



Stapedectomy

WHAT IS STAPEDECTOMY?

This is an operation to remove and replace the stapes, one of the three tiny bones (ossicles) of the middle ear. The purpose is to restore the progressive deafness caused by the disease otosclerosis. An incision is made around the eardrum which is elevated to reveal the middle ear cavity. The outer part of the stapes bone is removed, a hole is drilled through the "footplate" of the bone, and a small steel piston, or prosthesis is inserted. This re-establishes the so-called ossicular chain which transmits sound waves to the inner ear. The operation, which is usually performed under general anesthesia, requires a short visit to the hospital.

WHY IS PERFORMED?

The middle ear cavity, enclosed on one side by the eardrum (tympanic membrane) and on the other by the bony wall of the inner ear, houses the sound conduction mechanism called the ossicular chain. This is composed of three tiny bones, or ossicles, suspended from the roof of the middle ear cavity by ligaments and muscles. The Latin names of these three little bones – malleus, meaning "hammer", incus, or "anvil", and stapes or "stirrup" – hint that their combine function is transferring vibrations received at the eardrum to the inner ear. The footplate of the stapes occupies the oval window in the bony casing of the inner ear, and it is at this point that the inherited condition known as otosclerosis interferes with the transmission of sound.

There is a gradual overgrowth of bone around the footplate, causing the stapes bone to become frozen and unable to vibrate. The disease – twice as common in women – is gradual in onset, causing progressive hearing loss. The actual handicap may become apparent anywhere between the ages of 15 and 45. Usually both ears are affected, although not necessarily to the same degree. Stapedectomy is performed to replace the immobile "stirrup" with an artificial piston. It is usual to operate only on one ear at a time, starting with the poorer one.

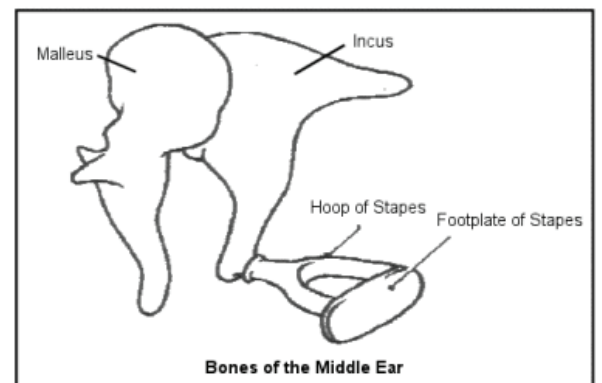
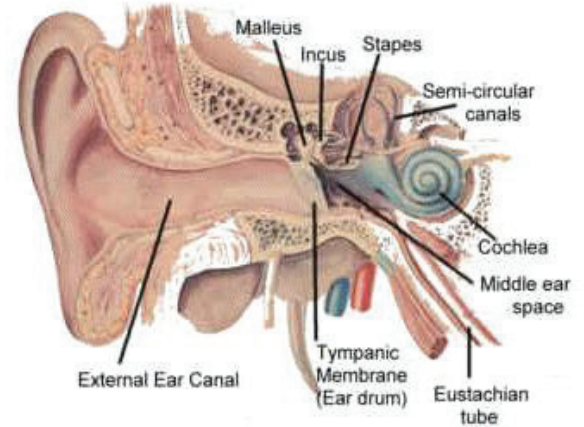
RISKS AND BENEFITS

In the vast majority of cases, stapedectomy is effective in relieving so-called conductive deafness. Occasionally the improvement in hearing is disappointing, and rarely the hearing loss is more marked after surgery. The risks of the procedure are very low. They can however included the loss of hearing; perforation of the eardrum; middle ear infection; persistent dizziness, and damage to the nerve supply to the tongue, resulting either in distortion or loss of taste. There is an extremely small risk of facial palsy, or change in the ability to move on side of the face.

THE PROCEDURE: PREPARING FOR SURGERY

There is no special preparation for stapedectomy although you will be asked to come to the office come to the office the previous day. You will have a physical exam and all last-minute questions will be answered. You will be warned that full recovery of hearing may not take place for some weeks after surgery.

On the day of surgery, you will enter the hospital or surgery center early in the morning. Dressed in a hospital gown, you will be given premedication to relax you an hour or so before the procedure is due to begin. An intravenous line will be



placed to give you more medication in the operating room. In the operating room, the surgeon works with you lying on your back with your head turned to one side and resting on a supportive ring. He or she uses a special operating microscope to illuminate and magnify the delicate structures of the middle ear. The side of your face is cleaned with an antiseptic solution and sterile sheets cover all but a small area around the ear. An incision is made deep in the ear canal, around the eardrum, which is now turned up on itself like a folded pancake. Fine instruments are used usually to remove the hoop of the stapes, leaving the footplate in place. A fine hole is now poked or drilled through the footplate, sometimes using a laser, to take the piston which is designed to link to the incus bone. The eardrum is returned to its normal position. Finally some packing is placed against the eardrum to hold it in place, followed by a cotton ball.

AFTER SURGERY

You will be returned to your room where you should rest on your side with the operated ear uppermost. You will be reminded to move slowly and to ask for nursing help before getting out of bed the first time. Sudden movements of the head should be avoided as these may make you feel dizzy. Mild painkillers will be available as necessary as well as drugs to counteract any nausea or vertigo. Do not be alarmed if your hearing deteriorates a few hours after surgery. This is due to blood collecting in the middle ear and the external ear canal and it will improve as the blood clot dries and disperses in a week or so. You will be warned not to blow your nose and to open your mouth to sneeze at least a week while the incision is healing. Also, you should avoid getting water in the ear. With good progress, you can look forward to going home in a few hours as soon as you feel settled enough to move about without help.

GOING HOME

You will be shown how to change the ear cotton as necessary and given an appointment for a postoperative checkup with your surgeon. Expect the cotton to become saturated with blood from time to time. You should replace it with fresh cotton whenever necessary. Pain is usually mild and can be relieved with Tylenol. You may be prescribed ear drops to soften the packing. When using the drops, lean your head or lie with the ear up for at least twenty minutes afterwards. Do not replace the cotton until after this time so that the cotton does not soak up the medication.

You should plan to rest at home, avoiding sudden movements and all exertion for at least a week. Mild dizziness may persist for a few days. You will be advised to avoid swimming or any activity causing pressure changes in the ear (such as flying) for several weeks after surgery. Otherwise you should be able to resume all normal activities, including exercise, within about two weeks.

POSSIBLE COMPLICATIONS

The most common complication is vertigo (dizziness) which normally clears in a short time and can be relieved with drugs. If it is persistent and disabling, further surgery may be necessary. Rarely there is immediate or late hearing loss months or even years after successful stapedectomy. If the loss is due to a dislocation of the piston, it can usually be repaired by revision surgery. The facial nerve runs through the middle ear just above the stapes and rarely may suffer some injury or swelling, leading to weakness in facial muscles on that side. This is a rare complication which usually resolves spontaneously.

LONG RANGE PLANNING

Otosclerosis is a progressive disease which usually affects both ears. The principle loss is due to fixation of the stapes as described. There may be a variable component of nerve damage or hearing loss in the inner ear. Such loss cannot be repaired by surgery and if severe enough could eventually require a hearing aid. Most patients decide to have surgery in the more severely affected ear as soon as the loss is severe enough to cause a handicap in normal conversation. The second ear can be repaired any time after the improvement in the first ear is considered stable, usually after six months. As with the first ear, the main criterion for deciding on surgery for the second ear is the degree of perceived handicap.