

# Ear Infection and Ear Tube Surgery

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## What is otitis media?

Otitis media means "inflammation of the middle ear". The inflammation results from an infection of the middle ear.

## Did you know...

Otitis media is the most frequent diagnosis recorded for children who visit a physician. Approximately one third of all children have more than three ear infections during the first three years of life. This results in 30 million doctor visits per year. Otitis media is also the most common cause of hearing loss in children. Although otitis media is most common in young children, it also affects adults occasionally. It occurs most commonly in the winter and early spring months.

## Is it serious?

Yes it can be serious because of the hearing loss it creates. If the middle ear fluid persists for a long time it can impair learning and delay speech development. It can also cause a severe earache and infection can spread to nearby structures in the head, especially the mastoid.

Otitis media is not serious if it is promptly recognized and treated. In most cases the hearing loss can be restored to normal. Thus it is very important to recognize the symptoms of otitis media and to get medical attention as early as possible.

## How does the middle ear work?

The middle ear is a peanut-sized, air-filled cavity separated from the outer ear by the paper-thin eardrum. Attached to the eardrum are three tiny ear bones. When sound waves strike the eardrum, it vibrates and sets the bones into a motion that is transmitted to the inner ear, which generates nerve impulses that are sent to the brain.

A healthy middle ear must contain air at the same atmospheric pressure as outside of the ear, so all these structures can vibrate freely. Air enters the middle ear through a narrow tube called the eustachian tube, which passes from the back of the nose up into the ear. When you yawn and hear a "pop" in your ear, that means your eustachian tube has just sent a tiny air bubble into your ear to equalize the pressure. This happens automatically over 1000 times a day.

## What causes otitis media?

Acute (sudden) otitis media is caused by bacteria, occasionally viruses, that enter from the nose or throat and reach the middle ear. This occurs because the eustachian tube is not functioning properly, often because it is inflamed from a cold, throat infection, or allergy attack. Infection in the middle ear causes earache, a red inflamed eardrum, and the build-up of pus and mucus behind the eardrum.

Sometimes the eardrum ruptures and pus drains out of the ear. More often, the pus and mucus remain in the ear because the eustachian tube will not let it drain naturally. This is called middle ear fluid or effusion or serous otitis media. It can become chronic, lasting for weeks, months, or even years after the painful part of the infection is over. If the fluid stays in the middle ear for long periods it causes a hearing loss and makes the child more at risk for frequent acute (painful) infections.

## What are the symptoms?

The most common symptom with the acute infection is an earache, with a feeling of pressure and blockage in the ear. Children who cannot describe earache may simply tug at the ear or have irritable behavior. Fever often accompanies the earache. The hearing is usually muffled. With proper treatment this hearing loss is almost always temporary, once the fluid drains full hearing is restored. Without proper treatment, the hearing loss may become chronic or permanent.

## How is otitis media treated?

The most common medication to treat otitis media is an antibiotic that kills bacteria in the middle ear so the body can heal and the middle ear fluid can drain. Medication to reduce pain and fever may be necessary. It is important to finish all of your antibiotics. It is also important to keep your follow-up appointment with your doctor to make sure the middle ear fluid is gone.

## What if medication does not work?

There are three main bacteria that are responsible for most types of otitis media in children. Bacteria have become increasingly resistant to antibiotics. This means that even the newer, more powerful antibiotics of today are often less effective than they used to be.

In children (or adults) with otitis media that doesn't go away after months of treatment with antibiotics, myringotomy tubes are often required to cure the infection and remove the middle ear fluid. This is an operation where a tiny incision is placed in the eardrum and a tiny tube is placed in the incision to drain the infected fluid from the ear.

The ear tube helps the middle ear fluid escape, allows the ear pressure to equalize and improves the hearing. Most ear tubes are designed to remain in place about a year and then fall out on their own. Some tubes are designed to remain in place indefinitely and have to be removed.

The type of tube required depends on how long it will take for the eustachian tube to return to normal. Otitis media can recur due to chronically infected adenoids. The adenoids are tonsil-type tissue in the back of the nose. Sometimes removal of the adenoids is necessary to try and prevent the middle ear infections. Allergies are thought to play a role in otitis media. How much allergies contribute to the infection is not known for sure. However, if a person has severe allergies, they also may require specialized allergy treatment.

## What to expect with ear tubes.

Since tubes provide an opening into the middle ear to equalize pressure, it is recommended that patients with tubes keep their ears dry. This means wearing earplugs when bathing or swimming in a pool. Sometimes water can leak into the middle ear through the tube and cause an infection. Fortunately this is rare if the ears are kept dry. Rarely, a patient may have ear drainage due to the tube (a foreign material). Sometimes this may require removal of the tube.

Most often the tubes will fall out on their own. About 3% of the time the tube will have to be removed from the eardrum. About 3% of the time a tube will fall out and leave a tiny hole behind in the eardrum that will need to be patched. Most children that require ear tubes will not ever need further ear tube surgery. However, about 15% of patients may require multiple ear tube procedures if their eustachian tube never functions normally. All patients that are old enough to be tested require a hearing test before the ear tube operation and after the ear tube operation.

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