

Ear Tube Surgery (Ventilation Tubes) Handout

About Your Ears

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The ear is divided into three parts called the outer, middle and inner ear. Each part performs an important function for the process of hearing.

The outer ear consists of an auricle and ear canal. The ear canal is slightly longer than one inch and ends at the eardrum. The ear drum is an elastic, paper-thin membrane that vibrates when sound waves fall upon it.

The middle ear is an air filled chamber containing the three smallest bones in your body, called ossicles. The bones connect the eardrum to the inner ear and are named individually the malleus, incus and stapes.

The inner ear contains a structure called the cochlea that is shaped much like a snail's shell. When fluid in the cochlea is moved by sound waves, signals are sent to the brain, resulting in hearing!

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The air chamber in the middle ear is connected to the back of the nose by the eustachian tube. This tube serves as a pressure-equalizing valve and as a drain. In infants and young children, the eustachian tube is still developing and is prone to functioning poorly. By age four, the eustachian tube is larger and more upright which improves its ability to function.

Many problems within the middle ear space are related to the eustachian tube. Normally, the eustachian tube opens with swallowing and yawning. Blockage of the eustachian tube creates negative pressure and over time can pull the eardrum inward. When this occurs, fluid accumulates and fills the middle ear space. Common causes of this condition include: infection, allergies, and cigarette smoke. If bacteria or a virus enters the middle ear through the eustachian tube, Acute Otitis Media (AOM) develops. Symptoms include fever, ear pain, irritability and sometimes drainage. Children have a greater risk for ear infections if they are in childcare, bottle feed or are around passive cigarette smoking.

Normal hearing occurs when the sound waves pass through the ear canal, vibrating the eardrum. Otitis media usually causes conductive hearing loss. Due to an increase in middle ear fluid and eardrum thickening, the sound vibrations that travel through the ossicles are reduced. Hearing will return to normal once the fluid goes away.

Potential reasons for a tube placement procedure include:

- A substantial hearing loss due to persistent fluid (more than three months)
- Poor response to antibiotics
- Recurrent episodes of acute otitis media
- Chronic retraction of the eardrum
- Significant eustachian tube problems with flying or altitude changes

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Benefits of the Procedure

Otitis media is the second most common childhood infection, surpassed only by the common cold. Because the number of episodes of otitis media declines after surgery, the need for antibiotics is also reduced, and decreases the likelihood of developing antibiotic-resistant bacterial ear infections.

The most common type of hearing loss related to chronic otitis media with effusion (fluid) is a conductive hearing loss. After removal of fluid from the middle ear space, the conductive hearing loss is usually resolved.

Tube placement also helps avoid other complications of chronic ear disease. These include permanent holes in the eardrum, scarring of the eardrum and bones, bone deterioration, cholesteatoma (skin cells) deposits, development of eardrum retraction pockets and hearing loss.

Because they help correct conductive hearing losses that occur with fluid behind the eardrum, tubes can also help improve speech development.

Risks of the Procedure

The procedure is not particularly painful. Most over-the-counter pain medicines relieve the discomfort associated with this procedure (e.g. Acetaminophen, Ibuprofen).

Standard surgical risks may include fever, infection, bleeding and allergic or adverse reactions to anesthesia medications. Your anesthetist is a doctor or a certified nurse practitioner fully licensed to administer anesthesia. Typically this procedure is very brief and requires a minimal amount of medication.

Fortunately, complications associated with the placement of tubes are very low. The most common complication is recurrent or persistent drainage from the ear (called “otorrhea”). This fluid may be clear or appear cloudy and may occur in up to 20 percent of patients. Often this is seen with cold or seasonal allergies since fluid that was once trapped behind an intact eardrum is now free to drain out the ear.

The following complications are possible, but relatively rare:

- The tube may stay in longer than desired. Most tubes will fall out within a two year period. In some children the tubes do not fall out of the eardrum within the expected time and may require removal at a future date. On the other hand the tube may also fallout too soon, and may need to be replaced.
- Swollen tissue may develop around the edges of the tube. This may lead to infection, bleeding and drainage from the ear. The tube may need to be removed if it does not clear with treatment.
- The eardrum may become thinned and collapse into the middle ear space. This can occur despite the normal function of the tube. This may require surgical correction.
- A hole in the eardrum may persist after the tubes fall out. If a hole in the eardrum persists, then surgical repair may be necessary. This operation is called “tympanoplasty”, and is usually delayed until the child is 7–8 years old.
- Heavy scarring or calcification of the eardrum can occur. This is called myringosclerosis and normally does not affect hearing.

- Skin from the outside of the eardrum may be introduced into the middle ear space causing debris from dead skin cells, called cholesteatoma, to develop. This can lead to significant damage within the middle ear. If this occurs, additional surgery will be necessary.

Pre-Procedure Care

Before coming to the hospital, write down a list of any medications that are currently being used (both over the counter and prescription medications). Tell us if you or your child has ever had a reaction to a medicine, local anesthetic or tape.

Do not eat or drink anything after midnight, the night before your surgery. If you are taking medication that has a morning dose - you should ask your doctor if he or she wants you to stop the medication the night before, or take the medication with a small sip of water at an earlier time.

Call your doctor if your child develops an acute illness or has an asthma attack within three days of the scheduled surgery. If your child is exposed to measles, mumps or chicken pox within twenty one days of procedure, you should also notify your doctor.

The Procedure

In children, tubes are usually placed in the operating room under general anesthesia by mask. Insertion of a breathing tube is usually not required. Keep in mind, however, that if your child has any special medical problems, the anesthetist will take whatever measures are needed to ensure a safe anesthesia experience.

After your child is under a comfortable level of anesthesia, the eardrums are examined using a special microscope. A small incision is then made in the eardrum. A small suction device is used to remove any fluid that is in the middle ear space. After the fluid has been removed from the middle ear space, a tube is carefully placed through the incision using small instruments.

Tubes generally remain in place for 6 to 12 months; special “long acting” tubes may remain in place for several years. If this is your second set of tubes, your doctor may recommend removal of the adenoids at the same time. Discuss this possibility with your doctor.

After the tubes have been properly positioned in the eardrum, your child will be awakened by the anesthetist and transported to the recovery room.

Post-Procedure Care

Once surgery is completed, a short stay in the recovery room is required. Depending on the facility, parents or spouses may be allowed in the recovery room. The nurses will monitor your child while the anesthesia wears off. Frequently during this time period children are disoriented, appear uncomfortable and may be very irritable. This usually lasts less than an hour. The doctor may prescribe eardrops and/or oral antibiotics for a few days after surgery.

In general no specific changes need to be made in your child’s activities and routine after ear tube placement. It used to be recommended that children keep water out of their ears when showering, bathing, or swimming after ear tube placement. Routine water precaution is no longer considered necessary and most children can bath and swim without taking any special precautions. Water exposure in the ears after ear tube placement is no longer considered

dangerous or harmful.

Your ENT surgeon will probably want to see you for a follow-up visit shortly after the surgery. This is to verify that the eardrum has healed well and the tubes are functioning properly. After leaving the hospital, please feel free to contact your doctor if you have any concerns. The majority of patients resume their normal daily routines by the next day.

Even with tubes, you may still develop an ear infection. Often this is associated with ear drainage (a “runny ear”). However, as long as the tube is functioning, the infections should be less severe and less frequent. If you suspect an ear infection please call your doctor. You may need a course of oral antibiotics and eardrops.

Over time, usually after 1-2 years, the tubes are gradually pushed out. The residual hole in the eardrum usually closes within a few days after the tube falls out. Infrequently, your ENT surgeon might need to remove the tubes.

Your ENT surgeon will be happy to address additional questions or concerns about what to expect after surgery.