

Little People and The Eustachian Tube

By Dr. Rob Hekkenberg, MD F.R.C.S.C. - Royal Victoria Hospital - Barrie, Ontario

The first detailed description of the eustachian tube was by Eustachius in 1562 and now bears his name. The eustachian tube joins the middle ear, which is responsible for amplification of sound to the nasopharynx or the back of the nose. Its function is threefold, ventilation and equalization of pressure in the middle ear, clearance of middle ear secretions, and protection from nasopharyngeal secretions and sound pressure. It is both cartilaginous and bony, and lined with respiratory epithelium C similar to the lining of the nose and mouth. The tube varies in length and orientation with age, which partially accounts for the decreasing prevalence of middle ear infections as one ages. Usually it is closed but can be actively opened with various maneuvers that activate dilatory muscles associated with the tube. For example chewing gum, yawning or a valsalva maneuver B pinching the nose, closing the mouth and trying to forcefully blow out.

In Little People, dysfunction of the eustachian tube (ETD) is quite common. This is thought to be due to the variation in cranio-facial shape, specifically the mid-face. This can manifest itself as frequent episodes of acute otitis media or ear infections, middle ear effusions or fluid present behind the eardrum causing hearing loss, and the feeling of pressure in the ears. The pressure sensation in the ear is similar to descent and ascent in an airplane or in the mountains. Uncommonly ETD can lead to small areas of weakness in the eardrum that can form "retraction" pockets and ultimately collect keratin (dead skin) debris and form a cholesteatoma. This can push on the little bones of hearing and cause substantial hearing loss if left untreated.

Treatment of eustachian tube dysfunction centers on identifying those people who are most at risk and are symptomatic. One must rule out any potentiating factors including anatomical obstruction of the tube in the back of the nose by the adenoids (lymphatic tissue similar to tonsils), mechanical irritation from nasal disease, functional obstruction due to a cleft palate, and possibly allergic phenomena congesting and obstruction the tube.

Enlargement of adenoids tends to cause ETD in children usually between the ages of 4 and 8 years of age. If this is present and presumed to be causative, removal of the adenoid tissue should be considered.

Mechanical irritation of the eustachian tube opening in the back of the nose either due to congestion or swelling of the lining of the nose or infected secretions (i.e. sinusitis) should be adequately treated with a combination of short-term decongestants (i.e. Otrivin, Dristan, Sudafed), inhaled nasal steroids, and/or antibiotics.

Cleft palates, which are usually evident at birth, should be corrected in a timely fashion, but despite repair some ETD can still persist.

Allergic factors should be ruled out with appropriate testing, and treated if present. Treatment options include avoidance of allergens, immunotherapy (allergy shots), nasal steroids and/or antihistamines.

Ultimately if still present and symptomatic, ETD can be treated with the insertion of ventilation tubes in the eardrum. They essentially replace the ventilation function of the eustachian tube by bypassing it. The ventilation tubes are anywhere from 3-8 mm and are inserted in the eardrum, either in the office using a local anaesthetic or in hospital using a general anaesthetic. They are either temporary or permanent, depending on the brand of the tube. The temporary usually last 6-18 months and most fall out on their own. Permanent tubes for chronic long-term ETD may sound like a logical solution but commonly get blocked and are not ideal for everyone. Tubes are not perfect, they require you to avoid getting water in the ears (ie ear plugs), and when they do fall out there is a very small risk that a hole can remain in the eardrum that does not heal. Despite having ventilation tubes in place, one can still get a discharging ear B either due to a middle ear infection or from water getting in the tube itself. This requires treatment with either oral antibiotics or drops.

Hopefully with a better understanding of the purpose, anatomy, and function of the eustachian tube, this can alleviate the frustration in dealing with its dysfunction, and help you make wise decisions in treating it.