

What is a cochlear implant?

A cochlear implant is an electronic device that provides sound perception to patients with severe to profound sensorineural (nerve) hearing loss. Cochlear implants help in 3 primary ways: aid in lipreading, in perceiving environmental sounds, and in monitoring one's own voice. The cochlear implant is surgically implanted and its electrode array is inserted into the hearing portion of the inner ear called the cochlea. There is also an external device that looks similar to a hearing aid that has a microphone and sound processor to collect sounds and convert them radio-wave signals. The signals travel through the skin to an antenna and receiver implanted under the skin, and the signals are then used to activate the electrode residing inside the cochlea. This, in turn, stimulates the auditory nerve with electric current and produces the perception of sound. The sound processor is individually programmed by an audiologist to best meet the needs of each patient.

Who benefits from a cochlear implant?

Patients with severe to profound sensorineural hearing loss in one or both ears may benefit from a cochlear implant. In patients with sensorineural (nerve) hearing loss, the problem is usually due to hair cell damage within the cochlea. The auditory nerve is typically still functional. A cochlear implant sends electrical signals to directly stimulate the auditory nerve by bypassing the inner ear, so patients may perceive sound with the implant despite damage to the inner ear.

Can every patient with severe to profound sensorineural hearing loss benefit from a cochlear implant?

Unfortunately, not everyone can benefit from using a cochlear implant. There are some types of sensorineural hearing loss that damage the auditory nerve, and in these cases there would be nothing that the implant can stimulate. In other types of hearing loss, there can be structural damage to the inner ear that can prevent a surgical implantation. Sometimes, it may be difficult to predict how well the implant will work on the patient. Studies have shown that duration of hearing loss and age at which the hearing loss occurred can influence the performance of the implant.

How do I know if I am a candidate?

Candidacy for cochlear implantation is determined by an otologist (ear doctor) and audiologist. The otologist will obtain a history, perform an exam, and order appropriate testing. The audiologist will evaluate your hearing by performing special hearing tests and also determine the appropriateness of amplification or hearing aids.

What is involved in having a cochlear implant operation?

Cochlear implantation surgery is performed under general anesthesia and takes about 2 hours. An incision is made behind the ear and with the aid of an operating microscope, the surgeon will

drill a portion of the bone behind the ear called the mastoid bone. A small opening is created into the cochlea, and the electrode array is threaded into the cochlea while the other implanted end is secured on the skull. This is an outpatient surgery and patients will go home the same day of surgery.

Will I hear better immediately after surgery?

Patients will not have any hearing in the operated ear immediately after surgery. The device will get activated approximately 1-3 weeks after surgery by the audiologist, which is when the device will begin working.

What does a cochlear implant sound like?

The sound generated by a cochlear implant is an electronic sound as opposed to acoustic sound that a normal ear would hear. The following YouTube clip can help us get an idea of what a cochlear implant can sound like. In the video clip, the cochlear implant recipient has normal hearing in one ear and a cochlear implant in her other ear. She tries to pick a sound clip that most closely resembles what her implant sounds like.

<https://www.youtube.com/watch?v=1dhTWVMcpC4>

For more information about cochlear implants, please schedule a consultation with Atlanta Otology.