Cochlear Implants
Navigating a Forest of Information...One Tree at a Time

http://clerccenter2.gallaudet.edu/KidsWorldDeafNet/e-docs/CI/index.html
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Surgical Considerations

Surgery for a cochlear implant is usually outpatient, is completed under general anesthesia, and lasts about three hours. Two parts of the implant are inserted during surgery: the FM receiver and the electrodes (see “Components of the Device” under What is a Cochlear Implant?). The FM receiver, which holds a magnet that attaches to external components of the implant, is set into the mastoid bone. The electrode array is inserted into the cochlea.

During Surgery

- The hair around the incision is shaved.
- A post-auricular (behind the ear) incision is made.
- A small depression is created in the mastoid bone to hold the receiver so that it is flush with the skull.
- The surgeon drills through the mastoid bone to the inner ear and the electrode array is then inserted into the cochlea.
- The receiver is secured to the skull and the incision is closed with stitches.

After Surgery

- The stitches are removed about two weeks after surgery.
- The patient returns to school or work as soon as he or she feels well enough to do so, usually within a week of surgery.
- The implant is activated four to six weeks after implantation, allowing enough time for the incision to heal properly.

Associated Risks

- The greatest risks are those related to the general anesthesia.
- As the surgery is performed in the vicinity of the nerve that moves the face, there is the rare possibility that temporary or permanent facial paralysis may occur.
- The surgical site could possibly become infected, requiring removal of the device.
• There may be pain at the wound following surgery—this is typically temporary.

• There is a slight risk of taste disturbances, such as having a metallic taste.

• Residual hearing in the ear to be implanted will most likely be lost (although with improvements in the technology and surgical procedures, this is not always the case).

• Following surgery, dizziness is sometimes noted.

**Note: Possible Link Between Cochlear Implants and Meningitis**

On July 24, 2002, the FDA issued a Public Health notification highlighting the possible association between cochlear implants and subsequent bacterial meningitis. While the FDA announcement discusses the possible association between implants and meningitis, it also explains that the implant has not been proven to be the cause of the meningitis in the cases noted. Related to the possible risk of meningitis, the following should be taken into consideration:

  • any surgery on the inner ear can increase the risk of infectious diseases like meningitis,
  • some deaf individuals may have congenital abnormalities of the inner ear that make them more prone to meningitis with or without an implant, and
  • some individuals who are deaf from meningitis may be at an increased risk for subsequent episodes of meningitis in comparison to the general population.

There were possible reported associations between meningitis and persons with cochlear implants from both the Cochlear Corporation and Advanced Bionics. It was only with Advanced Bionics that the design of an "electrode positioner" in the internal component of the Clarion CII implant was considered as a possible predisposing factor to meningitis. When this possible association was suspected, Advanced Bionics quickly and voluntarily removed their Clarion CII implant from the market while the necessary modifications were made to manufacture and distribute the CII without the positioner. The modified system is now available.

As stated on the Advanced Bionics Web site, a significant proportion of the reported meningitis cases with the CII implant (with the positioner) involved two centers in Europe. Increased incidence in Europe may possibly be due to lower vaccination rates there. The full report, *Cochlear Implant Recipients May Be At Greater Risk For Meningitis*, can be found at: [http://www.fda.gov/cdrh/safety/cochlear.html](http://www.fda.gov/cdrh/safety/cochlear.html).

(See also “What are the surgical risks?” and “What about the possible relationship between cochlear implants and the risk of meningitis?” in **Considerations in the Implantation Process.**)