



## Perforated Eardrum

### Insight into ear injuries

- What is a perforated eardrum?
- What causes an eardrum hole?
- How is hearing affected by an eardrum hole?
- and more...

A hole or rupture in the eardrum, the thin membrane that separates the ear canal from the middle ear, is called a perforated eardrum. The medical term for eardrum is tympanic membrane. The middle ear is connected to the nose by the Eustachian tube, which regulates pressure in the middle ear. A perforated eardrum is often accompanied by decreased hearing and sometimes liquid drainage. The perforation may be accompanied by pain, if it is caused by an injury or infection.

### *What causes eardrum perforation?*

The causes of an eardrum hole are usually from injury, infection, or chronic Eustachian tube disorders. A perforated eardrum from trauma can occur:

- If the ear is struck directly
- With a skull fracture
- After a sudden explosion
- If an object (such as a bobby pin, Q-tip, or stick) is pushed too far into the ear canal

Middle ear infections may cause pain, hearing loss, and spontaneous rupture of the eardrum, resulting in a perforation. In this case, there may be infected or bloody drainage from the ear. Infections can cause a hole in the eardrum as a side effect of otitis media. Symptoms of acute otitis media (middle ear fluid with signs of infection) include a sense of fullness in the ear, some hearing loss, pain, and fever.

In patients with chronic Eustachian tube problems the ear drum may become weakened and open up.

On rare occasions a small hole may remain in the eardrum after a previously placed pressure-equalizing (PE) tube falls out or is removed by a physician.

Most eardrum holes resulting from injury or an acute ear infection heal on their own within weeks of opening, although some may take several months to heal. During the healing process the ear must be protected from water and trauma. Eardrum perforations that do not heal on their own may require surgery. How is hearing affected by a perforated eardrum?



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Usually the size of the perforation determines the level of hearing loss—a larger hole will cause greater hearing loss than a smaller hole. The location of the perforation also affects the degree of hearing loss. If severe injury (e.g., skull fracture) moves the bones in the middle ear that send out sound out of place, or injures the inner ear, hearing loss may be serious.

***If the perforated eardrum is caused by a sudden traumatic or violent event, the loss of hearing can be great, and tinnitus (ringing in the ear) may occur. Chronic infection as a result of the perforation can cause longer lasting or worsening hearing loss.***

***How is a perforated eardrum treated?***

Before attempting any correction of the perforation, a hearing test should be performed. The benefits of closing a perforation include prevention of water entering the middle ear while showering, bathing, or swimming (which could cause ear infection), improved hearing, and lessened tinnitus. It also may prevent the development of cholesteatoma (skin cyst in the middle ear), which can cause chronic infection and destruction of ear structures.

If the perforation is very small, an otolaryngologist (your ear, nose and throat physician) may choose to observe the perforation over time to see if it will close on its own. He or she might try to patch a patient's eardrum in the office. Working with a microscope, your doctor may touch the edges of the eardrum with a chemical to stimulate growth and then place a thin paper patch on the eardrum.

Usually, with closure of the eardrum, hearing is improved. Several patches may be required before the perforation closes completely. If your physician feels that a paper patch will not provide prompt or complete closure of the hole in the eardrum, or if paper patching does not help, surgery may be required.

There are a variety of options for treatment, but most involve placing a patch across the perforation to allow healing. The name of this procedure is tympanoplasty. Surgery is typically quite successful in repairing the perforation, bringing back or improving hearing, and is often done in the physician's office.

Your doctor will advise you regarding the proper care of a hole in the eardrum.



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