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Patulous Eustachian Tube Dysfunction

Eustachian tube dysfunction (ETD) is often thought of as a problem of the Eustachian tube not opening properly due to swelling of either the tissues immediately comprising the tube or of adjacent structures such as the tonsils or adenoids. A Eustachian tube that does not open sufficiently results in inadequate aeration, pressure equalization, and drainage of the middle ear space and is one of the key underlying problems leading to otitis media and the problems associated with that condition (i.e. pain, pressure, conductive hearing loss). This type of ETD is particularly common in the pediatric population though it occurs regularly in patients of all ages.

A *patulous* Eustachian tube (PET) is another type of ETD which, though clinically less common, nevertheless results in symptoms that can be quite bothersome to the afflicted patient. This condition entails a Eustachian tube that is abnormally open, in some cases all or nearly all of the time, in other cases during periods of heavy respiration. General symptoms of PET include autophonia (hearing one's own voice as abnormally loud), hyperacusis (hearing sounds in general as abnormally loud), tympanophonia, and, less commonly, distortion to speech and to sounds in general. These symptoms may initially suggest a problem in the inner part of the ear and thus PET is often not recognized by the examiner.

Conditions that tend to be associated with PET include pregnancy, radiation therapy, hormone therapy, fatigue, stress, and weight loss. Additionally, anecdotal evidence suggests that some patients only experience symptoms or have an increase in symptoms during humid weather and especially during increased respiration in humid conditions. Symptoms are often worse during exercise.

In addition to the aeration and drainage function of the normally functioning Eustachian tube, the tube also serves to dampen the intensity at which we hear our own voice. When the Eustachian tube is patent, our voice and other sounds generated in our oral cavity, such as chewing and breathing, travel directly up the tube into the middle ear. These sounds are then heard at an abnormally loud level: autophonia is the abnormally loud perception of our own voice. In addition, because these vibrations will now be striking the tympanic membrane from the inside as well as from the outside, and these two separate signals will be slightly out of

phase, the patient's voice is not only likely to sound very loud but distorted as well. The specific cause of this phenomenon is not clear.

Often, estrogen nasal spray is attempted to "bulk up" the tissue surrounding the Eustachian tube opening in the back of the nose. This is not always successful in treating the symptoms of PET. Other surgical treatments include modifying the opening of the eustachian tube orifice (the torus tubarius) with injectable materials or sometimes with ear cartilage.

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