



Deaf children regain hearing in war-torn Banja Luka

Children with impaired hearing in Banja Luka, Bosnia-Herzegovina, are now getting their hearing back thanks to cochlear implants sponsored by Swedish aid. A school for the deaf now has a sound environment that can help to develop the children's language and their ability to communicate.

After the cessation of hostilities in Bosnia ten years ago, the Medevac – Medical Evacuation Program – project was started. This is directed at war-torn countries with the aim of evacuating injured people to locations where medical requirements can be addressed.

Children with serious hearing impairments used to be evacuated to Sweden for specialist care but, successively, Swedish doctors have instead been travelling to Bosnia-Herzegovina in order both to operate and to train local surgeons and audiologists. The aim is for the ear clinics themselves to be able to carry out surgery and work the electronic equipment involved in a cochlear system (see fact box). The programme of help for deaf children is financed by the Swedish government and is led by the ear clinic at the University Hospital of Linköping, which has also built up centres for cochlear implantation in both Sarajevo and Banja Luka. In addition, there is a school for the deaf in Banja Luka where children with seriously impaired hearing can improve their ability to communicate. A cochlear child can, however, never achieve normal hearing, and is therefore dependent on a good sound environment. The noise at the school for the deaf previously spoiled the children's ability to listen and learn language skills.

"The acoustics in the school made no difference when the children were really deaf. But after the children started hearing with the help of cochlear implants, the situation changed totally," says ear surgeon Henrik Harder of the ear clinic in Linköping.



In order to understand what sound is and to develop a spoken language, the children need good room acoustics. This problem too has now been solved. A 600 square metre, comprehensive system with sound absorbent ceilings and walls has been donated by Ecophon in Hyllinge outside Helsingborg.

"This makes a huge difference, not only for the children but also for the teachers," says Joakim Blomgren, audiological engineer at the ear clinic in Linköping, who has directed the measures for acoustic improvements at the school for the deaf in Banja Luka.

"It is fantastic to witness the children's sudden ability to hear, when they at the same time gain a much improved quality of life."

The boys, who have been deaf since birth, now have cochlear implants and are learning to communicate using hearing and speech.

This is how cochlear implants work

A cochlear implant is a medical/technical aid – a hearing aid that helps children who are deaf or have serious hearing impairments. Implants such as these have been made for about twenty years and the technology is continually being refined.

1. Sound is picked up by the microphone on the speech processor and is converted into coded pulses.
2. These pulses are sent via a wire to the transmitter coil that is hidden under the hair behind the ear.
3. The transmitter coil transmits the coded signal through the skin to the implant's receiver. The transmitter coil also sends the energy required to operate the electronics in the implant.
4. The receiver reads the signal and sends a pattern of small pulses in a conductor to the electrodes that are inserted in the cochlea in the inner ear.
5. Each pair of electrodes emits electrical pulses that stimulate the ganglia cells and auditory nerve, which in turn send impulses to the brain. The brain's auditory area reacts to these impulses and interprets them as sound.

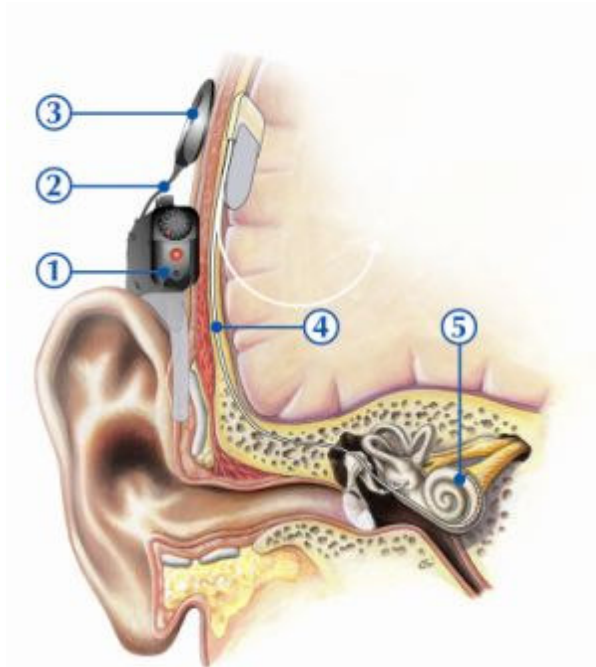


Illustration: Möllerström Medical AB

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