

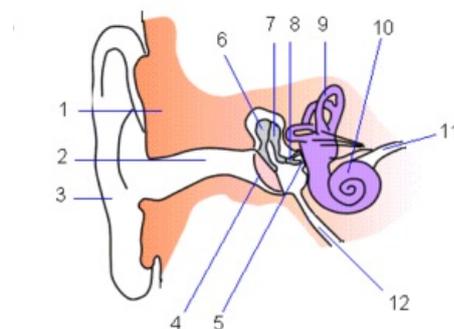
# Eustachian tube

Lath. *tuba pharyngotympanica* or auditory tube (*tuba auditiva (eustachii)*) is a tube about 3.5-4.5 cm long that **connects the nasopharynx and the cavity of the middle ear** and thus allows **equalization of pressure** on both sides of the eardrum.

## Anatomy

In adulthood, it is 3.5-4.5 cm long and has the shape of two funnels connected by narrow ends. Its lumen is approximately triangular in shape with an average width of 2 to 3 millimeters and forms an angle of 45° with the skull base. In childhood, the tube is shorter, wider and less inclined relative to the base of the skull, these proportions change as the individual grows.

The tube consists of a **bony and cartilaginous** part. The bony part forms the lateral third of the tube and begins with an oval opening above the floor of the middle ear cavity. It is always patent in a healthy individual. The cartilaginous part makes up about  $\frac{2}{3}$  of the length of the tube and opens into the nasopharynx about 10 mm above the level of the hard palate. The point **of connection between** the cartilaginous and bony parts is **the narrowest point** of the entire tube. The lumen is lined with cylindrical ciliated epithelium with an accumulation of mucous glands in the area of the pharyngeal opening, after reaching the middle ear cavity it becomes a mixed epithelium. A single muscle ( *m. tensor veli palatini* ) is responsible for actively opening the tube.



12 - Eustachian tube

## Function

In the normal state, the tube is closed due to the passive approximation of the tubal walls and the contraction of the elastic fibers. Maintains slightly **negative** pressure in the middle ear. The basic functions of the tube include **ventilation** , **drainage** and **protection of the middle ear** .

- The tube fulfills the ventilation function by opening briefly during yawning, chewing and sneezing, and thus enables ventilation and equalization of the pressure of the middle ear cavity with atmospheric pressure.
- The drainage function consists in transporting secretions from the middle ear to the nasopharynx. The cilia in the mucous membrane and the tensor veli palatini muscle participate in this through their contractions. This creates a negative pressure in the tube and creates a kind of pump between the middle ear and the nasopharynx .
- The protective function is given by separating the space of the middle ear cavity from the nasopharynx, i.e. protecting the middle ear from sounds and pharyngeal secretions.

## Disorders

In adulthood, pathology in the area of the auditory tube can be one of the first symptoms of malignant expansion in the nasopharynx. Disturbances in the function of the tube are either **obstructive**, or on the contrary, they are disorders due to excessive " **openness** ".

Obstructive disorders can be **mechanical** and **functional**.

Mechanical obstructions can be caused either by internal factors. For example, inflammation due to infection or allergies. Or external, leading to external oppression of the lumen. Here we include adenoid vegetation, nasopharyngeal tumor, but also the supine position with flow and stagnation of secretions in the nasopharynx.

Functional obstruction arises as a result of permanent collapse of the walls of the tube due to their increased compliance or a pathological opening mechanism, or both factors.

## Links

### External links

- Eustachian tube (Czech Wikipedia) ([https://cs.wikipedia.org/wiki/Eustachova\\_trubice](https://cs.wikipedia.org/wiki/Eustachova_trubice))
- Eustachian tube (English Wikipedia) ([https://en.wikipedia.org/wiki/Eustachian\\_tube](https://en.wikipedia.org/wiki/Eustachian_tube))
- Eustachian tube (<https://www.ceskaordinace.cz/eustachova-trubice-ckr-955-9622.html>)

### related articles

- Acute otitis media
- Secretory otitis
- Ear

## References

- KLOZAR, Jan. *Speciální otorinolaryngologie*. - edition. 2005. 224 pp. ISBN 9788072623464.

## References