

The gift of sound

Cochlear implant allows toddler to hear—and learn to speak

When 18-month-old Alex reacted to an airplane flying overhead,

his mom Lisa was overjoyed. She was expressing more than the usual motherly pride, because shortly after he was born, Alex was diagnosed with profound hearing loss in both ears.

“He failed the newborn screening test, so we went for more tests a month later,” says Lisa. Hearing aids didn’t work well enough to help Alex, so Lisa, her husband Brian and their son’s doctor, Chris Miyamoto, M.D., a pediatric otolaryngologist with the Ear, Nose and Throat Center at Peyton Manning Children’s Hospital at St. Vincent, decided that the best option was a cochlear implant.

A surgical solution

The implant, which was approved for children in the United States in 1990, consists of a receiver-stimulator and electrode that are placed under the scalp while the child is under general anesthesia. The doctor makes an incision behind the ear to expose the mastoid bone,

which he then drills through. The implant is threaded through this small hole. A microphone/speech processor and transmitting coil are then placed on the surface of the head to send signals to the receiver under the skin.

The size of the device isn’t an issue as the cochlea is adult-sized at birth. However, Alex had a slight malformation of his inner ear that made the surgery a little more difficult, says Dr. Miyamoto, who’s been performing cochlear implants for eight years.

The implants are very advanced. Each one can have four programs installed to be used in different settings (at home versus a noisy coffee shop, for example) that allow the user to pick up sounds as effectively as possible. In Alex’s case, his parents returned to the hospital many times for four different speech-coding programs to find one that gave Alex the best sound distinction.

Implants aren’t for everyone

Alex’s double hearing loss made him a candidate for the cochlear implant. Children with hearing loss in only



Now hear this

Is your child’s hearing at risk? To reach an otolaryngologist at Peyton Manning Children’s Hospital at St. Vincent, call the Pediatric Ear, Nose and Throat Center at **(317) 338-6815**. To receive the latest information about newborn and infant health via e-mail, visit **stvchildren.privatehealthnews.com**.

one ear wouldn’t undergo the surgery because they’d still be able to progress in speech and language, explains Dr. Miyamoto.

Alex has the implant in his left ear and a hearing aid in his right. Dr. Miyamoto is waiting to do the second implant because Alex has an additional hearing problem called auditory neuropathy.

The minimum expected benefit of a cochlear implant is a greater awareness of sound in the environment, according to Dr. Miyamoto. “But it’s very individualized and depends on whether the child had speech abilities before he lost his hearing,” he adds.

The sooner, the better

The best-case scenario for a child who’s hard of hearing is that he or she receives an implant before age 3 for better sound detection and to be



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—Lisa, Alex’s mother

able to acquire a basic understanding of speech.

“The best hope is that the kids will catch up with their peers and be able to communicate with their classmates,” says Dr. Miyamoto. “Our star patients can talk on the phone.”

Alex’s surgery took place last March, when he was 13 months old, and the implant was activated about a month later. The initial volume level is very low so it doesn’t scare the child, and then it’s turned up—daily or at longer intervals, depending on the patient’s rehabilitation program and progress.

Four months after the activation, Alex’s mom was thrilled to find he could hear sounds up to 12 feet away, and could comprehend relevant sounds for language.

“This past month he’s starting to talk and babble and has functional

words he uses appropriately,” says Lisa. “He’s probably got a bit of a [speech] lag but he’s learning more every day.”

Therapy will continue

Raising a child with a cochlear implant has its challenges, such as teaching him how to listen through auditory verbal therapy. “But we’re grateful we discovered the hearing loss at birth, because the earlier you intervene, the better for the child,” says Lisa.

The future will involve more

auditory verbal therapy, which Alex and his parents have participated in since he was 4 months old. Therapy is structured to help him understand and use the new sounds he hears.

The therapist instructs Alex’s parents how to communicate with their son, encouraging them to be as descriptive as possible when talking to him.

“Our confidence level has risen dramatically,” says Lisa. “We now have every belief that one day Alex will be able to catch up with his peers who have normal hearing.”

HEAR ME: Alex has a playful moment with Chris Miyamoto, M.D.

ALL CLEAR: Dr. Miyamoto checks Alex’s cochlear implant while Alex’s mom, Lisa, observes.

