

## **Eustachian Tube Dysfunction:**

The eustachian tube connects the middle ear to the throat. Its normal function is to equalize middle ear pressure with environmental pressure. When your ear "pops" on an elevator or in an airplane, the reason is that the eustachian tube has opened and equalized the pressure.

Occasionally people develop symptoms when the eustachian tube does not work properly. The problem is that the Eustachian tube stays closed when it is supposed to open. This may cause pain or fullness. It may be a particular problem and source of severe pain when flying on airplanes, ascending tall buildings, or diving. Often, the eustachian tubes will only partially open causing a crackling or crunching noise. This symptom is very common during or after the allergy season, an ear infection, common cold, or sinus infection. Other causes of fullness in the ears can be due to TMJ (jaw joint) disturbances, migraine, and Meniere's disease – your ENT doctor can help you differentiate between these other causes.

## **Diagnosis of Eustachian Tube Dysfunction (ETD):**

Diagnosis is generally made from history. Someone who reports that they have fullness in their ears, which clears when they swallow or "pop" them, has ETD of the most common kind -- the ET is not opening when it should. One can prove that the ET opens or not, using tympanometry. This is simply a method of recording pressure in the ear.

## **Treatment of Eustachian Tube Dysfunction:**

Treatment of ETD is unfortunately not very effective.

Medications for allergy such as decongestants, systemic or local antihistamines and nasal topical steroids are commonly tried. Hypertonic saline irrigation can also be attempted, however, this can sometimes cause fluid to get into the ear – which can be annoying to some patients. Another very effective way to “equalize” the ears is to keep your mouth closed while squeezing your nose and blowing to force air to “pop” the Eustachian tube open (be careful not to blow too hard as this can potentially cause damage to your inner ear structures or your ear drum).

Occasionally, people with severe symptoms due to ET dysfunction may have a ventilation tube placed in their eardrum. This relieves the symptoms of ET

dysfunction but creates a perforation in the eardrum, which reduces hearing to a small extent. The hole in the ear can also allow bacteria to get into the middle ear and cause infection.

### **Flying with Eustachian Tube Dysfunction:**

People who suffer from Eustachian tube dysfunction can potentially develop barotraumas (pressure related trauma) to the middle ear and inner ear structures. At a minimum, this can cause pain on the flight; however, in extreme cases, it can cause a rupture of the eardrum or damage to inner ear structures.

To attempt to prevent these symptoms:

1. Use Afrin nasal spray 1 hour prior to flying
2. Take pseudoephedrine 1 hour prior to flying (comes in 6, 12 and 24 hour combinations – make sure you take enough for the length of the entire flight). Note: pseudoephedrine can raise blood pressure and/or precipitate heart arrhythmias. If there is any question about whether you can safely use this medication, please contact your cardiologist or primary care doctor.
3. Learn how to equalize your ears. Keep your mouth closed while squeezing your nose and blowing to force air to “pop” the Eustachian tube open. Do this upon take off and during your descent.
4. Wear Earplanes earplugs during take off and landing. These are special earplugs that help to reduce the pressure changes from flying. They can be found at most pharmacies, and we often have them available at the front desk.
5. Chew gum during take off and landing – this helps to open the Eustachian tube by contracting muscles in your throat that help open the Eustachian tube.