Eustachian tube dysfunction is common in the pediatric population; it is reported that almost 40% of all children up to the age of 10 develop temporary ETD. Eustachian tube dysfunction may result from allergy, chronic infection, mucosal disease, laryngopharyngeal reflux and anatomical obstruction such as adenoid hyperplasty. This dysfunction leads to symptoms and diseases, such as serous otitis media or chronic otitis media, each with well known sequelae. Otolaryngologists attempt to ascertain the underlying etiology in each case and treat it with medical therapy as indicated. When tubal dysfunction is refractory to medical management, patients with persistent ETD may require placement of ventilation tympanostomy tubes. There are a subset of patients who often need repeated insertion, as these ventilation tubes are prone to obstruction, extrusion and infection.

In the 1960s, William House introduced eustachian tuboplasty as a means of dysfuncion leads to different treatment for persistent ETD through a middle fossa approach; however, this method was soon discontinued due to invasiveness and morbidity of the procedure. The evolution of endoscopic transnasal surgery combined with the application of inflatable balloons in urologic, cardiac and vascular procedures, as well as more recently sinus surgery, has led to new treatment options for persistent ETD. In particular, balloon dilation of the Eustachian tube, has emerged as a successful alternative treatment for ETD in the adult population.

In spite of this, eustachian tuboplasty has not been investigated in the pediatric population. We report the successful management of persistent ETD in the pediatric population with rigid dilation of the ET. In this report, we present the potential of rigid dilation of the ET in the treatment of pediatric persistent ET dysfunction.

CASE REPORT

We present a case of an 11 year old female with a history of persistent ETD despite maximal medical management and repeated placement of ventilatory tympanostomy tubes who presented with chronic serous otitis media and otalgia. Persistent ETD was confirmed pre-operatively with physical exam revealing severely retracted tympanic membranes bilaterally and suggested by audiogram.

As a result of failure of medical management and repeated tympanostomy tube placement, the patient was taken to the operating room for transnasal rigid eustachian tuboplasty. The transnasal endoscopic rigid eustachian tuboplasty by surgical terms is described in detail below.

METHODS AND MATERIALS

Under general anesthesia, binocular microscopy was first performed to confirm clinical findings. Once this was completed, attention was then turned to transnasal rigid eustachian tuboplasty.

After nasal decongestion with Afrin pledgets, a 4mm 0 degree endoscope was placed in the left nare to allow visualization of the nasopharynx and eustachian tube orifice (Figure 1). Eustachian tube dilation was attempted with a balloon catheter system, which was unsuccessful with curving into the angle of the eustachian tube and was subsequently, abandoned.

Rigid urethral sound instruments (Figure 2) were then utilized successfully to sequentially dilate the orifice. Size 8 through 12mm urethral sounds were used. This dilation was done under direct visualization, as well as through palpation of proper placement into the cartilaginous portion of the orifice (Figure 3). The cartilaginous tube opened with each dilation. Care was taken to avoid placing the rigid instruments into the bony ET. The limit of dilation was 12mm; this was felt as the largest diameter the ET orifice would allow without causing irreversible damage based on visual and tactile cues. The same procedure with similar results was done on the right. Figure 4 shows post-dilation opening.

The patient was followed with clinical examinations postoperatively without findings suggestive of ETD. She received no adjuvant treatment and experienced no complications. She is to have a repeat audiogram at her next visit.

CONCLUSION

Although preliminary, rigid dilation eustachian tuboplasty has shown potential in the treatment of persistent ET dysfunction in the pediatric population. We have presented a novel technique to perform minimally invasive surgery on the cartilaginous ET with improvement in ET dysfunction. This newly introduced method seems to be a feasible procedure to dilate the ET. Further studies and trials of rigid dilation will be necessary to determine long-term efficacy in the treatment of ET dysfunction.

REFERENCES