is not used because of missing teeth, *malocclusion* (a "bad bite"), or pain from advanced caries, then the supporting structures will weaken and cause much damage.

Periodontal Ligament. This strong, fiberlike tissue anchors the root to the bone and cushions the surrounding bone against the shock of chewing and biting. When extracting a tooth, the dentist cuts the periodontal ligament that connects the tooth to the bone.

Alveolar Bone. The bony part of the upper and lower jaws that surrounds and supports the roots of the teeth and the gums is called the alveolar bone. *Alveolar* means "hollow." The alveolar bone has hollow places, or *sockets*, that house the roots of the teeth.

Gingiva. This thick pink tissue—known as the gums—covers the necks of the teeth and all of the alveolar parts of the jaws. It fits tightly, except for gaps between the tooth and gum, called *gingival crevices*, where food particles and bacteria can collect. If teeth are not cleaned carefully and frequently, then *calculus*, a material made when plaque hardens, will form and periodontal (gum) disease will set in.

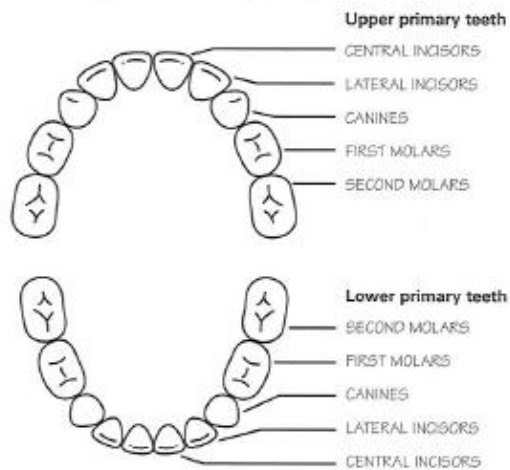


Healthy gums, left, fit tightly around the whole root and part of the enamel. Unhealthy gums, above, leave gaps, increasing the potential for disease and tooth decay.



Development and Eruption of Teeth

Under normal circumstances, you will develop two sets of teeth in your lifetime: the primary set and the permanent set.



Primary Teeth

The first set of teeth—called primary, baby, milk, or deciduous—is temporary but affects the future of your mouth in important ways. These teeth help to form facial contours and help you develop speech and the ability to chew. They also maintain space so that the permanent teeth can erupt in the correct formation.

Proper care of the primary teeth is critical. Decay and infections can spread to the permanent teeth even before they have emerged. Premature loss of baby teeth to decay or accidents may cause permanent teeth to erupt in the wrong positions, requiring orthodontic treatment (such as braces). If a tooth comes out before it is supposed to, the dentist will decide whether to replace it. Sometimes the jaw is growing quickly, spaces are naturally occurring, and the permanent tooth has room to erupt. However, the dentist may fit a metal or plastic device into the gap to help maintain that space until the permanent tooth is ready to come in.



Baby teeth form as tiny buds while the child is still in the mother's womb. At birth, all primary teeth and the permanent first molars are present but still below the gums. When the baby is around 6 months of age, some of the primary teeth are ready to slowly slide through the gums. At the time an incisor erupts, the root is only two-thirds formed. It may take four years after the tooth appears for the apical foramen, periodontal ligament, cementum, and alveolar bone to fully develop.



The small bumps on the biting surface of the tooth are called *mamelons*. They will wear down in a few years as the teeth contact the teeth of the opposing jaw. If they don't, then the dentist probably will check for malocclusion, a problem with the way the teeth meet when the jaws close.

Healthy primary teeth should be a milky white color. Tooth color other than white indicates a malformation of the enamel and a great risk for tooth decay.

The set of primary teeth includes 20 teeth, 10 each in the upper and lower jaws. Each jaw, or *dental arch*, contains two central incisors, two lateral incisors, two canines or cuspids, two first molars, and two second molars. These erupt in sequence, starting with the lower central incisors and then the upper central incisors. The alternating eruption pattern of matching teeth in opposing jaws ensures that the child can bite and chew, and therefore digest, food properly.

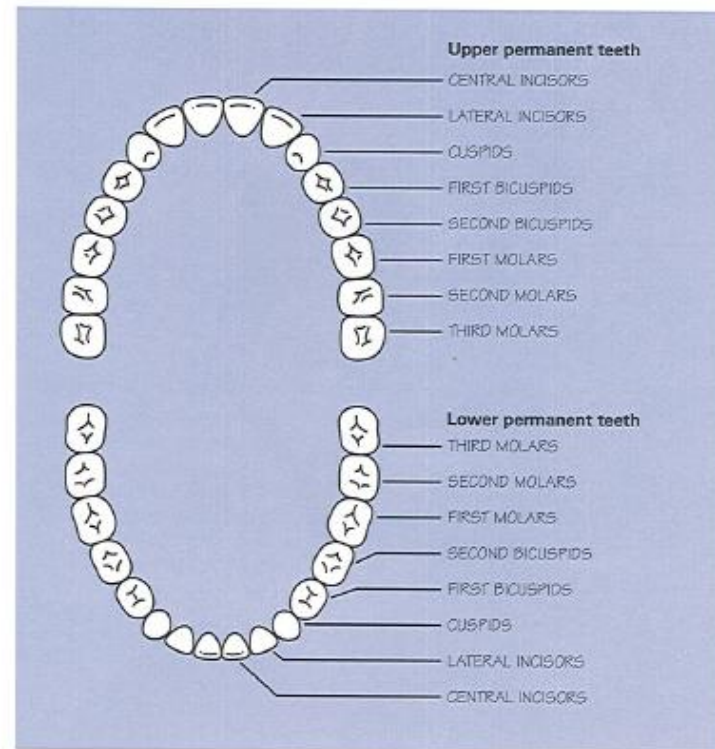
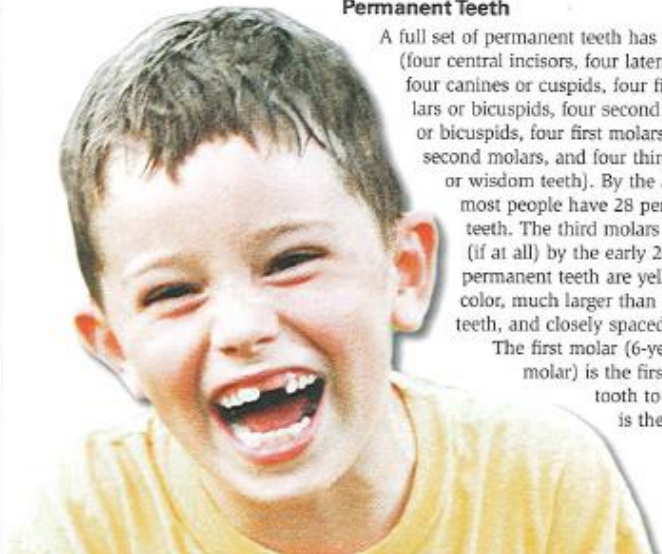
The sequence of eruption is more important than when the teeth erupt. Boys' teeth tend to erupt later than girls' teeth. This may be an advantage because teeth that remain under the gum longer have a higher resistance to dental caries because of the extra time the tooth has to absorb the chemical compound fluoride. Most 3-year-olds have a complete set of primary teeth with fully developed roots.

Around the age of 4, the child's jaws grow dramatically, creating gaps between the teeth. Then, at 6, the permanent first molars erupt. The roots of the primary teeth begin to dissolve (or resorb), the crowns lose support, and the teeth fall out (*exfoliate*).

Permanent Teeth

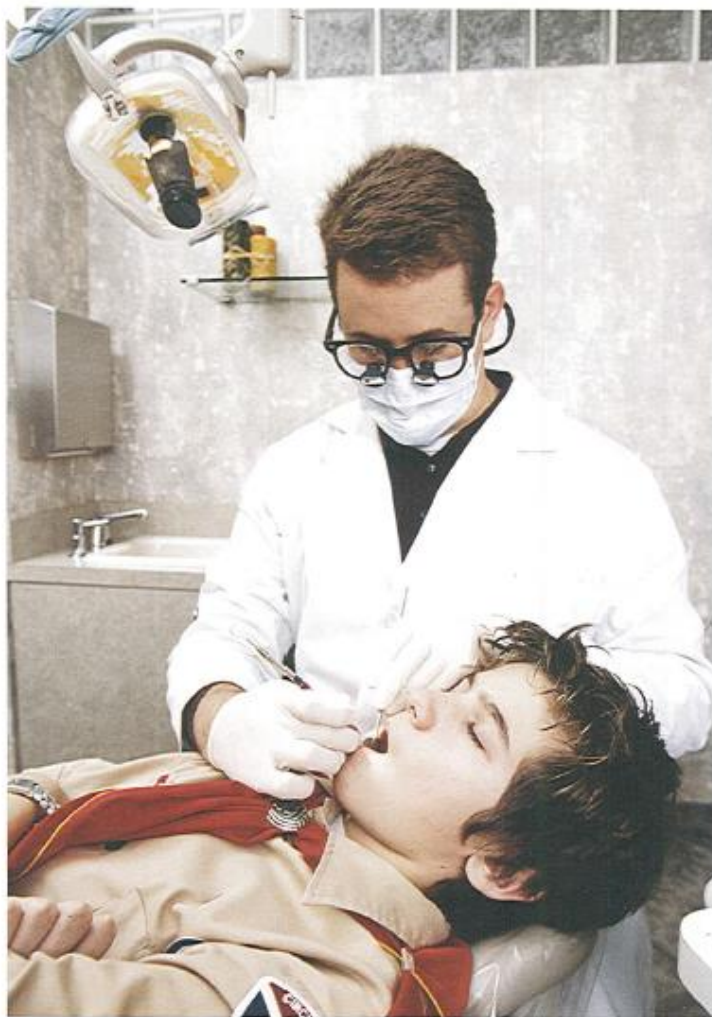
A full set of permanent teeth has 32 teeth (four central incisors, four lateral incisors, four canines or cuspids, four first premolars or bicuspid, four second premolars or bicuspid, four first molars, four second molars, and four third molars, or wisdom teeth). By the age of 13, most people have 28 permanent teeth. The third molars erupt (if at all) by the early 20s. The permanent teeth are yellowish in color, much larger than primary teeth, and closely spaced.

The first molar (6-year-old molar) is the first permanent tooth to erupt and is the key to



proper placement of the permanent teeth. If it emerges in the correct position, with healthy primary teeth next to it, it serves as a guide for the rest of the permanent teeth. But if the primary tooth next to the first molar is missing, the molar will tip or drift out of position and misdirect the eruption of the other teeth.





Keeping Your Teeth for a Lifetime

Once your permanent teeth replace your primary teeth, you are set for the rest of your life. If you take care of these teeth, you can avoid having to buy a third set—dentures.

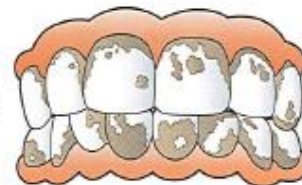
Enemies of Your Teeth and Gums

Tooth decay, or dental caries, is a destructive infectious disease caused by specific bacteria that feed on sugars in food and produce enamel-attacking acids. If left untreated, decay will work its way through the enamel, dentin, and pulp and eventually to the alveolar bone. In the worst case, the infection could spread through the bloodstream to other parts of the body, causing specific reactions that could result in death.

Plaque

Tooth decay generally begins with the formation of plaque, which contains a sticky substance called *dextran*. Bacteria digest sugars, producing dextran and acids. Plaque sticks to teeth and dental restorations (crowns, bridges, fillings, dentures, and implants) and holds those acids in close contact with the tooth surface.

Plaque accumulates in the pits and fissures of the molars and bicuspids, between teeth, and in crevices below the gum line. If it is not removed quickly and the acids are left undisturbed, the acids will react chemically with the minerals in enamel and dissolve them. The cycle of plaque formation and the process of tooth decay continue as long as colonies of bacteria are permitted to cling to the plaque on the teeth and feed on the constant supply of sugar that is introduced throughout the day, every day.



Plaque typically accumulates in hard-to-reach places—the pits and fissures of teeth, between teeth, and in crevices below the gum line.

Calculus

You can remove plaque easily by brushing and flossing diligently. But if you ignore plaque, it will eventually absorb calcium salts from saliva and harden into calculus, or *tartar*. Because calculus is rough and impossible to scrape off without special dental tools, it attracts more bacteria, which irritate and inflame the gums.

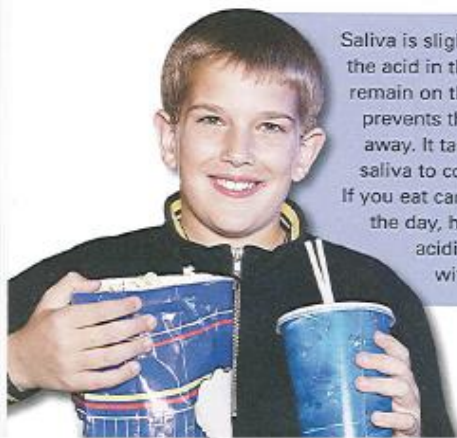


Acids

Strong acids in the mouth can dissolve enamel, causing holes—or *cavities*—in the teeth. As the cavity gets bigger, the acids can reach the softer dentin, which is more susceptible to caries. If the cavity is not treated, bacteria can swarm through the dentin to the pulp and attack the nerves and blood vessels. The pulp gets infected but cannot swell inside the tooth, so the infection spreads through the root canals into the tooth socket, causing an abscess.

Besides eating sugary foods, which bacteria use to produce acids, you may do other things that cause strong acids to attack the teeth and irritate the gums. Sucking on a lemon, putting an aspirin directly on a mouth sore, drinking carbonated beverages that contain acids as well as sugar, and bingeing and purging (an eating disorder called *bulimia*) all expose the mouth to corrosive stomach acids. Additionally, a condition known as gastroesophageal reflux disease, or GERD, can have a devastating effect on the enamel in teeth.

Saliva is slightly alkaline and can neutralize the acid in the mouth. If plaque is allowed to remain on the teeth, it locks in the acids and prevents the saliva from washing them away. It takes 20 to 40 minutes for the saliva to completely neutralize the acids. If you eat candy or drink sodas throughout the day, however, your mouth will stay acidic and decay will continue without a break.



Sugars

Sugar is the main staple in the diet of plaque-forming bacteria. If you reduce the amount of sugar you eat, bacteria do not have as much fuel to produce tooth-destroying acid. However, the more sugar you eat, the more acids the bacteria produce to attack the teeth.

Sweets are particularly harmful because they stay in or stick to the mouth for a long time: hard candy, cough drops, breath mints, non-sugarless chewing gum, caramels, pastries, and dried fruit. If starch sticks to the teeth, an enzyme in saliva called *amylase* can convert the starch to sugar, and then the acid-producing cycle starts again.



Tobacco

Smoking and chewing (smokeless) tobacco do not cause tooth decay but will, at the very least, stain your teeth and foul your breath. Tobacco irritates the soft tissues of the mouth—gums, tongue, *palate* (the roof of the mouth), and lining of the cheeks. It can cause sores, a white plaque on the roof of the mouth, or even oral cancer. In fact, the use of either smoking or chewing tobacco is considered to be the leading cause of oral cancer. Smokers are four to 15 times more likely to get oral cancer than nonsmokers.



Tobacco does more than just stain teeth. Users are more likely than nonusers to suffer from excessive tartar buildup and periodontal disease, to get oral cancer, and—as an added bonus—to have bad breath.

Tobacco users are more likely than nonusers to suffer from periodontal disease. Smoking depletes vitamin C, which healthy gums need. Nicotine constricts the blood vessels, limiting the supply of blood and oxygen to the tissues. These factors, along with excessive tartar buildup (particularly for pipe smokers), increase the risk of getting gum disease. In fact, tobacco may interfere with the treatment of gum disease and make it ineffective.

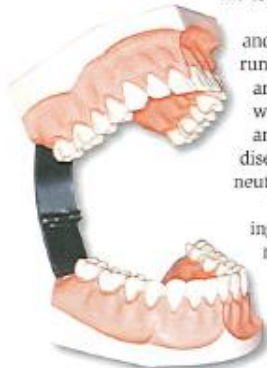


Genetics

Many factors affect the development of teeth and of oral and facial structures. During pregnancy, the mother may be exposed to chemical or environmental hazards. She may run a high fever for a long time, take certain medications or substances (such as alcohol or drugs), or have severe nutritional deficiencies. All of these influences can cause defects in the enamel and dentin of the baby's teeth, especially if they happen while the teeth, jaws, and face are forming.

Heredity plays a major part in the health of the teeth and supporting structures. "Good" or "bad" teeth can run in the family. Genetics determines how white teeth are, how quickly and how much the teeth will discolor, whether gums are predisposed to chronic swelling, and whether a person might develop an autoimmune disease that dries out the saliva and keeps it from neutralizing acids.

The range of possible genetic defects includes missing a complete set of permanent teeth; developing too many teeth or teeth that are unusually small or large; teeth that are fused together or share one root canal; a cleft lip and/or palate; and upper and lower jaws that don't match in size or meet properly.



Preventing Tooth Decay and Gum Disease

Although you can't control what kind of teeth you inherit, you can control how well you try to prevent tooth decay and gum disease. You accomplish this by developing good habits of oral hygiene and making good choices about eating.



How to Brush

The key to preventing caries and periodontal disease is controlling plaque. Whether you use a manual or electric toothbrush, or toothpaste or tooth gel, is not as important as whether you brush your teeth regularly, thoroughly, and correctly.

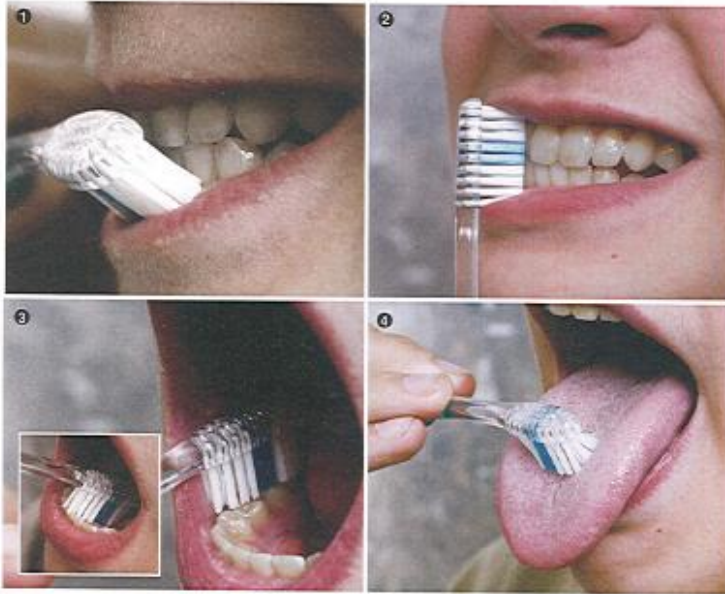
The American Dental Association (ADA) suggests selecting a toothbrush that is small enough to reach every face of the teeth, with soft, round-ended bristles, a flat brushing surface, and a straight handle. A dry brush cleans better than a wet one, so alternate two brushes.

Choose a fluoride toothpaste that is not too abrasive. Brands that claim to remove tough stains (caused by tobacco and coffee) and whiten teeth can also make the teeth sensitive by removing cementum and exposing the dentin. (Excessive pressure can wear away enamel, too.)

Ideally, you should brush your teeth after every meal and snack. Proper brushing shouldn't take longer than three minutes. Dentists recommend brushing your teeth a minimum of twice a day, after the first and last meals. If you are going to prevent the buildup of plaque, you must interrupt its formation once every 24 hours.

Replace your toothbrushes after three months of use (or before if they are worn out) and after an illness. And never share a toothbrush because you can "catch" tooth decay—that is, you can spread plaque-producing bacteria through saliva.

Develop a plan of attack that you can follow routinely. You may prefer to brush all the outside surfaces first, or you may decide to divide your mouth into quadrants and brush each area inside and out before moving on to the next section.



Using the proper technique for brushing your teeth will help ensure effective cleaning.

- 1) To brush the outside surfaces, set the bristles against the teeth near the gums at a 45-degree angle. Move the brush gently back and forth in short strokes about a half a tooth wide. Clean one or two teeth at a time. Brush along the gum line, too. Use the same technique to clean the inside surfaces.
- 2) For the incisors, you may find it easiest to clean them by holding the brush vertically and using up-and-down strokes.
- 3) Then, with the brush held flat, scrub the chewing surfaces. Be sure to brush every surface, particularly the hard-to-reach ones like the most-often neglected tongue side of all molars and the cheek side of the upper molars.
- 4) Finish up by lightly brushing your palate and tongue (from back to front).

Brushing Teeth With Braces

Having braces may be uncomfortable for a while, but it is ultimately a good thing for your mouth and teeth. People with braces need to be especially careful when brushing because the wires and brackets can trap the bacteria and food particles that cause decay. While brushing techniques used to clean braces are similar to those used to clean teeth alone, paying special attention to wires and brackets is very important.

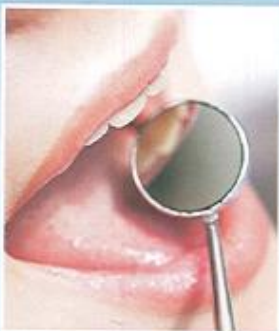


- 1) Start by cleaning the teeth above the wires of the braces. Set the bristles against the teeth near the gums at a 45-degree angle, then move the brush gently back and forth in short strokes about a half a tooth wide. Clean one or two teeth at a time.
- 2) Then carefully clean the teeth below the wire.
- 3) Next, thoroughly clean the wire and brackets by brushing on top of the wire in a circular motion. Finish by cleaning the chewing surfaces, tongue, and palate as usual.

Because you can't see plaque with the naked eye, you can't know for sure that you have gotten all of it off your teeth unless you use a harmless dye called a *disclosing agent*. Using a disclosing agent occasionally will help you learn how to effectively brush your teeth. You can either chew a disclosing tablet or swish a solution around your mouth. The dye will stain any remaining plaque. Clean the missed areas with your toothbrush, and remember to spend more time on those places the next time you brush. After cleaning your teeth, rinse thoroughly with water or a mouthwash containing fluoride.

Let's See Those Pearly Whites

Sporting whiter teeth is all the rage these days, and there are several ways to get them. There are lots of whitening toothpastes on the market that, with regular and thorough brushing, help remove surface stains to reveal the tooth's natural whiter color. The hydrogen peroxide used in many *bleaching agents*, however, actually makes teeth whiter by bleaching the porous enamel surface. No matter which whitening method you choose, make sure to get a dentist's opinion and supervision before beginning treatment.

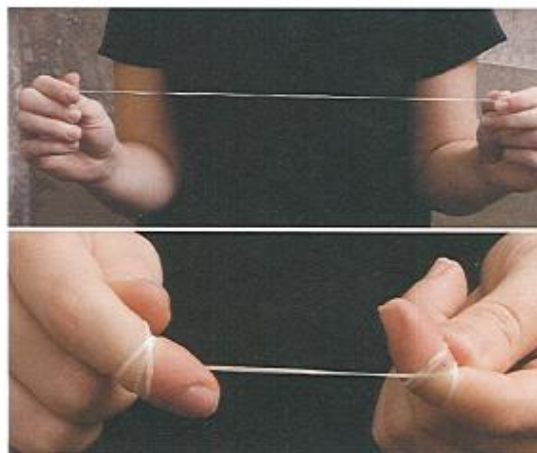


How to Floss

February is
National
Children's Dental
Health Month.

Many people use dental floss (a thread usually made of nylon) from time to time like toothpicks—to dislodge bits of food caught between the teeth. But using floss every day between every tooth, below the gum line, and under fixed bridges actually loosens the plaque that a toothbrush can't reach.

Ideally, you should floss whenever you brush. If you floss only once a day, however, do it at bedtime. Wrap about 18 inches of waxed or unwaxed floss around your middle fingers until you have an inch or two of floss between them. Hold the floss taut and guide it between two teeth. Curve the floss against a tooth and slide it gently under the gum line. Scrape it up and down on the surface of that tooth, and then curve the floss on the other tooth and repeat the process.



Start at the rear molar on one side of the upper jaw and work to the center. Then move to the other rear molar and work back to the center. Do the same for the lower jaw. Let out more floss as you move along, or replace it if it gets heavy with plaque or starts to fray.

If teeth are so tightly spaced that you can't get the floss between them, use a floss threader and insert it into the space below the contact points. This also works to get under a fixed bridge.

Rinse your mouth thoroughly when you finish. Your gums may bleed a little if you have *gingivitis* (inflammation of the gums) or if you were too rough. But keep at it, with a gentler touch. After a few days of flossing, the bleeding will probably stop.



Flossing reduces your risk of developing gum and bone disease and is so important to oral health that Dr. Michael F. Roizen, author of *Real Age: Are You as Young as You Can Be?*, suggests that flossing every day can add two years to your life expectancy.

Find out whether the water in your home is fluoridated. If it is, try to drink eight glasses of tap water each day and know that while you are replenishing fluids in your body, you are also protecting your teeth from decay.



How Fluoride Helps to Prevent Tooth Decay

Fluoride is a chemical compound that forms when fluorine combines with other elements. If enough fluoride is in the body when teeth are developing, it will react with other minerals to make the tooth enamel extra strong and extra resistant to the acids that cause tooth decay. After teeth are formed, fluoride reinforces enamel and also acts with minerals in saliva to restore enamel in the earliest stages of decay.

Fluoride is present everywhere, in varying amounts. The concentration of fluorides in the soil, water, and plants in certain areas may be lower or higher than in other areas. We can't count on what we eat and drink to give us a consistent, balanced supply of fluoride to ensure that our teeth are strengthened and protected, so we must take steps to expose our teeth to fluoride. You can take fluoride internally or apply it directly to the surfaces of the teeth.

Fluoridation, or adding fluoride to our water supply, is considered to be one of the greatest efforts to protect public health. Studies have shown that supplementing local water supplies with fluoride is an effective and economical way to strengthen people's teeth against dental caries. Many people choose to drink bottled water rather than tap water. Most bottled water, however, does not contain enough fluoride to ward off decay. In-home water filters not only eliminate impurities in tap water, but some filters also eliminate vital fluorides from the water supply.

If the water supply doesn't have enough fluoride to protect teeth, other fluorides can be taken internally (as food or medicine), including liquid and tablet supplements. Since ingested fluoride is most effective on unerupted teeth, it should be introduced at 6 months of age and continue until the second permanent molars erupt. Specific guidelines for fluoride supplementation are available from the American Dental Association.

Erupted teeth also benefit from having fluoride applied directly to the surfaces and hard-to-clean spots. Typical fluoride applications should *not* be swallowed. For people especially susceptible to caries, the dentist or hygienist paints a fluoride solution on the teeth or places gel in a tray inserted temporarily over the upper or lower arch of the teeth. Everyone (unless advised *not* to by a dentist or physician) should use fluoride toothpaste. In fact, the American Dental Association won't approve a toothpaste unless it contains fluoride.

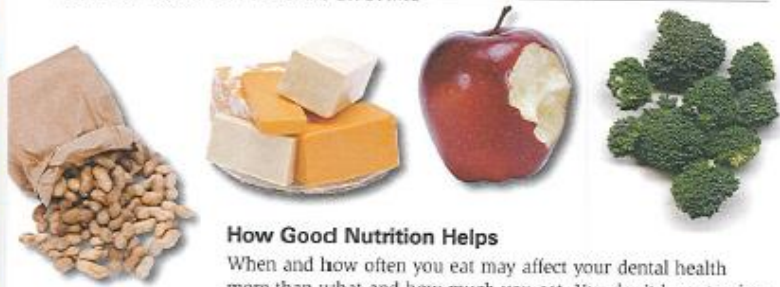
Mouthwashes, or mouth rinses, do little more than mask breath odors for 15 or 20 minutes, unless they contain fluoride or an antimicrobial agent that fights tartar and/or plaque. While many mouthwashes do not contain fluoride, they may still have benefits. Read the label to see whether the mouthwash contains the plaque fighters cetylpyridinium chloride and domiphen bromide. Look also for antimicrobial ingredients, such as sodium benzoate, benzoic acid, or chlorhexidine.



If you don't see this sign from the American Dental Association on your toothpaste, the ADA has not accepted it. One of the reasons may be that it doesn't contain fluoride.

Too Much Is Not Always Too Good

It is possible to get too much fluoride, which can cause mottling and pits in the enamel and lead to discoloration of the enamel. This condition, called *fluorosis*, happens in areas where the drinking water has too many fluorides. It doesn't occur where the water supply is artificially fluoridated. The upside of this condition is that although the teeth are stained, they are quite resistant to decay. Bleaching and bonding can help restore the surface of enamel.



How Good Nutrition Helps

When and how often you eat may affect your dental health more than what and how much you eat. You don't have to give up sugar to protect your teeth. If you eat sweet foods and drinks only at mealtimes and faithfully brush and floss your teeth afterward, you can avoid tooth decay.

The extra saliva produced to digest a meal will help wash away or neutralize acids, but eating sugary foods between meals will keep the acid level of the mouth high. If you must snack, choose foods that are low in sugar content: peanuts, popcorn, pretzels, olives, eggs, meats, milk, and plain yogurt. Even better are raw vegetables and fruits (but not fruit juices) because they are high in fiber and require vigorous chewing, which stimulates salivation and cleans the teeth and gums. Snacking before bedtime is harmful because of the reduced production of saliva during sleep. The plaque remains undisturbed on the teeth for hours.

Healthy people produce about 6 cups of saliva a day.



Baby bottle tooth decay (BBTD) is a type of caries in children younger than 3 years old caused by using a bottle filled with formula, milk, or fruit juice as a pacifier. When a baby is put to bed with a bottle filled with anything other than water (preferably fluoridated), then the sugars collect around the teeth. The bacteria have all night to produce acids, which destroy the enamel.

Protecting Teeth From Injury

Apart from decay, accidents are the main cause of tooth injury and loss in children.

Environmental Hazards

Many teeth have been knocked out because of a jump off a swing, a shove into a drinking fountain, a fall at the swimming pool, and poor footing on a wet tree trunk. Automobile crashes or sudden stops account for more tooth injuries. Everyone should take safety precautions to avoid these kinds of accidents. Don't run or climb on wet surfaces. Watch where you're going. Wear a seat belt.

Tooth loss often has an indirect cause. Radiation of the head or neck, such as in treatment for cancer, can destroy the salivary glands. The acids created by certain bacteria remain on the teeth, so decay sets in with a vengeance. Blood disorders affect the body's ability to fight infection, making a person susceptible to periodontal disease.

Mouth Guards

Everyone who plays active sports that are potentially dangerous to the face and head should wear a mouth guard. This device helps prevent teeth from getting chipped, fractured, or knocked out and protects the lips, tongue, and cheeks. The mouth guard cushions the impact of a blow or fall that might cause a concussion or broken jaw and distributes the pressure throughout the jaw.



Often, people cope with stress by grinding their teeth (a habit called *bruxism*). The constant heavy pressure can wear down and loosen teeth. With regular examinations, a dentist can tell whether a person has developed this habit and can recommend treatment.