ENThealth
POWERED BY AMERICAN ACADEMY OF OTOLARYNGOLOGY–HEAD AND NECK SURGERY

EAR TUBES

Most children have experienced at least one painful ear infection by the age of five. Many ear infections resolve on their own, especially if they are viral, and some bacterial infections require treatment with antibiotics. Sometimes recurrent ear infections and/or persistent fluid in the middle ear may become a chronic problem leading to other issues such as hearing loss, poor school performance, or behavior and speech problems. In these cases, insertion of an ear tube by an ENT (ear, nose, and throat) specialist, or otolaryngologist, may be considered.

Ear tubes are tiny cylinders placed through the ear drum (called tympanic membrane) to allow air into the middle ear. They may also be called tympanostomy tubes, myringotomy tubes, ventilation tubes, or PE (pressure equalization) tubes.

These tubes can be made of various materials, and come in two basic types: short-term and long-term. Short-term tubes are smaller and typically stay in place for six months to two years before falling out on their own. Long-term tubes are larger and have flanges that secure them in place for a longer period of time. Long-term tubes may fall out on their own, but removal by an otolaryngologist may be necessary.

WHO NEEDS EAR TUBES AND WHY?

Ear tubes may be recommended when someone experiences repeated middle ear infection (acute otitis media), or has hearing loss caused by persistent middle ear fluid (otitis media with effusion) that don't get better. These conditions most commonly occur in children, but can also be present in teens and adults, and can lead to speech and balance problems, hearing loss, poor school performance, or changes in the structure of the ear drum.

Other less common conditions that may warrant the placement of ear tubes are malformation of the ear drum or eustachian tube, Down syndrome, cleft palate, and barotrauma (injury to the middle ear caused by a reduction of air pressure, usually seen with altitude changes as in flying and scuba diving).

Each year, more than half a million ear tube surgeries are performed on children, making it the most common childhood surgery performed with anesthesia. The average age for ear tube insertion is one- to three-years-old. Inserting ear tubes may:

- Reduce the risk of future ear infection
- Restore hearing loss caused by middle ear fluid
- Improve speech problems and balance problems
- Improve behavior and sleep problems caused by repetitive ear infections
- Help children do their best in school

WHAT ARE THE TREATMENT OPTIONS?

Observation and medical management are typically the first steps of treatment. Your ENT specialist will help you decide when, and if, ear tubes are the best option for you and your child.

Ear tubes are inserted during an outpatient surgical procedure called a myringotomy with tympanostomy tube insertion. A myringotomy refers to a small incision made in the ear drum or tympanic membrane, which is most often done under a surgical microscope with a small scalpel. If an ear tube is not inserted, the hole would heal and close within a few days. To prevent this, an ear tube is placed in the hole to keep it open and allow air to reach the middle ear space (ventilation).

During Surgery

Most young children require general anesthesia. Some older children and adults may also be able to tolerate the

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procedure with only local anesthetic. An incision is made on the ear drum and the fluid behind the ear drum in the middle ear space is suctioned out. The ear tube is then placed in the opening. Ear drops may be administered after the ear tube is placed and may be prescribed for a few days. The procedure usually lasts less than 15 minutes and patients recover very quickly.

Sometimes the otolaryngologist will recommend removal of the adenoid tissue (lymph tissue located in the upper portion of the throat just behind the nose) when ear tubes are placed for persistent middle-ear fluid. This is often considered in children over the age of four, or when a repeat tube insertion is necessary.

Adenoidectomy can also help address issues of chronic nasal obstruction, significant snoring, or incessant runny nose that happens even when the child doesn't have a cold. Current research indicates that removing adenoid tissue at the same time as placement of ear tubes for persistent middle-ear fluid can reduce the risk of recurrent ear infections and the need for repeat surgery in children four years and older.

After Surgery

After surgery, the patient is monitored in the recovery room (if general anesthesia was used) and will usually go home within an hour or two. Patients usually experience little or no postoperative pain, but grogginess, irritability, and/or nausea from the anesthesia can occur temporarily. When done in the office, recovery is immediate.

Hearing loss caused by the presence of middle ear fluid is immediately resolved by surgery. Children with speech, language, learning, or balance problems may take several weeks or months to improve.

Your otolaryngologist will provide specific postoperative instructions, including when to seek attention and when to set follow-up appointments. They may also prescribe an antibiotic ear drops for a few days. An audiogram should be performed after surgery, if hearing loss is present before the tubes are placed. This test will make sure that hearing has improved with the surgery.

Although the tube does have a small opening (about 1/20th of an inch) that could allow water to enter the middle ear, research studies show no benefit in keeping the ears dry, and current guidelines do not recommend routine water precautions. Therefore, you do not need to restrict swimming or bathing in clean, treated water while tubes are in place, and you do not need to use earplugs, head bands, or other water-tight devices unless specifically recommended by your doctor.

Consultation with an otolaryngologist may be warranted if you or your child has experienced repeated or severe ear infections, ear infections that are not resolved with antibiotics, hearing loss due to fluid in the middle ear, barotrauma or excessive ear pressure injury, or have an anatomic abnormality that inhibits drainage of the middle ear.

ARE THERE ANY DANGERS OR POTENTIAL COMPLICATIONS?

Myringotomy with insertion of ear tubes is an extremely common and safe procedure with minimal complications. When complications do occur, they may include:

- *Perforation*—This can rarely happen when a tube comes out or a long-term tube is removed and the hole in the ear drum does not close. The hole can be patched through a surgical procedure called a tympanoplasty or myringoplasty.
- *Scarring*—Any irritation of the ear drum (recurrent ear infections), including repeated insertion of ear tubes, can cause scarring called tympanosclerosis

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or myringosclerosis. In most cases, this causes no problem with hearing and does not need any treatment.

- *Infection*—Ear infections can still occur with a tube in place and cause ear discharge or drainage. However, these infections are usually infrequent, do not cause prolonged hearing loss (because the infection drains out), and may go away on their own or be treated effectively with antibiotic ear drops. Oral antibiotics are rarely needed.
- *Ear tubes come out too early or stay in too long*—If an ear tube expels from the ear drum too soon (which is unpredictable), fluid may return and repeat surgery may be needed. Ear tubes that remain too long may result in perforation or may require removal by an otolaryngologist.

WHAT QUESTIONS SHOULD I ASK MY DOCTOR?

1. What would be the expected short- and long-term improvement from ear tube placement for my child's hearing? Speech? Infections? Balance?
2. What kinds of risks are associated with ear tube placement?
3. Are there any other procedures that might need to be done at the same time as ear tube placement?
4. How would ear infections be treated once ear tubes are in place?