Contra Costa Ear Nose & Throat

Eustachian Tube Problems

What is the Eustachian tube?

The Eustachian tube is a membrane lined tube that connects the middle ear space to the back of the nose. Its primary function is to ventilate the middle ear, ensuring that the pressure inside the ear remains at near normal ambient air pressure. The secondary function of the Eustachian tube is to drain any accumulated secretions, infections, or debris from the middle ear space. Several small muscles located in the back of the throat and palate controls the opening and closing of the tube. Swallowing and yawning cause contraction of these muscles, and help to regulate Eustachian tube function. If it were not for the Eustachian tube, the middle ear cavity would be an isolated air pocket inside the head that would be vulnerable to every change in air pressure and lead to an unhealthy ear.

Normally, the Eustachian tube is closed which helps prevent the inadvertent contamination of the middle ear by the normal secretions found in the back of the nose. A tube that is always open is called a patulous Eustachian tube. Patients with this rare condition are plagued by chronic ear infections. A much more common problem is a failure of the Eustachian tube to regulate pressure effectively. Partial or complete blockage of the Eustachian tube can cause popping, clicking, and ear fullness.

As Eustachian tube function worsens, air pressure in the middle ear falls, and ear feels full and sounds are muffled. Eventually, a vacuum is created which can then cause fluid to be drawn into the middle ear space (termed serous otitis media). If the fluid becomes infected, the common ear infection (supperative otitis media) develops.

The Eustachian tube can be blocked or obstructed for a variety of reasons. The most common cause is a "cold" (upper respiratory infection). Sinus infections or allergies can also cause swelling of the Eustachian tube. Consequently, a stuffy nose leads to stuffy ears. Children are particularly prone to Eustachian tube blockage because their tubes are narrower and closer to the adenoids. This is why adenoidal removal (adenoidectomy) is frequently recommended in children with chronic ear infections (chronic otitis media). Rarely, masses or tumors in the skull base or nasopharynx can lead to Eustachian tube obstruction.

Eustachian tube problems and the associated ear infections are among the most common problems seen by doctors. Many people have chronic problems regulating middle ear pressure. Causes range from allergies to excessively small Eustachian tubes. These patients often notice intermittent ear fullness, ear popping or cracking, mild hearing loss (an attenuation of sound), ringing in the ears (tinnitus), and/or occasional poor balance.

How do altitude changes or air travel affect Eustachian tube problems?

A rapid change in altitude and air pressure is equalized across the eardrum by a normally functioning Eustachian tube. A healthy tube opens frequently and widely enough to equalize these changes in air pressure. With altitude changes during the descent of an airplane, air pressure increases as the plane lowers. Persons with Eustachian tube blockage can develop fullness of the ear and dulled hearing. The air pressure change pushes the eardrum inward (retraction) and it may even fill with fluid or blood. Those with poorly functioning Eustachian tubes may experience similar symptoms when riding elevators, driving through the mountains, or diving to the bottom of a swimming pool. Scuba divers learn tricks to equalize their ear pressures.

How is Eustachian tube blockage treated?

There are several maneuvers that can be done to improve Eustachian tube function. The simple act of swallowing activates the muscles in the back of the throat which help open the Eustachian tube. Chewing gum, drinking, or eating promotes swallowing. Yawning is even better because it is a stronger muscle activator. If the ears still feel full, you can try to forcible open the Eustachian tube by taking a deep breath and blowing while pinching your nostrils and dosing your mouth. When you feel a pop, you know you have succeeded. If problems persist despite trying to forcibly open the tubes, you may need to seek medical attention. If you feel dizzy performing this maneuver, then stop and discuss this with your doctor.

If you have a cold, sinus or ear infection, or suffer an allergy attack, it may be advisable to postpone a trip by airplane. Similarly, individuals with Eustachian tube problems may find such sports as scuba diving painful and in some situations quite dangerous. Babies traveling on airplanes cannot intentionally pop their ears, but may do so if they are sucking of a bottle or pacifier. While descending on air flight, it is best to feed your baby and not allow him to sleep.

Many airplane travelers with Eustachian tube problems use a decongestant by mouth or nasal spray an hour before take off, and, if necessary, prior to descent. The decongestant acts to shrink the membranes lining the nose and throat, allowing the ears to equalize more easily. Similarly, patients experiencing chronic daily problems with Eustachian tube dysfunction can benefit by aggressive control of allergies (antihistamines, decongestants, and prescription nasal sprays). Allergy evaluation can be helpful. In severe situations, a tube can be surgically placed through the eardrum, replacing the role of a functioning Eustachian tube to equalize the ear pressure.

Eustachian tube problems at a glance

- The Eustachian tube connects the middle ear space to the back of the nose.
- Normally, the Eustachian tube is closed
- Partial or complete blockage of the Eustachian tube can cause popping, clicking, and ear fullness.
- The Eustachian tube can become blocked from common colds or allergies.
- Altitude changes can cause symptoms in persons with Eustachian tube problems.
- Several maneuvers can be done to improve Eustachian tube function.