

(1) EAR VENTILATION TUBES

(2) Your child has been referred for the placement of ear ventilating tubes. Placement of ear tubes is one of the most common procedures or operations performed on children. Shown in this slide is the pre and post operative appearance of an ear that has undergone ear tube surgery.

(3) The indications or reasons for placement on these tubes include:

Recurrent ear infections. Persistent ear infections that will not clear up even though the child has been placed on antibiotics.

(4) Breakdown of the eardrum. The eardrum often times will have its function impaired due to the fluid that accumulates or builds up behind it. Rarely, the eardrum will start to retract or breakdown. Placement of an ear tube will drain the fluid and relieve negative pressure behind the eardrum, allowing the eardrum to heal itself and assume a more normal position.

(5) Shown here are four different types of myringotomy tubes. There are actually well over 50 different types. The tubes vary both on the length of tube and the size of the inner phalange. The inner phalange is placed behind the eardrum and holds the tube in position.

Some tubes have a very small inner phalange. These tubes stay in the eardrum for a short period of time and are used when ventilation of the middle ear is only required for limited period. Other tubes have a large inner phalange. These tubes are sometimes called permanent tubes. However, they often eventually come out and when they do, a hole may be left in the eardrum.

The length of the tubes is also important. Tubes with small lengths can be easily cleaned. Other tubes are long, which tend to prevent water from getting into the middle ear. However, if an infection occurs, they can become plugged. Once they are plugged they may have to be removed in order to be cleaned and then reinserted. No tube is perfect. All tubes have advantages and disadvantages and this is probably the reason why there are so many different types.

(6) When your child comes for surgery we ask that he/she be NPO or not to eat or drink anything for at least 12 hours prior to the time of his operation. Sometimes if the child is very young, clear liquids, apple juice or Kool-Aid, can be given four to six hours prior to the surgery. The surgery lasts less than one day. The child will come in the hospital in the morning and be discharged that afternoon. The actual operating time is only approximately 5-10 minutes.

(7) Shown in this diagram is a cross section of the human ear. The ear is divided into three parts, the external ear, the middle ear and the inner ear or cochlea. The middle ear's function is to serve as an air chamber for the drum. The eardrum and the three ear bones

will vibrate, magnifying and making the sound louder. Connecting the middle ear with the back of the nose is a tube structure called the eustachian tube. This tube is responsible for providing a passageway for air to get into the middle ear. In children, this tube is often obstructed. It can be both narrow and at an angle which does not easily allow air to easily enter it. Obstruction of this tube will cause both negative pressure and fluid to build up in the middle ear. Often times, recurrent infections will occur because the fluid is good culture media for bacteria. To treat this, a small incision is placed in the eardrum. The fluid is suctioned from the ear and a myringotomy tube or ventilation tube is placed into the eardrum. This allows easy passage of air from the external ear into the middle ear. The hearing should then return to normal.

(8) The following is a video of ear tube surgery.

(9) There is very little danger from this surgery; however, any surgery holds inherent risks of reaction to the anesthetic and airway problems. Although these complications are very rare, they can be quite serious when they occur. The risk to the eardrum is small. In fact, ear tubes are placed to try to prevent damage to the eardrum and any potential damage, which may be caused from the operation, is far less than that which may occur if the ear infections continue. A permanent perforation of the eardrum can occur in ½ to 2 percent of children. This perforation will prevent the need for additional tube placement in the future, but another operation to close the perforation will eventually be required when the child is older. The formation of a skin cyst or cholesteatoma of the ear is a rare but serious complication which also requires surgery. If fluid is found in the child's ears

during surgery we will recommend using eardrops, three drops, three times a day, in each ear for three days.

(10) The tubes will stay in the ears for an average of nine months. There is, however a very wide variation from the time the tube is placed to the time it falls out. Rarely the tubes will fall out in two or three weeks. Rarely they will not come out. If the tube stays in approximately three years, at that time, we would recommend removing the tube. When we do this, there is a small increased risk of causing a permanent hole in the eardrum which would have to be patched later on.

(11) Rarely, the tube will become plugged, fall out and leave a hole in the eardrum. This occurs in approximately 1/2 - 2% of patients and when it does occur, the hole will act as an ear tube and thus nothing will need to be done immediately. However, at some point, the child will have to be taken back to the operating room and have the hole repaired. The first step in the ear tube extruding or coming out of the eardrum is that the drum will heal behind the tube. It will then plug the tube and then slowly push it out. Plugging of the tube is thus the first sign that the ear tube is starting to come out of the eardrum.

(12) During the process of ear tube extrusion, the eardrum may react to the tube forming what is a granuloma. This granulation tissue is raw, and tends to bleed quite easily. In fact, it can even fill the entire child's ear canal. This can cause troublesome and worrisome bleeding, however it is easily treated with eardrops, which almost always

results in subsidence or disappearance of this tissue. The tube can then be allowed to come out on its own.

(13) The child should not get water in his ears while he has ear tubes placed. If water flows through the ear tube into the middle ear, it can cause ear infections which will result in pus draining out the ear canal. It is best for the child to avoid getting water in his ear altogether. However, if the child has to swim, swimming in chlorinated pools, with water ear plugs, tends to be fairly well tolerated.

(14) However, getting water in the ear which comes from the bathtub, from the kiddie pool, behind the house or from lakes or rivers will tend to cause an ear infection almost immediately. If this does happen, you should use eardrops to try to prevent the ear infection from occurring. If your child does develop an ear infection, both antibiotics and eardrops should be used. When ear tubes are placed, many times the infection is not caused from the same organisms which cause infections in a child without ear tubes and oral antibiotics may not be beneficial. The eardrops, however, cover a wide spectrum of bacteria and their use should result in a clearing of the ear infection

(15) If you have any other questions, I will be happy to discuss this topic with you further.