

# Hearing *is* Believing

by Evelyn Venagas

The first cochlear device to be successfully implanted in a patient was invented by a team of scientists in 1978 led by an Australian professor of otolaryngology named Graeme Clark. The invention was based on principles first tested in the 18th century by Count Alessandro Volta, an Italian physicist who developed the electric battery and after whom the volt, a unit of measurement of electric potential, is named. Volta wanted to stimulate hearing by applying electric currents to the ear. His experiments involved attaching two metal rods to batteries and inserting a rod in each ear. When the circuit was completed, Volta received a jolt to the head and reportedly heard a bubbling or crackling noise.

Today, more than 200 years after Volta's experiment, over 200,000 people use cochlear implants to hear and an increasing number of cochlear implant recipients are children, some as young as five months old.

The device itself is simple, consisting of a receiver secured in the bone beneath the skin and a stimulator that winds itself through the cochlea. It is implanted through an incision behind the ear. The incision takes a few weeks to heal, at which point the patient is outfitted with the external components. The external components begin with a microphone worn behind the ear, much like a hearing aid. A magnetic transmitter adheres to the

metal implant under the skin, along with a speech processor that helps to filter audible speech. The transmitter sends a signal to the electrode, which then uses small amounts of electricity to stimulate the auditory nerve fibers which the brain processes as sound. Since the external components are held in place solely with magnetic force, removing the external equipment means simply pulling it off.

The results are stunning. Babies are especially keen to the cochlear implant, showing responses as soon as it is activated. Children that are slightly older and may have been using hearing aids usually require more therapy to get acquainted with new sound but, regardless of age, implants in children are usually viewed as a success and are considered the go-to procedure to cure deafness in children.

But some people who are deaf or hard of hearing see the proliferation of cochlear implantations as an affront to their culture. Long before the advent of the cochlear implant, groups of people with hearing loss or impairments all over the world had independently developed their own unique forms of non-verbal communication. Contrary to widespread belief, there is no universal form of sign language. The most commonly used signed language in the U.S. is American Sign Language. The growth and evolution of these languages has led to Deaf

culture, whereby a group of people that is affected by deafness (directly or indirectly) and use sign language as a main form of communication can identify as members of the Deaf community. When used as a cultural label, not as the name given to a loss or lack of hearing, the word Deaf is capitalized, the way you would capitalize American.

However, one must consider the fact that 90% of children who are deaf are born to hearing parents. Because of this, children who are deaf or hearing impaired usually learn sign language at school, or otherwise outside the home. For the mother or father who suddenly discovers that they won't be able to communicate with their child without learning a new language themselves, the diagnosis can become a scary one. This is why so many children born deaf today are receiving cochlear implants.

To get a better idea of the procedure and the decision making behind it, Directions interviewed Alex DeMolina. Alex's daughter, Kiersta, was born with bilateral hearing loss.



She was born at 35 1/2 weeks and monitored in the hospital's Neonatal Intensive Care Unit (NICU) for 13 days, but otherwise emerged a healthy baby girl.

"When she was in the NICU, Kiersta was given a newborn hearing screening, which is required in most

sensorineural hearing loss. One ear might be better than the other; however she was hearing around 90-95 db. When I explain it to people, I use the analogy that she hears at a lawn mower level.

"After the appointment, I got on the phone with my mom and cried and

**"I can't say enough how important these newborn hearing screenings are. It was our first indication that something was not all right."**

states. She was given the screening 3 times and each time failed. I can't say enough how important these newborn hearing screenings are. It was our first indication that something was not all right." Alex said.

Alex's concerns were brushed off; the screening technician telling her and her husband, Brian, that it was just fluid in the ears, and the pediatrician being hesitant to take them seriously. Finally they received a date for an ABR (auditory brain stem response).

then I called Brian because he was at school during the testing. My mom was wonderful and very supportive and Brian was very calm. They both let me know that everything was going to work out."

Alex and Brian began researching cochlear implants and, from the very beginning, knew this was a step they absolutely wanted to take. Kiersta's ability to listen and speak was going to depend on the implant and how soon she could have it. She was enrolled in

Early Steps and Children's Medical Services.

"The first place where we were actually taken seriously was at the Barton G Kids Hear Now Foundation, based in Miami, Florida. My mom saw an article about them in The Miami Herald and I sent an email introducing our family. We received a wonderful reply and met with the doctors at University of Miami's Cochlear Implant Center. We received confirmation that indeed Kiersta was a cochlear implant candidate.

"We are so grateful for their expertise and time that was given to us and even more so when they let us know about Auditory Verbal Therapy. The audiologist informed us that there is an excellent place for AV Therapy right here in Tampa, called the Bolesta Center. Shortly after this trip to Miami, we met with Judy Horvath, MA, LSLs Certified Auditory Verbal Educator (who is now the Director of Barton G Kids Hear Now Cochlear Implant Family Resource Center) and Kelly Teegardin, CCC-SLP. At 4 months, Kiersta received her hearing aids and started weekly AV sessions with Kelly."

"It was March 17, 2010 when our world turned upside-down. At just 5 weeks old, Kiersta received her 1st ABR with an audiologist. They confirmed that Kiersta has a hearing loss and it was showing to be a significant one. At that time, we were told that Kiersta has a severe to profound bilateral



Though Kiersta's services were covered by Medicaid, Medicaid only covered the cost of 1 implant. Also, Medicaid did not allow for Kiersta's application to even be submitted before she was a year old, and on June 2, 2011, she finally received her implant at 16 months.



Alex shared the videos of Kiersta after her surgery and on the date of her activation. Just 5 hours after the surgery she was already out of bed and playing as usual. Though it seems like a major surgery, it is usually performed as an outpatient procedure. The implant was activated

that she is deaf, but I rely heavily on spoken language to teach Kiersta about the world. It is our goal to have Kiersta mainstreamed in school and, since the popularity of cochlear implants is increasing, we do not feel

that we are going to be met with much opposition. We are going to teach Kiersta to be her own advocate and to make her own decisions as to where she belongs in the world.”

**“As soon as the implant was turned on, Kiersta’s eyes lit up at the sound of her mother’s voice.”**

on July 29th, 2011, and the results were nothing short of spectacular. As soon as the implant was turned on, Kiersta’s eyes lit up at the sound of her mother’s voice and, with each adjustment of the volume, she became more and more aware of all the sounds around her, responding to each one with a resounding smile and giggles.

While there is no doubting the success of the implant, Alex has mentioned that she knows it will be important to remember that she cannot solely rely on technology for communication. Since their brand of implant isn’t waterproof, they must find ways to communicate while bathing and swimming, when the device is removed. But, as both of Kiersta’s parents are reliant on spoken language, sign language is not a necessity for them yet. The auditory verbal therapy which Kiersta is currently undergoing has proven to be success, as her vocabulary grows and grows each day.

“In everyday life, I can’t say I forget



*Biscayne  
Awning Co., Inc.*

SERVING SOUTH FLORIDA SINCE 1924

Whatever your needs may be for commercial or residential awnings Biscayne Awnings & Shade Co. can meet those demands.

**CALL US TODAY!**  
**Toll Free (888) 7-AWNING**

**611 NW 5th St Miami, FL 33128**

**00000387** **Ctrl No. 01-0228.01**