

# Implants can help deaf people hear again

April 25 2016, by Elin Bäckström

---



Elin Bäckström A new thesis shows that the long-term deaf can have good hearing outcomes with cochlear implants.

Cochlear implants should be an alternative for patients with long-term deafness as well. This was found in a new study at Uppsala University. Previously, patients with an extended deafness duration were thought to derive limited benefit from cochlear implants.

'We have looked at people who were deaf for at least 20 years before having [cochlear implants](#). Previously, long-term deafness was considered a reason to forego cochlear implants, as the auditory nerve atrophies from lack of use. But now it has been found that the atrophy is slower

than previously thought, and therefore, these [patients](#) can have good results from the implant as well,' says Karin Lundin, auditory engineer at the Department of Surgical Sciences at Uppsala University.

The insertion of cochlear implants, CIs, is a routine operation today, with over 450 000 patients having had the surgery globally. New patient groups are continually included for hearing rehabilitation with cochlear implants, such as the long-term deaf, does with deafness related to high frequencies, or tinnitus sufferers.

In her thesis, Karin Lundin has examined and described the clinical results of patients who have had the surgery at the Uppsala University Hospital. She has analysed all patients who have had cochlear implants surgically inserted in Uppsala between 2002 and 2013, and who have been deaf for more than 20 years: how have these patients fared?

The study shows that most of the patients are well served by the implant, and that it helps them understand spoken language. The duration of deafness and the age at which the patient became deaf affects the result. Patients who had been deaf for a long time and previously could hear for a short time had worse hearing outcomes than those who had been deaf for a short amount of time and who had been able to hear for many years previously.

In order for a cochlear implant to function, an operational cochlear nerve is required. In the surgeries examined in the study, the measuring method eABR was used. The method was evaluated in the thesis.

'It is a good method for establishing when a cochlear implant will not work. In those cases, implantation can be foregone, saving both time and resources for the patient and healthcare provider. In some cases, brainstem implants can be used instead.'

Auditory brainstem implants (ABIs) is another, much rarer type of implant. Around 1200 people all over the world have had ABIs implanted. Between 1993 and 2013, 24 patients, 20 adults and 4 children, received ABI surgeries at the Uppsala University Hospital, the only hospital in Sweden that performs this type of surgery. The largest patient group with ABIs are adults with Neurofibromatosis type 2 (NF2), but in recent years, both children and adults with deformed or ossified cochleae or no auditory nerves have commonly received the implant. These new groups of patients with implants place greater demands on both examination before implantation and the process of rehabilitation afterwards.

ABIs are used when patients lack a functioning auditory nerve. The efficiency of the implant is sometimes disputed, as it is expensive and difficult to produce any strong measurements of hearing. It generally results in the patient perceiving environmental sounds and such, but not speech. In her thesis, Karin Lundin shows that the surgery still can be important.

'These patients are completely dependent on what little hearing the ABI implant can confer to them. Many of them have initially had normal hearing, and many have felt anxious of the prospect of full deafness, particularly since visual acuity can also be affected by the condition NF2. They describe it in terms of the implant providing them with a sense of safety, belonging, and participation in the outside world. Hearing is so much more than just speech recognition, a fact often lost on those of us with normal hearing,' Karin Lundin says.

The thesis shows that no severe complications were noted, either from the surgery itself or the stimuli generated by the implant. The ABI implant is generally used to perceive environmental sounds and as support for lip reading. All patients who used the implant full-time reported it making it easier to understand speech while the implant was

switched on. All children except one used their implants to good effect. It seems to take a long time for these patients to learn how to hear using their ABI. The patients felt that the hearing enabled by the ABI implant was of great importance to them, despite its limitations.

'NF2 patients are already ill and mainly have surgery to save their lives. The implant is sort of 'thrown into the bargain' and may not top the list of the patient's priorities initially, but this can change over time. ABI should be an alternative both for patients with NF2 and for patients where a cochlear implant is impossible, as in cases of cochlear deformities or the lack of audial nerves,' says Karin Lundin.

**More information:** [Experiences from Cochlear Implantation and Auditory Brainstem Implantation in Adults and Children: Electrophysiological Measurements, Hearing Outcomes and Patient Satisfaction](#)

Provided by Uppsala University

Citation: Implants can help deaf people hear again (2016, April 25) retrieved 24 April 2024 from <https://medicalxpress.com/news/2016-04-implants-deaf-people.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------