

## Conductive Hearing Loss

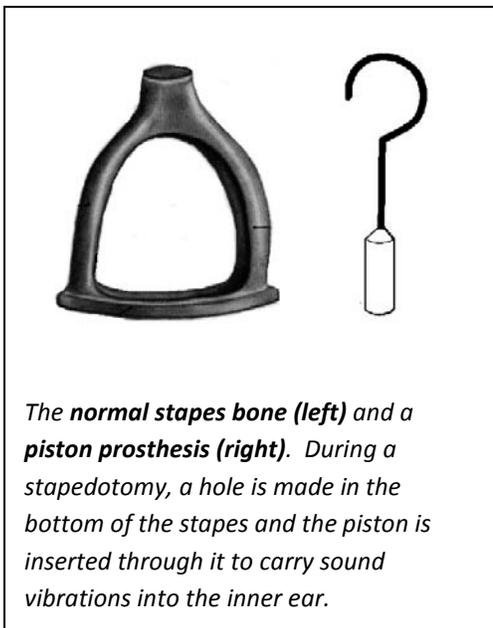
### How do we hear?

Sound vibrations are collected by the outer portion of the ear and funneled down the ear canal towards the eardrum. The sounds are then transmitted through three tiny bones in the middle ear called the ossicles. These three bones are named the malleus, incus, and stapes. The stapes carries the sound vibration into the fluids of the inner ear, called the cochlea.

If the bones of the middle ear do not carry the sound to the inner ear correctly, hearing loss results. This can happen if the bones are not connected together properly (either fused together or separated apart). One cause of this problem is a disease called otosclerosis. Also, trauma or infection can lead to problems with the middle ear bones, called ossicular chain discontinuity.

### What is otosclerosis?

Otosclerosis is the abnormal growth of bone in the ear. This can fix the stapes bone in place, preventing it from transmitting sound vibrations properly. For some people with otosclerosis, the hearing loss may become severe. The cause of otosclerosis is not fully understood, although research has shown that it tends to run in families and that white, middle-aged women are most at risk. Some research suggests a relationship between otosclerosis and the hormonal changes associated with pregnancy. While the exact cause remains unknown, there is also some evidence associating viral infections (such as measles) and otosclerosis.



### What are the symptoms of otosclerosis or ossicular chain discontinuity?

Hearing loss is the most frequent symptom. The loss may appear very gradually. Many people first notice that they cannot hear low-pitched sounds or that they can no longer hear a whisper.

In addition to hearing loss, some people may experience tinnitus. Tinnitus is a sensation of ringing, roaring, buzzing, or hissing in the ears or head that accompanies many forms of hearing loss.

### How are these conditions treated?

A hearing aid is almost always helpful and no further treatment is needed. However, in many cases surgery is also an option. In an operation called an ossicular chain reconstruction, stapedectomy, or stapedotomy, the surgeon bypasses the diseased bone with a prosthetic device that allows sound waves to be passed to the inner ear. For otosclerosis, there is about a 90-95% chance of improving the hearing in the ear. For other types of hearing loss, there is about a 50-75% chance of improving the hearing.

## **Risks of Surgery**

- Further hearing loss (rarely total) happens less than 5% of the time.
- A hole in the eardrum occurs less than 1% of the time, and will often heal by itself.
- Injury to the facial nerve that runs through the ear can cause facial paralysis. This is uncommon.
- Loss of sense of taste on the side of the tongue may occur. It is usually only a minor inconvenience for a few weeks.
- Persistent postoperative dizziness or ringing in the ear may happen, but both are quite uncommon.

## **Postoperative instructions**

- You may change the cotton ball in your ear 24 hours after surgery. You may then begin to bathe and wash your hair gently with shampoo.
- Bloody, watery, or oily discharge from the ear is normal for several weeks after surgery. You should leave a dry cotton ball in your ear to soak up the drainage.
- Do not get water in your ear until your doctor has told you that your ear is healed. You should put a cotton ball moistened with Vaseline in your ear when you bathe. You may leave a dry cotton ball in your ear, if you like.
- Do not blow your nose. The pressure may shift the prosthesis. Do not do any straining or heavy lifting (i.e. nothing heavier than a textbook) for one month after surgery.
- You should expect to have some dizziness after surgery. If you have persistent vomiting, please call.
- Everybody takes at least 1-2 days off of work or school after surgery. Many people need one week off.

## **Contact information:**

### **John Oghalai, M.D.**

Associate Professor

Otology, Neurotology, and Skull Base Surgery

Director, LPCH Children's Hearing Center at Stanford

Department of Otolaryngology - Head and Neck Surgery

Stanford University

801 Welch Road

Stanford, CA 94305-5739

Adult Clinic: (650) 723-5281

Fax (650) 725-6685

Pediatric Clinic: (650) 497-8841

Fax (650) 497-8839

[joghalai@stanford.edu](mailto:joghalai@stanford.edu)

<http://oghalailab.stanford.edu/>