cavities

Video

Cavity refers to a decayed or rotting portion of a tooth; this dental disease is caused by bacteria.

Our bodies are hosts to many bacteria, which invade the body right after birth, and stem from either our parents or the environment. Not all bacteria cause damage, for example the bacteria in the digestive tract (or intestinal flora) are necessary for survival - these good bacteria are called symbionts. Other bacteria simply occupy their own little niches - these are called commensals - they do not provide us with anything directly, but they form a screen, for example on our skin, which prevents other harmful types of bacteria from invading.

Sometimes bacteria and host fight for supremacy, and the medical term for these types of germs is opportunists. If the host is damaged by the bacteria, meaning that the bacteria win the fight, then these germs are designated as pathogens.

The mouth contains a great variety of bacteria, which occupy niches and thus keep other, more aggressive germs from entering, while other bacteria just live alongside us. Our mouths thus contain both symbionts and commensals. The composition of the bacterial flora can change very rapidly, however, if you undergo any life changes. Then the commensal bacteria can suddenly become pathogenic gerrms - this is what happens in the case of cavities.

A certain combination of factors results in cavities:

- conditions in the host
- tooth deposits - also known as dental plaque
- and time

Host conditions are all factors pertaining to the host, for example dental anatomy, composition of the saliva, dental hygiene. Plaque is a kind of dental film consisting of carbohydrates, components of the saliva and bacteria which form when teeth are not cleaned properly. Putting all these factors together, poor dental hygiene, plaque and enough time, results in cavities.

We will now take a tour of the plaque, as shown in this animation. Plaque is organized like a small city: there are bacteria which specialize in attaching to the teeth. Other bacteria help to transport nutrients by building conveyance channels. Streptococcus mutans bacteria take carbohydrates and use them to produce organic acids which attack the teeth by removing minerals from the dentine. Plaque is like a small city which takes 24 hours to build. This is when the original commensal and symbiont bacteria become pathogens. As long as they are disorganized, oral bacteria are not dangerous. It is only after plaque build-up that they start causing cavities and parodontitis.

This is why it is so important to remove plaque effectively using an oral rinse, dental floss and a toothbrush, thereby removing the bacteria's habitat - without which bacteria can cause no harm. However, as soon as a cavity reaches the solid part of the tooth (called the dentine), the situation shown here in yellow, bacteria start to invade the dentine. The dentine contains protein which provides the bacteria with yet another source of nourishment. Even once plaque has been removed completely, the spread of the cavity can no longer be stopped, so the cavity takes on a life of its own. You do not feel a toothache until the cavity has reached the nerve - marked here in red, and by then it is necessary to perform a root canal, since the nerve of the tooth is infected with bacteria. If root treatment is not performed properly, this results in inflammation of the bone - the patient feels this as the source of the ache - root tip resection or tooth extraction are the result.

Now you've heard a more detailed description of the typical life of a tooth - usually ending in crowns, bridges, partial dentures and sometimes even full dentures once the patient turns fifty. Here

you can see x-rays of patients from various dentists' offices. You may notice that all of these patients, and maybe you yourself, have bad side teeth. Even a lay person can tell that people first start getting fillings, crowns, and bridges (the bright spots on the x-rays) in their side teeth. Why? - Well, when you brush your teeth you probably have other things on your mind and do not clean them as thoroughly as you should. Moreover, the fresh taste of the toothpaste makes your mouth feel cleaner than it is, so that it is usually only the front teeth - the window display - that get the most cleaning while the side teeth - or back room - are not cleaned adequately. This has consequences: hidden deposits, especially in the spaces between the teeth eventually start destroying the enamel - leading to cavities and inflammation of the gums - parodontitis. This is also why we get fillings on the side teeth first, and if these are not performed correctly and we are not provided with sufficient information, then most people around the age of 50 have either no teeth or damaged teeth on the side. The front teeth have to take on a heavier load and at the age of 60 - presto - you get your full denture - the typical course of dental hygiene.

Regular oral hygiene, good dental work and/or information prevents the build-up of cavities, so you have something to smile about even in old age!