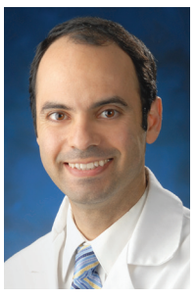


CLINICAL CONSULTATION

Symptom: Hearing His Voice in His Ear

By Hamid R. Djalilian, MD

A 77-year-old man comes in with a complaint of hearing his own voice in his right ear. The patient also says that he sounds like he is talking in a barrel, and he occasionally hears his pulse in his right ear. All these symptoms improve when he lies down.

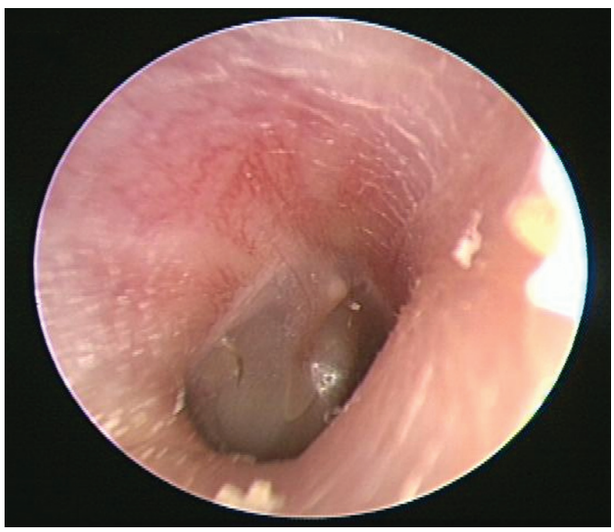
A couple of months before the symptoms started, the patient was suspected to have a nasopharyngeal mass, and he had a biopsy performed in that area.

Otherwise, he is in good health. He has not lost weight recently, nor does he perceive a change in his hearing, he said.

A picture of the patient's tympanic membrane is shown on the right.

What is your diagnosis? See p. 38.

Dr. Djalilian is the director of neurotology and skull base surgery and associate professor of otolaryngology and biomedical engineering at the University of California, Irvine.



This is the view of the patient's ear on otoscopy.

Diagnosis: Patulous Eustachian Tube

By Hamid R. Djalilian, MD

Continued from p. 36

People hear their own voice via two different mechanisms. In the first, sound exits the mouth and enters the ear canals via air conduction. In the second, vibrations of sound in the larynx and mouth vibrate the skull, leading to bone-conduction sound. Any dysfunction of either mechanism leads to patients feeling like they hear their own voice in their ear.

The finding of an improvement when the patient lies down is significant.

For example, cerumen impaction on one side can cause conductive hearing loss. The decrease in air-conduction sound causes an increased sensation of bone-conduction sound relative to the unaffected side. As a result, patients hear their own voice in the ear affected by unilateral cerumen impaction.

Patients also hear their own voice in their ear when they have conductive hearing loss from a middle ear disorder. For people with otosclerosis, their own voice sounds much louder in the affected ear, leading patients to speak more softly. This phenomenon is counterintuitive to their family members, who notice that the patient has hearing loss but speaks quietly. (When patients have sensorineural hearing loss, on the other hand, they speak more loudly.)

Superior and posterior canal dehiscence also cause conductive hearing loss and increased ability to hear via bone conduction, leading patients to hear their own voice through the vibrations of the skull. Like people with otosclerosis, these patients often have pulsatile tinnitus, and internal sounds seem louder to them.

VASCULAR AND MECHANICAL

The finding of an improvement when the patient lies down is significant. The fact that the change in position of the head affects symptomatology indicates a mechanical or vascular phenomenon.

In our patient, the problem is vascular and mechanical. Normally, the Eustachian tube is closed, only opening upon swallowing or yawning. An abnormally open Eustachian tube, termed a patulous Eustachian tube, can cause a variety of symptoms, including autophony and pulsatile tinnitus.

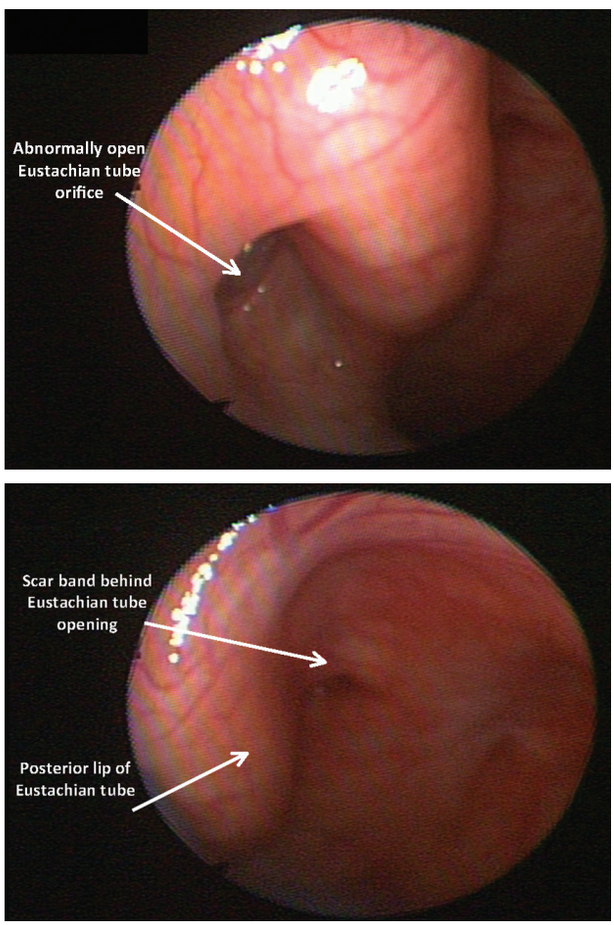
Patients with a patulous Eustachian tube generally present after a significant weight loss. The weight loss causes the fat pad around the Eustachian tube to shrink, leading to a loss of support for tube closure.

As a result, the abnormally open Eustachian tube will allow sound to get through the nasopharynx, into the Eustachian tube, and into the middle ear, causing patients to feel like they are talking in a barrel.

When the patient lies down or bends over, more venous blood gathers around the Eustachian tube, and the resultant pressure causes the Eustachian tube to close. Symptoms improve, as sound cannot go through the closed tube into the middle ear.

On examination, the tympanic membrane will show movement when the patient breathes through the nose. The patient needs to be prompted to breathe through the nose slowly and deeply.

If the patient is lying down, the movement of the tympanic membrane will not be seen because of the venous congestion around the Eustachian tube. Some clinicians have used continuous tympanometry to demonstrate the movement of the tympanic membrane in and out. The audiogram may show a very mild conductive hearing loss.



These images of the patient's nasopharynx show the abnormally open Eustachian tube orifice (top) and the scar band behind the posterior lip (bottom).

Nasopharyngoscopy must be performed to ensure a mass is not present. In this patient, an evaluation of the nasopharynx demonstrated a scar band behind the posterior lip of the Eustachian tube orifice that was keeping the Eustachian tube open.

TOPICAL TREATMENTS

Treatment of a patulous Eustachian tube is primarily medical, with topical medications used to cause congestion of the Eustachian tube orifice in the nasopharynx.

The abnormally open Eustachian tube will allow sound to get through the nasopharynx, into the Eustachian tube, and into the middle ear.

The most commonly utilized topical medication is estrogen, which is mixed with saline. An intramuscular formulation of 25 mg of conjugated estrogens in 30 mL of saline has to be made in a compounding pharmacy. The medication is used topically two to three times a day.

Since a patulous Eustachian tube is primarily seen in patients who have lost weight after chemotherapy, patients are encouraged to regain that weight to get relief.

In patients who cannot gain weight or tolerate medical therapy, surgery can be performed. The simplest procedure is tympanostomy tube placement, which helps in approximately 50 percent of patients.

The next step in management is the injection of biocompatible materials around the Eustachian tube to cause a slight closing of the tube. Some of these injectables are temporary, and some are more permanent. Usually, a temporary injectable is used first, and, if the patient has improvement, longer-lasting injectables are used.

A more permanent solution is closure of the Eustachian tube through the ear or with a cartilage graft at the nasopharyngeal orifice. Some professionals have used cautery and sutures to close the Eustachian tube.

These long-lasting procedures lead to chronic middle ear dysfunction and make tympanostomy tube placement necessary.