



Full service adult and pediatric  
ear, nose, throat, head and neck  
surgery, allergy, audiology and  
hearing aid clinic

Todd Berinstein, MD, FACS  
Danielle Brown, PA-C  
Kayla Eversole, PA-C  
Alison Metcalf, AuD  
Hyla Richey, MBA, MS, F-AAA

### 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 (i.e. aerobic exercise in high humidity).

Patulous Eustachian tube occurs in 0.3 percent to 6.6 percent of the general population. It seems to be slightly more common in women than in men. It is not associated with hearing loss.

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.

Patulous Eustachian Tube is often easy to diagnose once the symptoms are recognized. The evaluation of PET is very simple and includes a hearing evaluation, ear drum tests, and breathing tests. Treatment can involve surgery to correct or modify the opening of the Eustachian tube or in some cases to partially plug the tube.

Courtesy of: [http://medicine.yale.edu/surgery/otolaryngology/hearing/care/adult/diseases/tube\\_dysfunction.aspx](http://medicine.yale.edu/surgery/otolaryngology/hearing/care/adult/diseases/tube_dysfunction.aspx) Yale Hearing & Balance Center. Yale Physicians Building. 800 Howard Ave, 4th Floor. New Haven, CT 06519

