From the University of Mississippi Medical Center Division of Public Affairs

TALLULAH TODDLER BECOMES 100TH CHILD TO RECEIVE COCHLEAR IMPLANTS AT UMMC

For more information contact Patrice Guilfoyle at (601) 815-3940 or pguilfoyle@pubaffairs.umsmed.edu. Photo available upon request.

JACKSON, Miss. – The thought of Courtland Collins of Tallulah experiencing a lifetime of silence was almost more than the infant's parents could bear.

A newborn screening program at a local women's hospital had detected Courtland's profound hearing loss when he was just 2 days old. After a second test confirmed his deafness, Courtland was referred to Dr. Jeff Carron, associate professor of otolaryngology at the University of Mississippi Medical Center.

With great trepidation, his mother, Kendra, brought Courtland to UMMC.
"It was probably the worst day in our lives," Kendra recalled of learning the initial diagnosis. "We were sad, upset and really scared. I'm an occupational therapist, I treat children all the time and I thought I knew a lot about deafness.
"I found I had a lot to learn."

After hearing aids proved to be of little benefit, Carron discussed the possibility of providing cochlear implants for the child. Courtland's parents considered every available option and ultimately agreed to the procedure.

Commonly called "bionic ears," cochlear implants provide individuals with profound hearing loss an alternative way to recognize sounds. Rather than a hearing aid, which amplifies sound, the implants use an electric field to directly stimulate auditory nerves inside the cochlea, or inner ear.

The implants have several functioning parts: a microphone, speech processor and an RF transducer are located in an external, removable headpiece, while an internal coil implanted beneath the skin relays the incoming signal to 22 implanted electrodes in the cochlea. The internal and external coils connect through the skin behind the ears by tiny magnets.

"That's been our trend for children 12 months old and younger who are profoundly deaf: to receive simultaneous bilateral implants," Carron said. "The original thinking was that nobody needed two implants: one (implant) would stimulate both sides of the brain, and people wanted to preserve the second ear in case new, better technology is eventually found.

"But studies in Europe indicated significant differences (in children who received bilateral implants), particularly in hearing and speech development. In young children, where the brain is still developing, bilateral implants have had a significant impact on total language and development."

He said although the procedure doesn't provide completely normal hearing - "It's not a cure," Carron warns - the results can be remarkable, provided the patient meets all physical requirements and has the advantage of comprehensive auditory-verbal post-implantation therapy.

“A child needs to be trained to use these (cochlear implants) as best as possible to compensate for the difference in normal hearing,” Carron said. “With the right therapy, early diagnosis and early intervention, you can rehabilitate a child at an early age and have them assimilate into a mainstream classroom by the first or second grade.”

Indeed, parents of some of Carron’s former patients regularly send him cards and e-mails relating the auditory milestones their children have accomplished as a direct result of the implants. In one video, a 3-year-old girl sings her “ABCs” unprompted; in another, a former patient sings along to the chorus of a Top 10 hit playing on the car stereo.

“The miraculous thing about what these kids do is that they can hear, understand and recreate the pitch and inflection of music,” Carron said. “They’ve effectively ‘relearned’ how to hear. The electrodes have stimulated the brain, and pathways have reformed in an alternate way.”

To derive this optimum benefit, it is crucial for children to receive the implants very early in their brain’s development, Carron said. The vast majority of adults with profound hearing loss who opt for cochlear implants may never pick up on those “sounds” because their brain had never been trained to comprehend them.

The particular implants Courtland received - the internal devices are smaller than any previous implants and virtually undetectable beneath the skin - represent the latest in available cochlear implant technology. During the approximate three-hour procedure, an audiologist tested the auditory pathways to make sure the new devices stimulated Courtland’s brain. All went according to plan, and at 10 months old, Courtland became the 100th child to receive cochlear implants from Carron.

“If Courtland is anything like the cohort of kids who get implants within 12 months (of age) and receives the proper therapy, you wouldn’t know he was deaf if he didn’t show you his implant,” Carron said.

Courtland is scheduled to be fitted with the external listening devices this week, and the audiologist will be looking for him to give visual responses to the new stimulus. If successful, the initial results may appear a bit unsettling.

“A lot of times babies aren’t excited about it at first, because this new “sound” can be frightening to them,” Carron said.

Kendra said she is looking forward to seeing her youngest child cry - not because Courtland may be a bit scared of the new sensation, but because he will be reacting to sound for the very first time.
“We’re very hopeful (about Courtland’s visit) because the audiologist told us she got a response from his brain when she turned each implant on (during surgery),” Kendra said. “Now that we’ve got the surgery behind us, I realize what kind of a burden our family has been under.

“My little girl (Courtland’s sister Preston, 5) said all she wants for Christmas is for Courtland to hear. This is going to be a great Christmas present.”

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