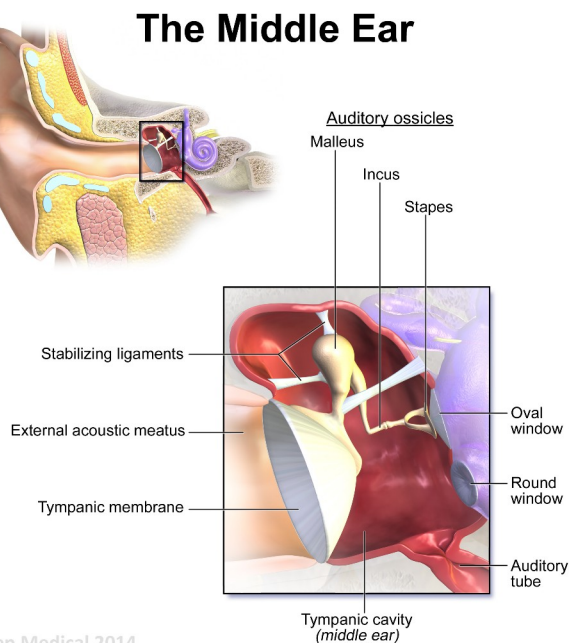


Middle ear barotrauma

A slight feeling of pressure in the ear – which a diver doesn't know that feeling! If it increases while diving down, however, and it becomes painful, it is often too late – you have a **middle ear barotrauma**.

The middle ear is the space between the eardrum and cochlea, where the ossicles are located. Through the Eustachian (or auditory) tube, it is connected to the nasopharynx, allowing air to get into it. This happens unconsciously several 100 times every day while a person chews, swallows or yawns and the Eustachian tube opens for a nanosecond.



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Every diver knows that it is necessary to equalise pressure in the ears when you dive down. There are different techniques, which all achieve the same thing: the Eustachian tube opens and air flows from the nasopharynx into the middle ear, which is crucial for diving. Due to the increase in ambient pressure, the air in the middle ear is compressed while at the same time the water pressure in the ear canal presses the ear drum in the direction of the middle ear. If the pressure is not equalised in time, divers will first notice an unpleasant feeling. If, despite that, they dive down further, they will experience pain and the mucous membrane will secrete fluid into the area where the ossicles are. This is one of the reasons why the hearing is often impaired for a while after a middle ear barotrauma.

If the pressure difference is even bigger, there may be bleeding and the ear drum may burst, which leaves a hole in the middle ear. Water then streams through this hole into the middle ear and the diver becomes extremely dizzy. A burst ear drum is often more boring than painful, but diving is out of the question for a few months afterwards.

By the way – a middle ear barotrauma can also occur while going back up to the surface. During this time, there is a relative overpressure in the middle ear. If the air cannot escape through the Eustachian tube ("reverse block"), it pushes the ear drum painfully outwards, which may also lead to a tear.

If you have ear problems after a dive during which you had problems with pressure equalisation, a slight or more severe middle ear barotrauma is the most probable cause. In this case, decongestant nasal (!) drops (active substance e.g. xylometazoline), pain medication with a decongestant effect (e.g. Ibuprofen) and a break from diving until the symptoms have fully subsided should help.

In order to avoid a middle ear barotrauma, you should always dive down only as far as the pressure equalisation works! Regular practice and learning different techniques for pressure equalisation, diving down carefully, no diving with a cold and sufficient fluid intake help to avoid a middle ear barotrauma.

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