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## OTOSCLEROSIS (12/05)

### What is Otosclerosis?

The term otosclerosis is derived from the Greek words for "hard" (scler-o) and "ear" (oto). It describes a condition of abnormal growth in the tiny bones of the middle ear, which leads to a fixation of the stapes bone. The stapes bone must move freely for the ear to work properly and hear well.

Hearing is a complex process. In a normal ear, sound vibrations are funneled by the outer ear into the ear canal where they hit the eardrum. These vibrations cause movement of the eardrum that transfers to the three small bones of the middle ear, the malleus (hammer), incus (anvil), and stapes (stirrup). When the stapes bone moves, it sets the inner ear fluids in motion, which, in turn, start the process to stimulate the auditory (hearing) nerve. The hearing nerve then carries sound energy to the brain, resulting in hearing of sound. When any part of this process is compromised, hearing is impaired.

### Who Gets Otosclerosis And Why?

It is estimated that ten percent of the adult Caucasian population is affected by otosclerosis. The condition is less common in people of Japanese and South American decent and is rare in African Americans. Overall, Caucasian, middle-aged women are most at risk. The hallmark symptom of otosclerosis, slowly progressing hearing loss, can begin anytime between the ages of 15 and 45, but it usually starts in the early 20's. The disease can develop in both women and men, but is particularly troublesome for pregnant women who, for unknown reasons, often experience a rapid decrease in hearing ability. Approximately 60 percent of otosclerosis cases are genetic in origin. On average, a person who has one parent with otosclerosis has a 25 percent chance of developing the disorder. If both parents have otosclerosis, the risk goes up to 50 percent.

### What Are The Symptoms?

Gradual hearing loss is the most frequent symptom of otosclerosis. Often, individuals with otosclerosis will first notice that they cannot hear low-pitched sounds or whispers. Other symptoms of the disorder can include dizziness, balance problems, or a sensation of ringing, roaring, buzzing, or hissing in the ears or head known as tinnitus.

### How Is It Diagnosed?

Because many of the symptoms typical of otosclerosis can also be caused by other medical conditions, it is important to be examined by an otolaryngologist (ear, nose and throat doctor) to eliminate other possible causes of the symptoms. After an ear exam, the otolaryngologist may order a hearing test. Based on the results of this test and the exam findings, the otolaryngologist will suggest treatment options.

### How Is It Treated?

If the hearing loss is mild, the otolaryngologist may suggest continued observation and a hearing aid to amplify the sound reaching the eardrum. Sodium fluoride has been found to slow the progression of the disease and may also be prescribed. In most cases of otosclerosis, a surgical procedure called stapedectomy is the most effective method of restoring or improving hearing.

### What Is A Stapedectomy?

A stapedectomy is an outpatient surgical procedure done under local or general anesthesia through the ear canal with an operating microscope. (No outer incisions are made.) It involves removing the immobilized stapes bone and replacing it with a prosthetic device. The prosthetic device allows the bones of the middle ear to resume movement, which stimulates fluid in the inner ear and improves or restores hearing. Modern-day stapedectomies have been performed since 1956 with a success rate of 90 percent. In rare cases (about one percent of surgeries), the procedure may worsen hearing. Otosclerosis affects both ears in eight out of ten patients. For these patients, ears are operated on one at a time; the worst hearing ear first.

### What Should I Expect After A Stapedectomy?

Most patients return home the evening after surgery and are told to lie quietly on the un-operated ear. Your doctor may prescribe oral antibiotics. Some patients experience dizziness the first few days after surgery. Taste sensation may also be altered for several weeks or months following surgery, but usually returns to normal. Following surgery, patients may be asked to refrain from nose blowing, swimming, or other activities that may get water in the operated ear. Normal activities (including air travel) are usually resumed three weeks after surgery. Since packing is placed in the ear at the time of surgery, hearing improvement will not be noticed until it is removed or is dissolved after surgery.

Notify your otolaryngologist immediately if any of the following occurs:

- \* Sudden hearing loss
- \* Intense pain
- \* Prolonged or intense dizziness
- \* Any new symptom related to the operated ear

**Informed consent**

Complications from stapedectomy are infrequent and seem to be related to the presence of uncommon variations in anatomy. The incidence of *total hearing loss* reported by most experienced surgeons is about one in 200 cases. *Facial nerve paralysis* is extremely rare for stapedectomy. *Loss of taste* on the side of the tongue is common postoperative complaint that usually resolves within two months. Some dizziness after surgery is normal and may last for a few days or weeks, but *disabling dizziness* may indicate injury to the inner ear, and the surgeon should be informed. *Tinnitus* (ringing or buzzing in the ear) that was present commonly persists, although following surgery it may disappear. On the other hand, tinnitus may develop as a result of surgery. The incidence is not known but it is uncommon. Hearing loss that does not improve or become worse as a result of surgery occurs in about 2% of cases and is often due to a condition such as a congenital anomaly of the facial nerve, incus, round window, or massive obliteration of the stapes footplate causing surgery to be incomplete or impossible.

A hearing aid may be a reasonable alternative to surgery and the options between surgery or a hearing aid should be considered. *Stapedectomy for otosclerosis is an elective procedure.*

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Patient Signature

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Date

\_\_\_\_\_  
Surgeon Signature

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Date