

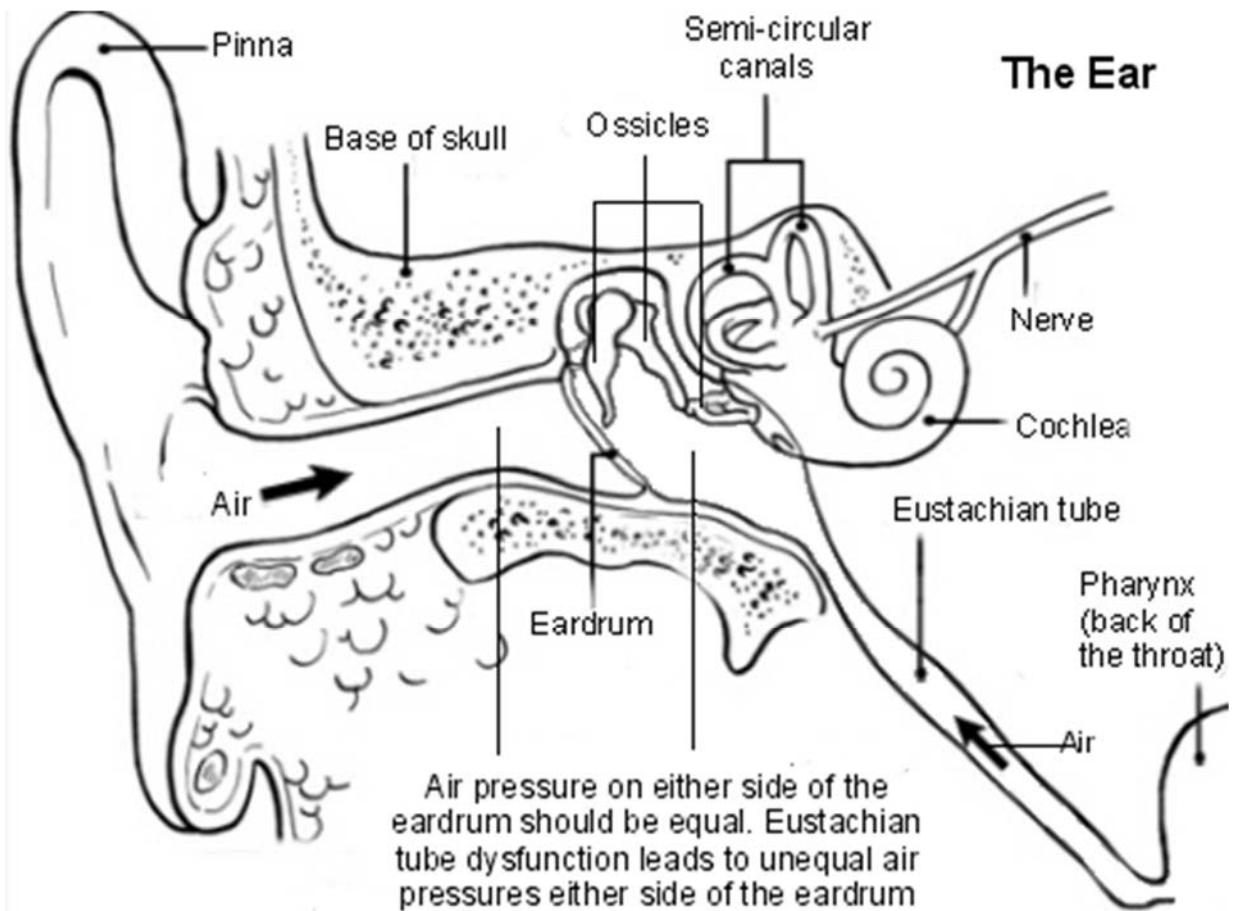
# Eustachian Tube Dysfunction

Eustachian tube dysfunction (ETD) can cause dulled hearing. It is usually a temporary problem that lasts a week or so and most commonly occurs 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.

## What is the Eustachian tube and what does it do?

The Eustachian tube is a narrow tube that connects the middle ear with the back of the nose. In adults it is about 3-4 cm long. The middle ear space behind the eardrum is normally filled with air. The air in the middle ear is constantly being absorbed by the cells that line the middle ear. So, fresh supplies of air are needed to get to the middle ear from time to time.

The Eustachian tube is normally closed but opens from time to time when we swallow, yawn or chew. This allows air to flow into the middle ear and any mucus to flow 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, enables the eardrum to work and vibrate properly, which is needed 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.

## What is Eustachian tube dysfunction?

Eustachian tube dysfunction (ETD) means that the Eustachian tube is blocked or does not open properly. Air cannot then 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 inward. 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 dulled hearing. You may also have ear pain because the eardrum is tensed and stretched. Other symptoms that may also develop include: a feeling of fullness in the ear; tinnitus (ringing or buzzing in the ear); dizziness. One or both ears may be affected.

Symptoms can last from a few hours to several weeks or more. It depends on the cause. In most cases due to a cold (the common cause) the symptoms are likely to go within a week or so. As symptoms are easing, you may get popping sensations or noises in the ear. Also, the dulled hearing may come and go for a short time before getting fully back to normal.

## **What are the causes of Eustachian tube dysfunction?**

ETD occurs if the Eustachian tube becomes blocked, or if the lining of the tube becomes swollen, or if the tube does not open as it should to allow air to travel to the middle ear.

### **Colds and other nose, sinus, ear or throat infections**

This is the common cause of ETD. 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 will have had one or more episodes in their life when they have had a cold and find that they cannot hear so

well due to ETD. The symptoms of ETD may persist for up to a week or so (sometimes longer) after the other symptoms of the infection have gone. This is because the trapped mucus and swelling may take a while to clear even when the infecting germ has long gone.

Sometimes the infection is very mild. Perhaps a mild cold with a mild bunged up nose. However, ETD may still develop in some people for a while.

## **Glue ear**

Glue ear is a condition where the middle ear fills with glue-like fluid. 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, resulting in dulled hearing. The situation is made worse by the glue-like fluid damping down the vibrations of the drum even further. It is a common condition in children. It clears by itself in most cases but some children need an operation to solve the problem.

## **Allergies**

Allergies that affect the nose, such as perennial rhinitis and hay fever, can cause extra mucus and inflammation in and around the Eustachian tube and lead to ETD.

## **Blockages**

Anything that causes a blockage to the Eustachian tube can cause ETD. For example, enlarged adenoids. Rarely, ETD can be a symptom of rare tumours that sometimes develop at the back of the nose. These will usually cause other symptoms in addition to ETD.

## **Air travel and the Eustachian tube**

Some people develop ear pain when descending to land during a plane journey. It is caused by unequal pressures that develop on either side of the eardrum as the plane descends. As a plane descends, the air pressure becomes higher nearer the ground. This pushes the eardrum inwards which can be painful. In most people, just normal swallowing and chewing quickly cause air to travel up the Eustachian tube to equalise the pressure.

Some airlines offer sweets to suck and eat when the plane is descending to encourage you to chew and swallow. However, if you have a narrow Eustachian tube, a cold, or anything else that can cause blockage to the Eustachian tube, then the pressure does not equalise very easily when the plane descends. This can cause severe ear pain.

## **What is the treatment for Eustachian tube dysfunction?**

Treatment options depend on the cause and severity of the condition.

### **Often, no treatment is needed**

In many cases, the ETD is mild and does not last longer than a few days or a week or so. For example, this is common following 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, try to breathe out gently with your

mouth closed and pinching your nose (the Valsalva manoeuvre). In this way, no air is blown out but 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. This is a particularly good thing to try if you get ear pain when descending to land in a plane.

## **Decongestant nasal sprays or drops**

These 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 longer than this, they may cause a worse rebound congestion in the nose.

## **Antihistamine tablets or nasal sprays**

These 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 in the nose 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.

## **Referral to a specialist**

If symptoms persist, or the cause of the ETD is not clear, then you may be referred to an ear specialist for assessment. Treatment options depend on any underlying cause that may be found.