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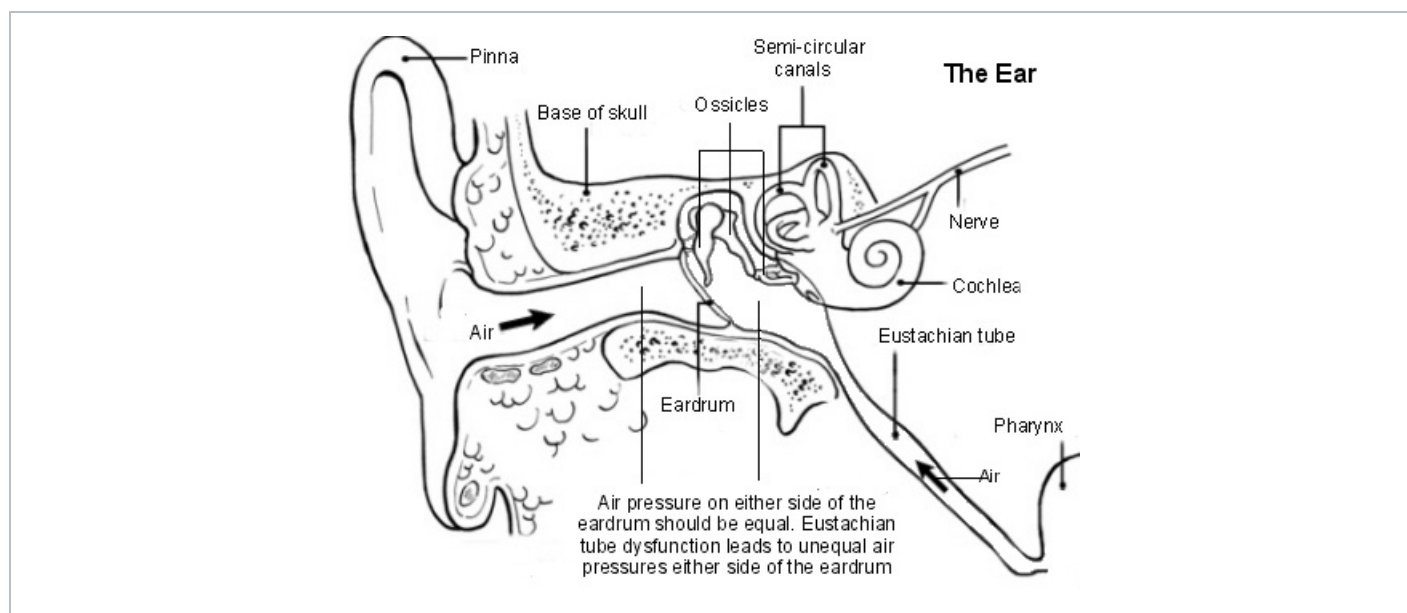
Eustachian Tube Dysfunction

Eustachian tube dysfunction (ETD) can cause dulled hearing and a feeling of pressure or fullness in the affected ear. It is usually just a temporary problem during and after a cold. There are various other causes and sometimes it lasts longer. Often no treatment is needed but decongestants, antihistamines or a steroid nasal spray sometimes help.

The Eustachian tube is a narrow tube that connects the space behind the ear (the middle ear) with the back of the nose. In adults it is about 3-4 cm long. The middle ear is normally filled with air. The air is constantly being absorbed, so fresh supplies of air are needed to get into the middle ear from time to time. The air can't get in through the eardrum as this is a complete seal, so it gets in from the back of the nose when the Eustachian tube opens.

What does the Eustachian tube do?

The Eustachian tube is normally closed but opens when we swallow, yawn or chew. This allows air to get into the middle ear and any mucus to get out. This keeps the air pressure equal either side of the eardrum. Having equal air pressure on each side of the eardrum and the middle ear free of mucus, helps the eardrum to vibrate. This vibration is needed for us to hear properly.



How do we hear?

Sound waves hit the eardrum. Vibrations of the eardrum pass on to tiny bones (the ossicles) in the middle ear. These bones transmit the vibrations to the cochlea in the inner ear. Sound signals are sent from the cochlea to the ear nerve and then on to the brain. [See the separate leaflet called Hearing Problems if you would like more details.](#)

What is Eustachian tube dysfunction?

If the Eustachian tube is blocked or does not open properly this is called Eustachian tube dysfunction (ETD). Dysfunction is just another way of saying that it isn't working properly. With ETD, air can't get into the middle ear. Therefore, the air pressure on the outer side of the eardrum becomes greater than the air pressure in the middle ear. This pushes the eardrum inwards. The eardrum becomes tense and does not vibrate so well when hit by sound waves.

What are the symptoms of Eustachian tube dysfunction?

The main symptom is muffled or dull hearing. One or both ears may be affected.

Other symptoms that may also develop:

- Ear pain:
 - Due to the eardrum being tense and stretched.
 - Pain may come and go.

- Rarely causes constant ear pain. If your ear is hurting all the time, it may be due to a different cause and you should see a doctor. [See separate leaflet called Earache \(Ear Pain\) for more details.](#)
- Ringing or buzzing in the ear (**tinnitus**):
 - This is as well as muffled hearing.
 - ETD doesn't cause tinnitus on its own.
- **Dizziness**:
 - Mild dizziness (vertigo) may occur.

Symptoms may last from just a few hours to several weeks or more, depending on the cause. In most cases, the cause is a common cold and the symptoms are likely to go within a week or so. As it improves, it is common to hear popping noises or feel popping sensations in the ear. It is also common for hearing to go back to normal suddenly but then become dulled again before getting completely back to normal.

What causes Eustachian tube dysfunction?

ETD happens if the Eustachian tube becomes blocked, if the lining of the tube swells, or if the tube does not open fully to allow air to travel to the middle ear.

Common colds and other nasal, sinus, ear or throat infections

- By far the most common cause of ETD is the **common cold (upper respiratory tract infections)**.
- The blocked nose or thick mucus that develops during a cold or other infections, may block the Eustachian tube.
- An infection may also cause the lining of the Eustachian tube to become inflamed and swollen.
- Most people have had a cold when they haven't been able to hear so well - this is due to ETD.
- Symptoms may last for a week or so (sometimes longer) after the other symptoms of the infection have gone. This is because the trapped mucus and swelling can take a while to clear even when the germ causing the infection has gone.
- Sometimes the infection that sets it off is very mild but even so, in some people, ETD can still develop.

Glue ear

- Glue ear is a condition where the middle ear fills with glue-like liquid.
- It is a common condition in children.
- The Eustachian tube becomes congested and prevents the free flow of air into the middle ear, causing the difference in air pressure mentioned above. The eardrum becomes tight, reducing its ability to vibrate. This results in dulled hearing. The situation is made worse by the glue-like fluid damping down the vibrations of the drum even further.
- It clears by itself in most cases but some children need an operation to solve the problem.

[See separate leaflet called Glue Ear for more details.](#)

Allergies

Allergies that affect the nose, such as **persistent rhinitis** and **hay fever**, can cause extra mucus and inflammation in and around the Eustachian tube and lead to having symptoms for several months.

Smoking

- Smoking can stop the tiny hairs that line the Eustachian tube from working.
- Smoking can also cause tissues at the back of the nose and throat (including the adenoids) to enlarge, blocking the Eustachian tube.
- If you smoke and are having problems with long-term (chronic) ETD you should try to **stop smoking**.

Blockages:

- Anything that causes a blockage to the Eustachian tube can cause muffled hearing - for example, **enlarged adenoids** in children.
- Rarely, a tumour behind the eardrum or at the back of the nose (the nasopharynx) can mimic the symptoms of ETD. These types of tumours are very uncommon and usually cause other symptoms in addition to ETD, such as headache, a hoarse voice and a constantly blocked nose.

What causes long-term Eustachian tube dysfunction?

For most people who experience ETD, it settles by itself within a couple of weeks. But in some people it seems to go on for a long time - many months. It is not known why some people are more prone to this happening than others.

Some common causes of long-term (chronic) ETD:

- **Chronic sinusitis** - up to half of people with chronic ETD.
- **Persistent rhinitis**.
- Smoking-related changes to the nose and throat.

In around 1 in 5 people who have long-term ETD, no cause is found. There is no evidence that there is a genetic cause and it doesn't appear to run in families.

Do I need any tests?

Usually not. Most cases are due to a cold, the symptoms are typical and it usually clears up in a few weeks.

If your symptoms have gone on for more than six weeks:

- It is important to see your doctor to make sure that there is no underlying problem. This is especially important if your hearing is getting worse, particularly on one side.
- Your doctor will want to examine your ears, but also your throat and nose.
- You may need to be referred to a doctor who specialises in the Ears, Nose and Throat (an ENT specialist).
- Further tests that may then be done include:
 - **Hearing tests** (called an audiogram) to get an accurate idea of your hearing.
 - Tympanogram, which is a way of testing the pressure behind your eardrum.
 - **Nasopharyngoscopy**, in which a small flexible camera is put into your nose to look at the back of your nose (the nasopharynx) and to see the openings of the Eustachian tube directly.
 - **Computerised tomography (CT) scan**.

What is the treatment for Eustachian tube dysfunction?

The treatment for ETD depends on how badly you are affected and what has caused it.

Often, no treatment is needed

In many cases, the muffled hearing and popping are mild and do not last longer than a few days or a week or so. This is common after a cold. No particular treatment is needed and the symptoms often soon go.

Try to get air to flow into the Eustachian tube:

- Air is more likely to flow in and out of the Eustachian tube if you swallow, yawn or chew.
- Also, try doing the following: take a breath in. Then breathe out gently with your mouth closed and pinching your nose (the Valsalva manoeuvre). In this way you are gently pushing air into the Eustachian tube. If you do this you may feel your ears go 'pop' as air is forced into the middle ear. This sometimes eases the problem. Occasionally doing this can make you dizzy so make sure you are sitting down.
- This is a particularly good thing to try if you develop ear pain when descending to land in a plane. [See separate leaflet called Ears and Flying for more advice.](#)

Decongestant nasal sprays or drops

A **decongestant** may be advised by your doctor if you have a cold or other cause of nasal congestion. You can buy these from pharmacies. They may briefly relieve a blocked nose. However, you should not use a decongestant spray or drops for more than 5-7 days at a time. If they are used for longer than this, they may cause a worse rebound congestion in the nose and can damage the lining of your nose. They are not recommended for use in children.

Antihistamine tablets or nasal sprays

Antihistamines may be advised by your doctor if you have an allergy such as hay fever. In this situation they will help to ease nasal congestion and inflammation.

Steroid nasal spray

A **steroid nasal spray** may be advised if an allergy or other cause of persistent inflammation, such as chronic sinusitis or persistent rhinitis, is suspected. It works by reducing inflammation in the nose. It takes several days for a steroid spray to build up to its full effect. Therefore, you will not have an immediate relief of symptoms when you first start it. However, if any inflammation is reduced in the back of the nose then the Eustachian tube is able to work better.

Steroid nose drops

Betamethasone nose drops are steroid nose drops. They are very similar to the steroid nasal sprays but because they are drops they can run deep into the back of the nose. They can only be prescribed. [See separate leaflet called 'How to use nose drops' for more details.](#)

Referral to a specialist

- If symptoms continue or the cause of the ETD is not clear, you may be referred to an ear specialist for assessment.
- Treatment options depend on any underlying cause that may be found.
- A small plastic tube (a grommet) can be inserted through the eardrum, under an anaesthetic, to allow air to get into the middle ear.
- A treatment recently developed is called balloon dilatation. This involves inserting a tiny tube with a small balloon on the end into the Eustachian tube through the nose. The balloon is filled with salt water and left in place for a few minutes in order to stretch the Eustachian tube. Currently the treatment is only being used as part of research but may be authorised for general use if trials are favourable.

Further reading & references

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