INTRODUCTION

Eustachian tube dysfunction is a generic term applied when there is presumed insufficient dilatation of the eustachian tube lumen to adequately ventilate the middle ear and mastoid cavity. The cause or origin of this dysfunction appears to be multifactorial and may include chronic infection, allergic disease, laryngopharyngeal reflux, primary mucosal inflammatory disease, abnormalities with the dilatory dynamics and anatomical obstructive abnormalities.**(Bluestone 1996).**

Persistent or recurrent otitis media with effusion is generally attributed to eustachian tube dysfunction. When the dysfunction is refractory to maximal medical therapy, surgical ventilation of the middle ear space with insertion of a tympanostomy tube into the tympanic membrane is usually successful in alleviating the effusion and restoring the tympanic membrane to its normal contours. Patients with chronic persistent eustachian tube dysfunction often require repeated tympanostomy intubation because of tube extrusion or obstruction. A number of "permanent" tubes have been developed in an attempt to provide longer-lasting middle ear ventilation, but such tubes are still subject to problems with crusting, infection, obstruction and unplanned extrusion.(**Gates et al 1989)**

Numerous surgical procedures have been developed in an attempt to correct chronic eustachian tube dysfunction. Because the bony isthmus is the narrowest portion of the tubal lumen, it has been implicated historically as the primary site of tubal dysfunction. Virtually all of the operations previously described have involved techniques to widen the osseous portion of the eustachian tube. **Zollner, (1963)** described stenting

of the tubal lumen using silk threads and later changed to the use of a polyethylene tube. The stents had a problem of extrusion and obstruction, as well as a risk for internal carotid artery injury during the insertion process through the middle ear orifice. **Wullsteine, (1960)** performed the first reported case of drilling the bony tube from a middle ear approach, and expressed significant concern over the potential for internal carotid artery injury in future such attempts. **House et al., (1969)** described wide exposure for drilling and widening the eustachian tube using a temporal craniotomy for a middle fossa approach. **Misurya, (1975)** performed similar widening of the isthmus using a combined transcanal and preauricular approach. **Jansen, (1985)** suggested the use of endoscopy to aid in the bony drilling process and concentrated on widening the posterior-superior aspect of the middle ear orifice. **Charachone et al 1986** described a postauricular approach to widen the inferior and lateral walls of the tube leaving Silastic stents in place for 18 to 24 months. There have been no reports of long-term success using any of these techniques.

Dennis et al., **(2001)** have pursued a hypothesis that the pathophysiological features of eustachian tube dysfunction may occur in the cartilaginous portion of the tube. Anatomical studies with cadaver dissections and endoscopic analysis of normal subjects and patients with eustachian tube dysfunction have been reported. The use of video endoscopy for dynamic analysis of eustachian tube dilation and closing processes has been invaluable. It appears that most cases of eustachian tube dysfunction can be broken down into categories of obstructive, dynamic or combined disorders. Obstructive disorders are associated with mucosal oedema or hyperplasia of various origins. Dynamic problems

involve dysfunction of the tensor veli palatini and/or levator veli palatine muscles.

Kujawski, (2003) performed the first eustachian tube operation to focus on the cartilaginous portion in 1997. This laser eustachian tuboplasty used CO2 laser to ablate mucosa, soft tissue and cartilage at the nasopharyngeal orifice. Ablation extended along the posterior wall into the tubal lumen. His experience with this series of patients using either CO2 or 980-nm diode laser demonstrated that 81% of patients remained free of eustachian tube dysfunction after 36 month of follow-up.