

OTOSCLEROSIS

Otosclerosis is the most common cause of conductive hearing loss in adults, a disease of the inner ear bone. Otosclerosis is a common cause of hearing impairment and it is hereditary, although the hearing impairment may skip a generation or two.

FUNCTION OF THE NORMAL EAR

The ear is divided into three parts: the outer ear, the middle ear and the inner ear. The outer ear collects sound, the middle ear mechanism transforms the sound, and the inner ear receives and transmits the sound to the brain.

Sound causes the eardrum membrane to vibrate. These movements are transmitted across the middle ear to the inner fluids by three small bones (hammer or malleus, anvil or incus, and stirrup or stapes) changing sound vibrations in air into fluid waves in the inner ear. The fluid waves stimulate delicate nerve endings in the cochlea. The nerve transmits small electrical impulses to the brain where they are interpreted as understandable sound.

TYPES OF HEARING IMPAIRMENT

If there is some difficulty in the outer ear or middle ear, a conductive hearing impairment occurs. If the trouble lies in the inner ear, a sensorineural or nerve hearing impairment occurs. When there is difficulty in both the middle and the inner ear, a mixed or combined impairment exists. Mixed impairments are common in otosclerosis.

Usually, otosclerosis affects the stapes or stirrup bone, the final link in the middle ear transformer chain. Anything that interferes with its motion results in a conductive hearing impairment. This type of impairment is called *stapedial otosclerosis* and is usually correctable by surgery.

Otosclerosis can also spread to the inner ear (*cochlear otosclerosis*) and cause sensorineural hearing loss. The amount of hearing loss due to involvement of the stapes and the degree of nerve impairment present can be determined only by careful hearing tests.

TREATMENT OF OTOSCLEROSIS

Medical

There is no local treatment to the ear itself or any medication that will improve the hearing in persons with otosclerosis. In some cases medication may be helpful in preventing further loss of hearing.

Surgical

The stapes operation (stapedectomy) is recommended for patients with otosclerosis. This operation is performed under local anesthesia and requires a short period of convalescence. Over 90 percent of these operations are successful in restoring the hearing permanently.

THE STAPES OPERATION

Using a surgical microscope, the fixed stapes is partially or completely removed and a wire-type prosthesis is inserted to replace the stapes.

The stapes prosthesis allows sound vibrations to again pass from the eardrum membrane to the inner ear fluids. The hearing improvement obtained is usually permanent.

The person having stapes surgery may return to work in five to seven days depending upon occupational requirements.

One should not plan to drive a car home from the hospital. Air travel is permissible 48 hours following surgery.

HEARING IMPROVEMENT FOLLOWING STAPES SURGERY

Hearing improvement may or may not be noticeable right after surgery. If the hearing improves at the time of surgery, it usually regresses in a few hours due to swelling and packing material (ointment) in the ear. Improvement in hearing may be apparent within three weeks of surgery. Maximum hearing, however, is obtained in approximately six weeks.

The degree of hearing improvement depends on how the ear heals. In the majority of patients, the ear heals perfectly and hearing improvement is as anticipated. In some, the hearing improvement is only partial or temporary. In these cases the ear usually may be re-operated on with a good chance of success.

In less than 1 percent, complications in the healing process may be so great that there is severe loss of hearing in the operated ear to the extent that one may not be able to benefit from a hearing aid. For this reason, the poorer hearing ear is usually selected for surgery.

When further loss of hearing occurs in the operated ear, head noise may be more pronounced and unsteadiness may persist for some time.

Tinnitus

Most patients with otosclerosis notice tinnitus (head noise) to some degree. The amount of tinnitus is not necessarily related to the degree or type of hearing impairment. Following successful stapedectomy, tinnitus is often decreased in proportion to the hearing improvement.

RISKS AND COMPLICATIONS OF STAPEDECTOMY

Dizziness

Moderate dizziness is normal for a few hours following stapedectomy and in some cases may result in nausea and vomiting. Some unsteadiness is common during the first three to four postoperative days; dizziness on sudden head motion may persist for a few weeks. Rarely is dizziness prolonged.

Taste Disturbance and Mouth Dryness

Taste disturbance and mouth dryness is not uncommon for a few weeks following surgery. In 5 percent of patients, this disturbance may be prolonged.

Loss of Hearing

Further hearing loss develops in 2 percent of the patients due to some complications in the healing process. In 1 percent, this hearing loss is severe and may prevent the use of a hearing aid in the operated ear.

Tinnitus

Should the hearing be worse following stapedectomy, an uncommon occurrence, tinnitus (head noises) likewise may be more pronounced.

Eardrum Perforation

A perforation (hole) in the eardrum membrane is an unusual complication. It develops in less than 1 percent and usually is due to an infection. Fortunately, should this complication occur, the membrane may heal spontaneously. If the healing does not occur, surgical repair (myringoplasty) may be required.

Weakness of the Face

A rare complication of stapedectomy is weakness of the face. This may occur as the result of abnormality or swelling of the facial nerve, which runs through the ear. Most often this occurs 2 weeks after surgery and recovers to normal within 3 to 4 weeks.

HEARING AIDS

If you are a suitable candidate for surgery, you are also suitable to benefit from a properly fitted hearing aid. If you have otosclerosis and are not suitable for stapes surgery, you still may benefit from a properly fitted aid.

Fortunately, patients with otosclerosis very seldom go “totally deaf” but will be able to hear with an electronic aid. The older the patient, the less the tendency for further hearing loss due to the otosclerotic process.

It is not the intention of this brochure to provide specific medical advice, but rather to provide the reader with information to better understand their disorder and their diagnosis. Specific medical advice will be provided by the doctor, and this brochure does not replace consultation with a qualified physician for diagnosis and answers to your personal medical condition.