



Flying and the Ear

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Flying comes high on the list of anxieties of people suffering from deafness and tinnitus. Most of these anxieties are unfounded and come from the almost universal experience of discomfort in the ears following an air flight.

Pressure changes – their effect on the ear Although a commercial aeroplane may be flying at over 30,000 feet, the pressure in the cabin is controlled automatically to the equivalent of a height or around 6,500 feet. The main effect of this pressure change is on the middle ear (the part of the ear behind the ear drum containing the small ossicles or bones which conduct sound to the inner ear and nerve of hearing).

The middle ear cavity is normally filled with air at the same pressure as the surrounding air. The air in the middle ear is being continuously absorbed by the body, but each time we swallow or yawn, the eustachian tubes (running to the back of the nose) opens and allows air to pass into the middle ear cavity equalising the pressure.

After take-off the pressure in the aircraft cabin slowly drops, but this does not usually cause a problem as the air in the middle ear is at a relatively high

pressure and gets blown down the eustachian tube, rather like releasing the string on a toy balloon.

If there is going to be a problem with equalising pressure in the middle ear it tends to occur when the aircraft comes down to land. At this time the air in the middle ear is at a lower pressure than the air in the cabin, the eustachian tube may become blocked and the small muscles in the throat which open it may not be able to do so. The ear drum is pressed inward and tensed resulting in a slight discomfort. People often worry that the ear drum will be damaged by this pressure change, but it is a very strong fibrous membrane and not easily damaged, certainly not by relatively small and gradual changes in air pressure.

In people with pre-existing deafness, often due to reduced nerve function, the small temporary loss of hearing may have very dramatic effects in terms of speech intelligibility. Usually the

blockage of the eustachian tube clears of its own accord after a short time.

Avoiding the problem Eustachian tube function varies somewhat between individuals, and even in the same person over a period of time, but here are a few simple rules:

- Make sure you are awake before the aircraft begins its decent (the initial decent from cruising altitude may be an hour or so before landing). The eustachian tube does not open effectively during sleep.
- Keep swallowing, using a glass of water (or your favourite beverage!) at regular intervals - if necessary every 15 to 30 seconds. If this does not clear the ear, pinch the nose between finger and thumb and gently blow air down it with the mouth closed, but without releasing any air (the Valsalva manoeuvre).
- Avoid flying with a cold (not always an easy thing to do). With a cold or other infection around the nose and throat the lining of the eustachian tube is swollen and blocks more easily. If you are forced to travel by air with a cold use nasal decongestant drops or decongestant spray (eg Otovrine) on the advice of your doctor. Use the decongestant before and during the flight.

If you are worried about your eustachian function and whether it is normal, it is very easy to check on this by a simple test called "Impedance Audiometry". These devices are available at all audiology departments, and quickly and objectively measure whether your eustachian tube is normal, and your

middle ear pressure is the same as the surrounding atmosphere. Many people who believe that they have eustachian obstruction, or middle ear "catarrh" are often surprised to find that their eustachian tube works quite normally when tested in this way. Sometimes the diagnosis has been made wrongly, perhaps many years before the aid of this accurate test.

Engine noise Some people are worried that the noise of the engines will damage their ears or cause their tinnitus to get louder. If you find the noise of the engines disturbing, the solution is either to select a seat in front of the wing, or as a last resort to use soft earplugs. If you have been fitted with wearable noise generators it is very helpful to use them on an aeroplane to reduce the discomfort of any loud sounds there may be. If you normally wear hearing aids, you should also wear these during your flight, as removing them may make your tinnitus louder and more noticeable.

In people with hearing loss, it is often the "straining to hear" phenomenon which makes the tinnitus louder when on board an aircraft. If eustachian blockage is experienced during flying, then tinnitus may appear to get louder temporarily, in the same way as it does on inserting an ear plug. On clearing the ears, the tinnitus will return to its former level. Many people actually find that being in the aircraft is one of the times when they are completely free of their tinnitus because of the environmental

noise of the engines and airflow around the aeroplane.

Pressure changes and tinnitus In some cases changes of pressure do have small and temporary effects on tinnitus. It may change the frequency, and in some cases may temporarily increase or decrease the loudness. The same effects can be produced by lying flat or tilting with the head down. The majority of tinnitus sufferers do not experience these effects, and it must be stressed that when they do occur they are only temporary.

Very occasionally sudden decompression occurs in an aircraft. This can have an effect on the inner ear. It is an extremely rare occurrence, and is usually accompanied by disturbance of balance and hearing loss. If medical attention is sought quickly enough, treatment is often effective. Any ear condition following a flight that does not clear after a few hours should be seen by a doctor.

Grommets and perforations

Grommets are very small ventilation tubes used in the treatment of certain middle ear disorders. Perforations can occur in the ear drum as a result of infection or injury. In either case there is actually less of a problem flying than if the ear drum is intact. This is because any change in pressure can be equalised across the ear drum and does not depend on the eustachian tube functioning normally.

Ear plugs and flying Despite all these assurances some people still remain

extremely sensitive to small changes in pressure in the middle ear. This sensitivity is usually due to an anxiety that the ear drum may be damaged by pressure change. Sometimes the ear drum is rather more mobile and floppy than normal, this can result in increased discomfort during descent. While there is still no risk of damage to the ear, the symptoms can sometimes be reduced by wearing a foam plug in the ear canal.

This does not stop the changes of pressure reaching the ear drum, it simply slows them down, so that any pressure change that might occur rapidly, occurs more gradually, and therefore reduces awareness of the sensation. The ear plug should be removed on leaving the aircraft. Those who have hearing aids which effectively block the ear canal may find that wearing a hearing aid has the same effect.

Flying and ear surgery If you have recently undergone middle ear surgery, or are about to do so, it is important to check whether or not you will be allowed to fly immediately afterwards. If the operation involves the insertion of a grommet or ventilation tube, then there should be no problem about flying. Other operations which involve either the grafting or perforation of the ear drum, or more particularly the stapedectomy operation for otosclerosis, usually require a short period of avoidance of air travel while the ear is healing. Ask your ear specialist for his/her views.

Other factors Many people with hearing disorders and particularly those who have tinnitus, suffer from varying degrees of depression and anxiety. If you have been anxious in the past it is quite likely that you are worried about flying because of the safety aspect.

Many people use their tinnitus or hearing disorder as an excuse not to get on an aeroplane. Statistically, flying is the safest way to travel anywhere but many people have natural worries and anxieties about it. Discuss these anxieties with your GP, he or she may agree that it is one of those very rare occasions where it is appropriate to prescribe a small dose of some

tranquilliser.

Relaxation and breathing exercises can be extremely helpful, particularly if practised beforehand. Where there are well-established phobias about flying, British Airways run a "desensitisation" course and they can be contacted directly about this. If your worry is that flying may be harmful to your ears, then in 99.9% of cases we say go ahead and enjoy your flight.

Ear plugs Simple foam ear plugs are available from Boots and larger chemists. Special plugs, in junior and adult sizes, which are said to help equalise pressure, are called *Earplanes*.

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This information is not a substitute for medical advice. You should always see your GP / medical professional

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