

Tympanic Membrane Perforation

The Tympanic Membrane

The tympanic membrane, or eardrum, is a thin membrane that separates the ear canal and the middle ear. It is made of partially translucent tissue. When sound waves strike the tympanic membrane, it vibrates and begins the process of converting these waves into impulses that the brain understands as sound. The eardrum is also an important barrier in preventing outside particles such as bacteria from entering the middle ear.

The eardrum may be perforated by acoustic trauma such as puncture by a Q-tip, bobby pin, a hot slag from welding, or from an open-handed slap to the ear. It may also be ruptured by barotrauma, which is pressure-induced damage, such as in scuba diving. The most common cause of rupture is from ear infections, however, which can cause increased fluid and pressure in the middle ear. Conversely, a perforation of the tympanic membrane may lead to infection because bacteria can enter through the hole and infect the middle ear.

Many perforations due to acute infection will heal spontaneously, in much the same manner that a cut on an arm would heal. Usually healing occurs within one month. Perforations that result from chronic infections, however, especially when the membrane sustains damage, often do not heal.

Symptoms of a Perforated Eardrum

If the perforation is caused by a middle ear infection (otitis media), there may be pain and/or bloody drainage from the ear. Mild hearing loss and tinnitus (ringing in the ear) may also occur. The severity of hearing impairment and tinnitus depend on the size and location of the perforation and also the degree, if any, of disruption of the bones in the middle ear. If the perforation is due to a sudden trauma or explosion, the symptoms usually improve in a few days. If chronic infection continues, however, hearing loss may be sustained and significant.

Preventing Infection While an Eardrum is Perforated

While the eardrum is perforated, the middle ear is unprotected and is vulnerable to infection from contaminated water. It is very important to keep the ear dry while showering, bathing, or swimming, in order to prevent water from entering the middle ear. Your physician will recommend specific methods of protecting your ear, such as the use of cotton balls covered with petroleum jelly, silicone earplugs, showercaps, etc.

Treating a Perforated Tympanic Membrane

If the perforation is very small, it may close on its own. Hearing aids may be recommended for patients with minor hearing loss who do not have recurring infections and who do not swim regularly. For individuals who do have hearing loss and recurrent ear infections (at least three months) despite the use of antibiotics or other therapies, it may be necessary to close the hole with a surgical procedure called tympanoplasty.