

VENTILATION TUBES SURGERY

DEFINITION

- Ventilation tubes are tiny plastic tubes that are inserted through the eardrum by an ear, nose, and throat surgeon. They are also called tympanostomy tubes, because they are placed in the tympanic membrane (eardrum).
- At least 1 million children in the United States (most of them 1 to 3 years of age) have ventilation tubes placed each year.
- The operation costs about \$300 if done in the office (only possible with older, cooperative children) and about \$1000 if it needs to be done in the hospital with the child under brief anesthesia.

The ventilation tubes are used to drain fluid out of the middle ear space and ventilate the area with air. The eardrum normally vibrates with sound because the space behind it (the middle ear) is filled with air. If it is filled with fluid, the hearing is muffled. This happens with ear infections. Sometimes after the infection clears, the fluid remains. This occurs if the eustachian tube (which runs from the back of the nose to the middle ear) has become blocked and no longer allows air in and fluid out. Following an ear infection, approximately 30% of children still have fluid in the middle ear at 1 month, 20% at 2 months, and 5% at 4 months. The main concern about prolonged fluid in the middle ear is that the associated hearing deficit may have an impact on speech development. By 5 years of age, the eustachian tube is wider and fluid usually doesn't persist long after ear infections are treated.

BENEFITS

Ventilation tubes allow secretions to drain out of the middle ear space and air to reenter. The risk of recurrent ear infections is greatly reduced. The hearing returns to normal with the tube in place and speech development can get back on track. Tubes also prevent the fluid from becoming thicker (a "glue ear") and damaging the middle ear. The ventilation tubes also buy time while the child matures and the eustachian tubes begin to function better.

RISKS

First, approximately 10% of children with ventilation tubes continue to have ear infections with drainage and pain. These bouts of infection, which require antibiotics, probably would have occurred anyway. Second, complications may occur around the tubes falling out too early or too late. Normally the tubes come out and fall into the ear canal after about 1 year. Sometimes they come out too quickly and need to be replaced by another set. If they remain in the eardrum for over 2 years, the ear, nose, and throat specialist may need to remove them. Third, after they come out, some leave scarring of the eardrum or a small hole (perforation) that doesn't heal. These both can cause a small hearing loss. Because of these possible complications and the requirement for an anesthetic, physicians recommend ventilation tubes only for children who definitely need them.

DEALING WITH TEMPORARY HEARING LOSS

As described earlier, most children with a hearing loss caused by fluid in their middle ear have it on just a temporary basis. During this time when you talk with your child, get close to him, get eye contact, get his full attention, and occasionally check that he understands what

you have said. If not, speak in a louder voice than you normally use. A common mistake is to assume your child is ignoring you when actually he doesn't hear you. Reduce any background noise from radio or television while talking with your child. If your child goes to school, be sure he sits in front near the teacher. (Middle ear fluid interferes with the ability to hear in a crowd or classroom.) Keep in mind that most children's speech will catch up following a brief period of partial hearing.

MEDICAL INDICATIONS FOR TUBES

The surgical placement of ventilation tubes is usually indicated if several of the following conditions are met:

- The fluid has been present continuously for over 4 months.
- Both ears are involved.
- The fluid has caused a documented hearing loss. (Although a loss greater than 20 decibels (dB) can significantly affect speech, many children with fluid in their ears have nearly normal hearing.)
- The fluid has caused a speech delay (e.g., child is not using 3 words by 18 months or 20 words by 2 years).
- Recurrent ear infections have failed to respond to treatment with continuous antibiotics.

PREVENTION OF CHRONIC EAR FLUID

Chronic ear fluid and recurrent ear infections are usually due to a blocked eustachian tube. If any of the following triggers are present, treat or eliminate them before considering ventilation tubes.

- Exposure to tobacco smoke.
- Drinking a bottle while lying down (or bottle propping) can cause milk to enter the middle ear space.
- Children with nasal allergies have more frequent ear fluid buildup. Consider this if your child has associated hay fever, eczema, asthma, or food allergies.
- Children with nightly snoring caused by large adenoids may also have ear problems.