Information for the Cochlear Implant candidate

The most common type of hearing loss that leads to a patient becoming a cochlear implant candidate arises in the specialized sensory cells of the human inner ear (the cochlear). This organ of hearing is encased in the bone just behind your eardrum and is about 1/3 inch wide. The cochlea is like a receiver, and converts sound energy to electricity. This electrical signal is then conveyed to the brain through a wire (the auditory nerve/8th cranial nerve) and after traveling a considerable distance is processed in multiple areas of the brain connected to speech, memory, emotion, problem solving, balance, and even vision.

A cochlear implant is designed to improve human hearing at the first step in the chain – the cochlea. It electrically reactivates (or in some cases bypasses) the damaged cells in the cochlea and stimulates your auditory nerve directly. The cochlear implant does not apply any signals to your brain and in fact is nowhere near the brain or brainstem. The device consists of an internal implanted portion (the receiver stimulator – fully implanted and invisible to you) and an external sound processor (worn on the ear – can be removed). The internal device is inserted into the cochlea through a very small hole approximately 1-2 millimeters wide.

The sound that you hear with a cochlear implant is electrical and thus will sound very different than the type of sound one grows accustomed to with hearing aids. Hearing outcomes with a cochlear implant are dependent on a number of factors including patient age, overall health, the mechanism/type of hearing loss, the possible presence of congenital hearing loss, duration of deafness, and time spent using a hearing aid, among others. Your surgeon will counsel you on your unique case and the anticipated outcome you may achieve with a cochlear implant. These hearing outcomes are highly unique to each individual patient.

In general, most patients will regain good speech understanding, be able to use a telephone, and be able to converse with others (to a certain degree) in a noisy environment. Other patients will only achieve awareness of environmental sounds and an improvement in sound-assisted lip reading – both of which may be large improvements from the pre-implant state of being. When the device is turned on, your brain has to adapt to the new sound of the device to which it is very unaccustomed. This can occur quickly in some patients but may take 6-12 months in others. Most patients will NOT understand words and speech in their early time using an implant but will rapidly improve with time and practice. The single most important predictor of success is constant use of the device! Your audiology team will also be involved heavily in calibrating and programming your implant to uniquely meet your specific hearing needs. For this reason, no two implants are exactly alike.