Cochlear Implantation

Overview
A cochlear implant (CI) is an option for a person with severe to profound hearing loss when hearing aids provide limited or no benefit. It is an electronic device that is surgically implanted under the skin in the temporal bone behind the ear. An electrode array extending from this is inserted into the cochlea (inner ear). Externally worn equipment is necessary to pick up sound and convert it into electrical information to be sent to the implanted receiver/stimulator. This system bypasses the normal hearing process and directly stimulates the auditory nerve.

The Food and Drug Administration (FDA) approved cochlear implants for adults in 1984 and children in 1990. They are covered by most insurance, including Medicare and Medicaid. More than 100,000 people worldwide have been implanted. A cochlear implant does not “restore” or create normal hearing. It is a tool that allows for the auditory information of speech and other sounds to be sent to and processed by the brain. Learning to use a cochlear implant is a very active process. It requires a lot of commitment and effort by the recipient and their family.

Making the decision for cochlear implantation
The decision to implant is made after comprehensive evaluation and consideration of the candidate by our cochlear implant team. Emphasis is placed on counseling and educating the candidate and their family about the realities of living with a cochlear implant and maintaining it. The team consists of the surgeon, audiologists, speech and auditory therapists, neuropsychologists, geneticists, a social worker, a financial counselor, and for children, a pediatric developmental specialist.

Cochlear implant technology
There are three cochlear implant companies that have devices approved by the FDA for implantation in the United States: Cochlear Americas, Advanced Bionics, and Med El. All cochlear implant devices have internal parts (surgically placed) and externally worn components:
• A microphone to catch auditory information (sound).
• A speech processor to code auditory information into electrical impulses that are sent to the implanted components.
• A headpiece or “coil” worn behind the ear, held in place by a magnet over the internal receiver. It sends the coded electrical signal across the skin.
• An internal receiver/stimulator which receives the coded signal and sends this to the electrode array in the cochlea to directly stimulate the auditory or hearing nerve which in turn, sends the coded information to the brain for processing.

Cochlear implant surgery
The surgery can last from two to three hours. It is usually done on an outpatient basis and the recipient is able to go home within a few hours after surgery. Some people stay one night in the hospital. Normal activities can be resumed within one week. The healing process can take up to three to four weeks.

Many people desire bilateral cochlear implants (one for each ear). Sometimes both are placed in a single operation, but often the second is placed 3 or more months after the first one is placed. This offers the opportunity to see how the recipient responds to the cochlear implant before committing to another one.

Risks of surgery
Although cochlear implantation is almost always safe, complications are possible, just as with any surgery:
• The device is electronic and thus can break or malfunction and require replacement.
• Electrode or device movement can occur.
• Injury to the facial nerve that runs through the ear can cause facial paralysis. This is extremely uncommon.
• Loss of sense of taste may occur. This typically goes away in a few weeks.
• Dizziness or ringing in the ear are uncommon, but can occur.
• Meningitis can occur any time after cochlear implantation. This is particularly relevant for patients with inner ear malformations because they are at higher risk. Prior to surgery, you are required to receive certain injections to help reduce risk of Meningitis.
• An additional consideration is learning to interpret the sounds created by an implant. This process takes time and practice. Speech-language pathologists, teachers of the hard of hearing, or educational audiologists are the professionals frequently involved in this learning process. Family involvement is paramount. Not everyone performs at the same level with a cochlear implant. Prior to implantation, all of these factors need to be discussed and understood.

Postoperative Instructions
• If you were given a head bandage, make sure it is not squeezing your head too tight. You should be able to slide a finger underneath it. The bandage can be removed 24 hours after surgery.
• You will have an incision behind the ear covered either with small tapes or skin glue. Please keep the area dry for 48 hours after surgery. Thereafter, you may bathe and wash the hair and incision gently with shampoo. Dry the area completely with a towel afterwards.
• Some drainage from the incision, redness, or mild swelling is normal. Also, swelling around the eye, particularly in the morning, is common and not concerning. If, however, you note severe redness, dramatic swelling around the incision, or any surgical wound exposure, please notify our office immediately.
• You will be given a prescription for an antibiotic. Please follow directions given at that time.
• You will be given a prescription for pain medication. Please use as needed. A common side effect is constipation. Stay hydrated, eat high-fiber foods, and you may purchase Colace stool softener over the counter if needed. You may begin to decrease the frequency of doses as your pain decreases. You may then switch regular Tylenol according to the appropriate dosing on the bottle, not to exceed 3,000 mg daily from all sources.
• You may resume a regular diet and other scheduled medications after discharge.
• Avoid heavy lifting, blowing your nose, bending over, or “popping” your ear for four weeks.
• Sex is ok after surgery, but for the first month, your partner should take the active role.
• Otherwise, you may resume regular activity within a few days.
• If you have any change in activity level, are vomiting profusely, have a stiff neck, or have fevers (greater than 101.5°F), please notify our office immediately.
• Call the clinic for a post-operative wound check appointment in 1-2 weeks.
• Everybody takes at least 1-2 days off of school or work after surgery. Many people need one week off.

Contact information

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