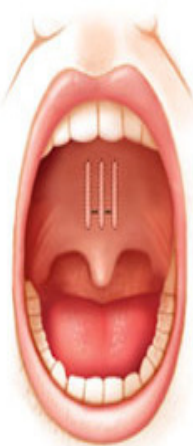


Always falling asleep?

3 Pillar Fibers
in the soft palate**IN THIS ISSUE**

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Snoring and Sleep Apnea – The New Pillar Procedure Our experience

William C. LeLiever MD, FACS, FRCS (C)

This article explores exciting recent trends in sleep medicine. Sleep apnea is upper airway obstruction with blockage of airflow in three areas – the nose, the palate and the tongue base. It is common problem and affects 4% of males and 2% of women. Sleep apnea is serious causing heart disease, high blood pressure, diabetes, stroke and sudden death if not detected. It is associated with periods of complete cessation of breathing, excessive daytime tiredness, weight gain, snoring, restless sleep pattern, and constantly waking up, and “felling tired no matter how much sleep you’ve had “. Snoring, of course, is well known to us all due to vibration or blockage in all of these areas. As clinicians, we need to identify which area is causing the problem.

The pillar procedure is a new innovative way of stiffening the soft palate using 3 tiny polyethylene implants paced into the muscle layer of the soft palate. The resultant tissue reaction further stiffens the soft palate preventing vibration and intermittent obstruction which is one of the causes of obstructive sleep apnea. It also is very effective for snoring patients. This procedure is replacing earlier procedures for snoring, namely, somnoplasty and radiofrequency treatment of the soft palate, laser assisted uvuloplasty and sclerotherapy to the soft palate. In all the prior procedures, we have seen return of the snoring due to weakening of the muscle around the treatment area. The pillar procedure appears to be a permanent cure to the problem.

Central Carolina ENT started performing the Pillar procedure in February 2005 and currently has performed 156 implants on 52 patients. The results to date are impressive with 8 patients out of 13 patients (all patients with obstructive sleep apnea) coming off CPAP due to the effects of the pillar alone. The results for snoring have also been impressive with a 78% reduction of elimination of snoring for the entire group. The effects are noted in 8 to 10 weeks after implantation. The effects on daytime tiredness has also been impressive with a significant number of patients reporting marked improvement. Our practice is the leading center for the Pillar procedure in North Carolina.

The benefits of the new Pillar procedure are 1) It is a one time office or outpatient procedure and does not require a hospital. 2) It is quick, painless with no post op pain- we generally see a mild sore throat for 24 to 36 hours after the procedure 3) It is the least invasive of all our procedures 4) It is reversible 5) It is indicated for snoring and mild/moderate sleep apnea. (continued on page 5, see pillar procedure)

Allergies and Chronic Ear Infections

Dr. Doris Lin

There are times when ear drainage and fluid (otitis media with effusion) doesn't seem to go away with conventional treatment such as antibiotics or ear ventilation tubes. We know that chronic inflammation in the nasopharynx or middle ear impairs drainage of the middle ear. We know that allergies can lead to chronic inflammation, especially in the nose and nasopharynx. Can allergies lead to chronic ear infections then?

Allergies and Chronic Ear infections?

Otitis media with effusion (OME) can significantly impair hearing, cause profound mucosal changes, delay speech development and result in permanent middle ear damage. OME is the most common cause of hearing loss in children today and causes a conductive hearing loss. Of particular interest is OME refractory to conventional antibiotic treatment and surgical therapy such as myringotomy, tonsillectomy, adenoidectomy, tympanostomy tube placement and even radical mastoidectomy. Chronic mucosal inflammation has been shown to be a major finding in these cases. The role of allergy in these cases is under active investigation.

Eustachian tube dysfunction

Eustachian tube dysfunction (ETD) has been shown to be a major factor in the development of OME. The Eustachian tube connects the middle ear to the nasopharynx, the area of the pharynx just behind the nose. Its primary function is to equalize pressure in the middle ear and the ambient air pressure. Another function of the Eustachian tube is to drain fluid from the middle ear space. Normally, the Eustachian tube is closed which helps prevent infections from the nose or pharynx from climbing up into the ear. Swallowing and yawning causes contraction of the muscles near the opening of the Eustachian tube, and helps to regulate Eustachian tube function.

Upperrespiratoryinfectionsandallergieshave been shown to contribute to ETD, and in some cases contribute to a patulous Eustachian tube (a tube that is always open). Patients with a patulous Eustachian tube can be plagued by chronic ear infections. Provocative intranasal challenges of pollen, house dust mite and histamine worsen ETD. Allergic rhinitis has been shown to result in a significantly higher rate of ETD, particularly during childhood. One theory on the mechanism is that ETD in the setting of allergy may be a result of retrograde spread of edema and congestion of nasal mucosa, decreased mucociliary function (nasal mechanism of mechanically removing secretions and

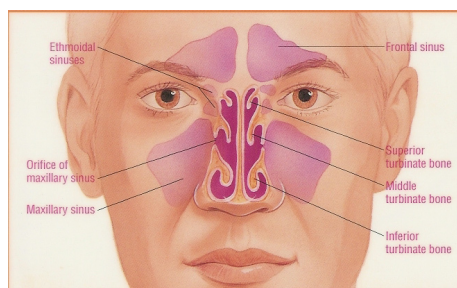
debris from the nose), or obstruction of the Eustachian tube orifice from hypersecretion by seromucous glands in the nose and nasopharynx. These symptoms can be alleviated with specific allergy therapy, including immunotherapy and elimination diets depending on the offending agent.

Otitis media with effusion

Otitis media with effusion (OME) often results from ETD or can be the result of chronic inflammation or microbial infection. The causative contribution of allergy to OME is unknown, with a broad range of attribution (0 to 95%) reported in the literature. One difficulty in determining the role of allergy is that each study uses a different way of testing for allergies and also studies different allergens. Many would agree that OME caused by allergy is most likely from ETD secondary to an allergic reaction in the proximal eustachian tube or nasopharynx. However, some studies have demonstrated the presence of histamine and other biologic mediators of inflammation in the middle ear fluid of patients with OME, suggesting that the middle ear is also a primary target of allergic reactions.

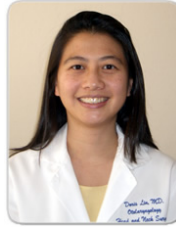
An argument against a significant role of allergy in the pathogenesis of OME is that while allergy is typically considered seasonal with regional variation, OME has its highest incidence in the winter, regardless of region. In addition, an IgE mediated reaction is brief and not typically long enough to cause significant ETD. Also, there is no clear evidence for an intranasal challenge directly producing a middle ear effusion. Although intranasal challenges have resulted in ETD, the duration of dysfunction is insufficient to result in OME. Even complete Eustachian tube obstruction produced by sectioning the tensor veli palatine muscle (one of the muscles controlling the opening of the Eustachian tube) in an animal model takes one to four weeks to result in a middle ear effusion. Intranasal provocative challenge persists for only several hours to a few days.

Counter arguments contend that winter is the time of year when dust and mold counts tend to be highest. Intranasal challenges of histamine, pollen and house dust mite have been shown to result in ETD, albeit of unclear sufficient duration to cause OME. Epidemiologic studies have shown that patients with OME have an increased prevalence of atopic conditions, such as, allergic rhinitis, eczema, and asthma. Over 50% of patients with OME have allergic rhinitis, whereas 21% of patients with allergic rhinitis have OME.



What causes tinnitus? Why do I have tinnitus? How can I make tinnitus go away?

Many patients experience “ringing” happen? Sometimes this is because to the patient and occasionally even on or near the hearing nerve. If a Eustachian tube dysfunction or



DR. DORIS LIN

or hear sounds in the ear. What causes this to of a pulsatile mass in or near the ear that is audible to your doctor. Sometimes this is due to a growth cracking or popping sound is heard, this can be from temporomandibular joint dysfunction.

However, most of the time, tinnitus, the patient and is not usually caused (75%), tinnitus is associated with

Many times, it is the tinnitus that brings a hearing loss to the patient’s attention. Usually this hearing loss is caused by noise trauma (a loud work environment, gun fire, explosions) or presbycusis, a natural decrease in hearing with increasing age. Occasionally the hearing loss is a result of diabetes, blood pressure problems, or thyroid problems. A few other causes of hearing loss include Meniere’s disease, autoimmune hearing loss, chronic ear infections, otosclerosis, and vestibular schwannoma. Sometimes temporomandibular joint disorders can be associated with tinnitus, aural fullness, pain or discomfort near the ear. Many medications cause tinnitus as a side effect (Table 1), especially aspirin containing medications. Many patients are ingesting aspirin and may not realize it as aspirin is found in many common over the counter medications (Table 2). Depression and anxiety can often exacerbate tinnitus. Sometimes temporary tinnitus can be caused by something as simple as plugged ear wax.

or sounds in the ear, is subjective, or only heard by by masses or tumors near the ear. Most of the time a hearing loss, particularly in the high frequencies.

What causes tinnitus?

A distortion in any of the systems that lead to perception of sound can cause tinnitus. This can involve anything in the ear, along the hearing nerve, or in the brain. The central nervous system is integral to our perception of sound and sometimes no abnormality in the ear or hearing nerve is found but there is still an abnormal perception of sound in the central nervous system. Some have likened this to other phantom sensations, such as those experienced after a limb amputation where a person may still experience sensations or pain from the missing limb. Auditory hallucinations, hearing music or voices are generated in the cortical structures of the brain. Rare causes of this are temporal lobe tumors or other brain masses. Often these are from psychiatric disorders or from certain drugs.

Popping or crackling sounds with Eustachian tube dysfunction are generated when the Eustachian tube is opened. The Eustachian tube connects the middle ear with the nasopharynx and helps to drain fluid and equalize pressure. This tube is usually closed but can be forced open by sneezing with your nose and mouth closed or swallowing and holding your breath. Temporomandibular joint dysfunction can cause popping or crackling sounds heard in the ear.

Why do I have tinnitus?

As mentioned above, tinnitus is most often associated with a hearing loss. Sometimes a mass or tumor is the cause of the tinnitus and/or hearing loss. An examination to investigate the source of the tinnitus should include a head and neck examination (physical examination of the ear especially) and the following:

- Audiogram (a hearing test)
- Tympanometry (to check motion of the ear drum)
- Acoustic reflexes (to test the hearing circuitry to the brain and back to the ear)

Other exams are considered on a case by case basis. If someone has imbalance or vertigo, electronystamography (ENG) is considered. If the above exams are abnormal or someone has an unexplained one sided tinnitus or hearing loss, magnetic resonance imaging (MRI) is obtained. Computed tomography (CT) scans are obtained if there is bony disease suspected. Laboratory tests and allergy testing are considered. (continued on page 4)

How can I make tinnitus go away?

Treatment of tinnitus depends on the cause. If the tinnitus is the subjective kind associated with hearing loss, removing the source of hearing loss is important. Examples are cessation of any medications known to cause tinnitus or ear protection in a noisy working environment. Treatment of ear infections or Eustachian tube dysfunction should be started. Temporomandibular joint pain can be relieved with anti-inflammatory medications or jaw immobilization (bite guard) for patients who grind their teeth at night.

To relieve the tinnitus often a hearing aid or masking device is helpful. The hearing aid helps by improving the hearing and often dampens the tinnitus. If the tinnitus is mostly at night or at a quiet time, a white noise background, music, or soothing sound (running water, ocean roar) can "mask" the tinnitus and allow you to sleep. A masking device provides the same effect and is portable. This can even be a "homemade" masker such as a portable CD player or MP3 player or a professional one obtained from an audiologist.

Other treatments to improve tinnitus have shown benefit in some patients but not all, highlighting the many different mechanisms causing tinnitus. Habituation is a protocol to help patients "get used to" their tinnitus and requires listening to sound at increasing volume over time (over 12 months). Electrical stimulation of the skin near the ear has been reported to provide relief in some patients with tinnitus. Biofeedback in conjunction with a therapist and psychotherapist often helps patients who have failed masking techniques.

Medical treatment of tinnitus can help select patients. These include antidepressants, anticonvulsants, anesthetics, or anti-anxiety medications. The mechanism of their benefit is most likely from their effect on neural pathways in the brain and nerve conduction. Tinnitus can be exacerbated by severe anxiety and depression and patients with this component should be seen by a psychiatrist as well.

Surgery is helpful in select causes of tinnitus. If a vascular mass is the cause, then removal of the mass often improves tinnitus. Tinnitus associated with a vestibular schwannoma may or may not go away with removal of the mass. Patients with otosclerosis note improvement of their tinnitus in 40% of cases following successful stapedectomy. Sometimes microvascular decompression of the hearing nerve (relieving pressure on the nerve from a nearby vessel) can help.

Conclusion

Understanding tinnitus goes a long way in being able to live with tinnitus. As more is learned about tinnitus and how it comes about, newer treatments are sure to be available in the future.

Tinnitus websites

American Tinnitus Association <http://www.ata.org/>

Action for Tinnitus Research <http://www.tinnitus.co.uk/>

American Academy of Otolaryngology website on tinnitus <http://www.entnet.org/healthinfo/hearing/tinnitus.cfm>

Table 1

Medications Associated with Tinnitus

Aminoglycoside antibiotics (many ending in mycin)
Cisplatin
Furosemide
Non-steroidal anti-inflammatory drugs
Aspirin
Quinidine
Quinine

Table 2

Aspirin-containing Compounds

Alka-Seltzer
Asper-Gum
Bufferin
Coricidin
Darvon compound
Dristan
Ecotrin
Exedrin
Fiorinal
Midol
Pepto-Bismol
Theracin
Trigesic

(pillar procedure from page 1)

6) The results for snoring are 75-82% effective for good candidates (body weight/ tongue position/ palate obstruction).

Not all patients are candidates for this procedure and alternatives include CPAP or continuous positive airway pressure delivered by a mask to the face or nasal area, oral appliances, nasal surgery, tongue and base of tongue procedures, medical management to name a few. A pre-op evaluation is essential to tailor the right therapy for your problem. In some cases, sleep studies are required and patients are encouraged to bring in copies of prior sleep studies. The Pillar procedure is another tool in our treatment of these disorders. To learn more about the new Pillar procedure, please visit [www. Restoremedical.com](http://www.Restoremedical.com).

HAPPY PILLAR PATIENTS



Welcome Julie Strickland, Our Newest Team Member



Central Carolina ENT would like to welcome Julie Strickland to our team. She is a licensed medical Aesthetician and has more than 10 years experience as a Certified Medical Assistance. Julie has successfully treated patients with a variety of skin conditions, from simple dry skin to more complex issues such as acne and pigmentation disorders. Complementing her specialty skin care, Julie provides relaxing therapeutic facials, chemical peels, and make-up applications.

Julie will also working along side our other skincare consultant, Janet Norris, to provide our patients with the finest medically supervised skin care products and treatments. Let us customize a skin care program specifically suited to your skin tone and treatment needs. Under the supervision of facial plastic surgeon, Dr. Samuel P. Davis III, the skin care department offers prescription strength skin care programs from some of the world's leading skin product manufacturers.

Obagi Nu Derm, Obagi C Rx, Physicians Complex, GloTherapeutics

We invite you to call our Sanford office at 919-774-6829 or our Apex office at 919-363-9311 to schedule a consultation with of our skin care experts. Ask about our monthly specials.

THE APEX OFFICE RIBBON CUTTING CEREMONY

Facts

- CCENT has performed 156 implants on 52 patients
- Medicare and Medicaid have approved the Pillar Procedure effective October 1, 2006

