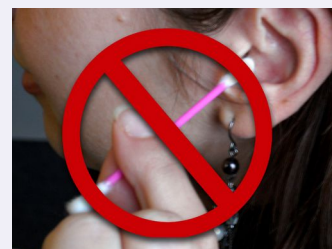


**Ear problems are not uncommon amongst divers. There are essentially two different types of injury: inflammation and pressure damage.**

Inflammation of the external ear canal (medical term: otitis externa) is the most common ear infection amongst divers. This infection is caused by moisture in the ear canal and therefore particularly affects people who are frequently in water, i.e. swimmers. Within just a few hours to days, painful inflammation often develops from a mild itch. Typically, there is pain on pressure to the tragus, the small prominence directly in front of the entrance to the ear canal, or pains develop when pulling on the ear conch. Pressure equalisation usually

doesn't cause any problems to start with but may be painful later. Hearing is not affected at the outset. If the skin of the ear becomes severely swollen, a slight hearing impairment may result.

Even the slightest injuries to the sensitive skin on the ear canal may lead to this, such as injuries caused by e.g. improper cleaning with cotton buds, wearing earplugs or irritation caused by salt crystals and wind. Even too much ear wax together with moisture provides a good breeding ground for bacteria and fungi. If you regularly suffer from ear infections during diving holidays, you should consult an ENT doctor before a trip for examination and advice.



If you have an outer ear infection, carefully rinsing the ear canals with clean tap water, drying your ears with a hair dryer after diving and using alcohol and vinegar based disinfectant ear drops can help in mild cases. These measures may be carried out as a precaution in the event of recurring ear infections.

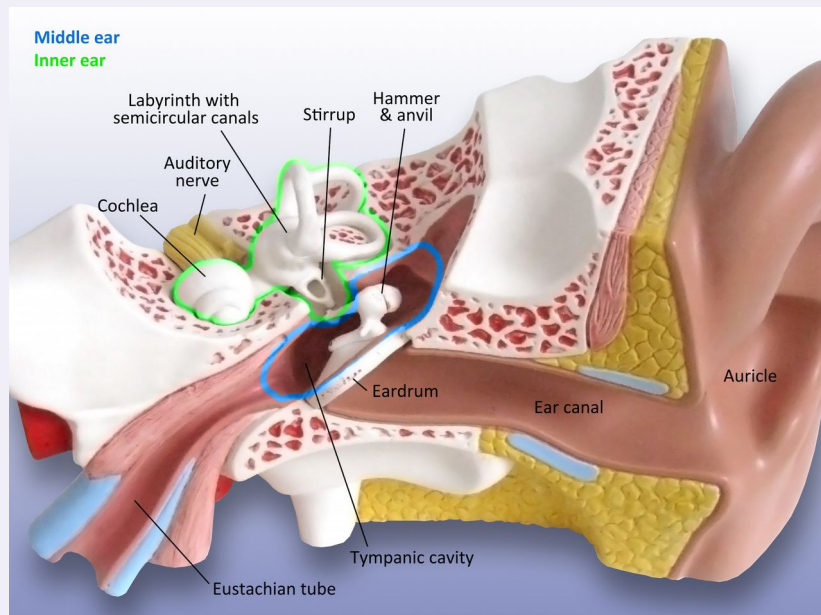
Severe infections require the use of antibiotics – in this case usually in the form of ear drops. The active ingredient ciprofloxacin is often used. These ear drops are only available on prescription. Some divers carry them in their medical kit in case they are needed. Anti-inflammatory pain relief such as Ibuprofen or Diclofenac is also often needed for the severe pain. Diving is not permitted with a severe ear infection. If symptoms do not improve within a few days, you should visit a doctor.

A middle ear infection is not a typical diving illness. However, you can get one when diving with a cold or equalising pressure during air travel. Here, germs reach the tympanic cavity via the Eustachian tube and affect the mucous membrane in the middle ear. Hearing impairment in the ear on the affected side is typical and accompanied by a severe, throbbing earache that you get during a cold. Fever, dizziness and light-headedness may also occur. The eardrum may rupture in the event of severe inflammation and pus may be secreted.

It is important to distinguish between this and an outer ear/ear canal infection as treatment is completely different. Ear drops are ineffective for middle ear infections because they cannot penetrate the eardrum. Antibiotics must therefore be taken in tablet form. It should also be ensured that the middle ear is well ventilated. This is achieved by using nasal sprays or drops which reduce congestion in the mucous membrane of the nose and also of the Eustachian tube. The active ingredient xylometazoline is contained in most decongestant sprays. Of course, a person is not fit to dive until the infection has completely healed.

The increase in pressure in deep waters may cause damage to the eardrum and the structure of the middle ear. This is known as barotrauma of the middle ear. An affected diver usually reports problems with pressure equalisation preceding the earache. The eardrum is overstretched during the dive and may therefore rupture. Even if the eardrum does not rupture, liquids or blood may collect in the tympanic cavity. The diver experiences impaired hearing and when equalising pressure he may be aware of a squeaking or smacking sound. Often, only a dull feeling of pressure is noted, which is

sometimes associated with dizziness. Barotrauma is common amongst beginner divers who, due to the complex demands of diving, "forget" to equalise pressure.



If severe pain suddenly occurs during the dive or whilst equalising pressure, this is usually an indication of a severe strain on the eardrum or a rupture. If cold water penetrates the middle ear through a rupture, this often results in dizziness, which can lead to disorientation and panic.

Germs can penetrate the tympanic cavity from the outside and subsequently cause a middle ear infection. If a rupture is suspected, this must therefore always be assessed by a doctor as this is necessary for treatment and in order to prevent any further damage. Some ear drops containing alcohol or certain antibiotics may permanently damage the inner ear if the eardrum is ruptured! In addition to

painkillers, decongestant nasal drops are recommended in order to assist normal air supply to the middle ear via the Eustachian tube and to promote the discharge of secretions from the middle ear through the nose. Antibiotics are often prescribed in tablet form for ruptured eardrums in order to prevent a bacterial infection until the rupture has closed. Small ruptures often heal by themselves although an operation may be necessary for larger ruptures.

There is always a diving ban in the event of a ruptured eardrum until the injury is fully healed. This could take several months. Following this, fitness to dive should be re-determined by an ENT consultant.