

The Middle Ear and Mastoid

Overview

Tympanic membrane perforation

Many things can cause a tympanic membrane perforation, or hole in the eardrum. It can be caused by trauma. This includes sticking things in the ear (like a Q-tip, bobby pin or pencil), getting slapped on the ear or being close to an explosion. Ear infections (acute otitis media) are another common cause. A severe ear infection may lead to a hole if the pressure of the pus behind the eardrum causes it to rupture. Repeated mild ear infections can also cause a hole in the eardrum.

Ossicular chain dislocation

Ossicular chain dislocation, or separation of the middle ear bones, may happen with a skull fracture. The eardrum may or may not have a hole. It may also happen when a hole in the eardrum is caused by penetrating trauma, such as a Q-tip injury.

The most common type of problem is separation of the joint connecting the incus to the stapes. The second most common is separation of the joint connecting the malleus to the incus. Fracture of the arch stapes may also occur. Ossicular fixation may occur several months after the fracture if new bone grows at the fracture line.

Chronic otitis media and cholesteatoma

A patient with a hole in the eardrum can get chronic otitis media. This means that there is a hole in the eardrum, long-standing infections, and drainage from the ear canal (otorrhea). The infection slowly wears away the middle ear bones.

Chronic otitis media also can lead to a cholesteatoma. A cholesteatoma is a skin cyst behind the eardrum. Poor Eustachian tube function may be the cause. Over time, the cholesteatoma increases in size and destroys the delicate middle ear bones.

Complications of otitis media and cholesteatoma

Acute otitis media, chronic otitis media, and cholesteatoma can cause severe problems. The disease may go into the inner ear and cause permanent hearing loss or dizziness. It may cause facial paralysis. The disease can spread into the brain, causing meningitis, a brain abscess, cerebrospinal fluid leak, or an encephalocele.

Evaluation and treatment

A careful examination of the ear is needed. An audiogram tells the amount of hearing loss. Computed tomography (CT scan) may be needed to see the extent of the disease. Usually, surgery is necessary to treat the problem. The CT images help to guide surgery.

Risks of Surgery

- While many patients expect ear surgery to help their hearing, it is unusual to experience complete recovery of hearing. Further hearing loss happens less than 10 percent of the time. Total deafness is uncommon.
- The cholesteatoma or ear infection can come back.
- The eardrum may have a hole if it does not heal properly.

- Injury to the facial nerve that runs through the ear can cause facial paralysis. This is uncommon.
- Loss of sense of taste may occur. This usually goes away in a few weeks.
- Lasting dizziness or ringing in the ear may happen. Both are uncommon.
- These risks also can happen if you do not have surgery. Untreated infection or cholesteatoma of the ear can cause serious problems.

Postoperative Instructions

- If you have a head bandage on, make sure it is not squeezing your head too tight. You should be able to slide a finger underneath it. The bandage should be removed 24 hours after surgery. You may then begin to bathe and wash your hair gently with shampoo.
- Bloody, watery, or oily discharge from the ear is normal for several weeks after surgery. You should leave a dry cotton ball in your ear to soak up the drainage.
- Do not get water in your ear until your doctor has told you that your ear is healed. This usually takes 1-3 months. You should put a cotton ball moistened with Vaseline in your ear when you bathe.
- Do not blow your nose. The pressure may blow open the repair. It is OK to perform light work the day after surgery, but do not do any straining or heavy lifting until your ear has healed.
- You may expect to have mild dizziness when you turn your head for a few days after surgery.
- Everybody takes at least 1-2 days off of work or school after surgery. Many people need one week off.

Expected outcomes of surgery

The rate of successful repair of a hole in the eardrum is typically 90 to 95 percent. It is better if the ear is dry and uninfected. If a patient has already had one surgery that did not work, the success rate of further surgery is lower. Some patients have such poor Eustachian tube function that complete repair is impossible.

The primary goal of surgery for chronic otitis media and cholesteatoma is to remove all infection and cholesteatoma. Hopefully, this will stop the ear from draining. It will prevent more problems later. A good result can be expected in 80 to 90 percent of the cases. In many cases, a second surgery is needed to look for recurrence of the disease. This surgery is usually performed 6-18 months after the first surgery.

The secondary goal is to make hearing better. Failure to improve hearing is not a complication. Success depends almost as much on the ability of the body to heal and preserve the reconstruction as on the surgeon's skill. Fortunately, even those cases that fail may often be revised.

The success rate of ossicular chain repair to improve hearing depends on the problem. If the stapes is intact, the rate of a good hearing result is about 75 percent. If the stapes is not intact, the rate of a good hearing result is about 50 percent.

Although the surgeon always tries to repair the problem, the healing process has a major impact on the ultimate hearing outcome. Scar tissue can pull on the delicate ossicles and/or ossicular prosthesis, moving them from the best position. If the hearing result is less than expected, surgery can often be done again to try to make it better.

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