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**THE IMPORTANCE OF MODERN TECHNICAL DEVICES IN THE
 DEVELOPMENT OF HEARING**

Murotmusaev Komiljon Boriboevich*; **Yunusov Mirsaid Khudoyarovich****;
Khakberdiev Jamoliddin Abdugafforvich***

*Associate Professor,
 Jizzakh State Pedagogical Institute,
 UZBEKISTAN

**Master,
 Jizzakh State Pedagogical Institute,
 UZBEKISTAN

***Master,
 Jizzakh State Pedagogical Institute,
 UZBEKISTAN

Email id: haqqberdiyevjamol1992@gmail.com

ABSTRACT

This article discusses the features of advanced, reliable, comfortable modern hearing aids for people of all ages with hearing impairments that are advanced in foreign countries 'cochlear implant system, allowing many people to use their hearing and speech skills like a healthy person. Today, the rapid development of global technology opens the door to many opportunities for people with disabilities. The formation of the cochlear implant system for children with a single hearing impairment has given many people the opportunity to use their hearing and speech through speech like healthy people. "Modern hearing aids allow your child to hear and learn to speak in this way. If experienced professionals work together to find an individual solution for your child, they can use their hearing aid optimally. In everyday life with hearing aids and cochlear implants, you need to teach your child to wear "hearing aids" with pleasure, so that your child can benefit greatly." [14.7]

KEYWORDS: Cochlear, Implant, Compensation, Rehabilitation, Nucleus 6, Tuning Processor, Accessory.

INTRODUCTION

If at 5-6 months your child does not make a “Rumble” with different intonation, does not turn to you when you call, at 7-8 months does not begin to look for objects with your eyes, listen to make sure that his/her hearing system is normal (Otorhinolaryngologist) consult a doctor. If the doctor finds that the child is completely deaf or has very low hearing, do not let the world look dark to your eyes. Do your best to ensure that your child is properly educated from an early age. Its future depends on your skillful approach to parenting, your earnest desire to compensate for the hearing loss, and you are capable of it. Try to pave the way for your child to study and work. Accept your child as he or she is, and encourage him or her to rejoice in every little achievement. With a diagnosis of “your child can’t hear,” you’re never alone. Therefore, you should get the maximum information about the means for the treatment of your child's hearing loss, the modern possibilities of compensation for lost hearing - using a hearing aid or cochlear implantation. Today, one of the most pressing problems in the field of otolaryngology, audiology and deaf pedagogy is the importance of modern technical devices in the development of hearing and the formation of oral speech in children with hearing impairment.

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THE MAIN FINDINGS AND RESULTS

Cochlear implantation is the surgical insertion of a system of electrodes into a patient’s inner ear, which in turn allows the surviving fibers of the auditory nerve (afferent fiber) to perceive sound information through electrical stimulation, post-rehabilitation and cochlear implantation is a concept used in relation to burn surgery, when that technology is installed in the human body, electronic pulses come to an external microphone, an external speech processor transmits the sound coming through the microphone to the audio processor, and the nervous system receives these signals.

Cochlear implantation (CI) is a rapidly evolving modern method of helping people with severe hearing loss. With the advent of first-channel cochlear implantation, creators continue to technically improve the cochlear implant system, developing the newest sounds and striving for the most natural sound (Clark G.M., Tong Y.C., Martin L.F., Eisen M.D., Tavartkiladze G.A. et al.). [13]

Parents are often interested in having the right technical solution to ensure their child’s hearing activity. Each child's ear has an individual shape, narrow or wide ear canals, specific features of hearing ability. Parents need to choose the right technical device to ensure their child's hearing activity and achieve a successful result, to be individually suitable for the child, to be tested regularly, to optimize the child's needs. The device itself, successful surgery for cochlear implantation and its correct adjustment depends on the effectiveness of subsequent rehabilitation

of the surgical operation (Kukushkina O.I, Goncharova E.A, Sataeva AI). To improve the rehabilitation process, manufacturers are filling the system of cochlear devices with new features that are very useful when working with families with children with CI with specialists in various fields (surgeons, audiologists, deaf educators, etc.). Assessing the impact of cochlear implantation on human health and quality of life, experts ask the question: "How perfect is the hearing ability by the device?", "How reliable is this or that company's implantation?", "How convenient are tuning processors in tuning?" At the same time, parents, whose main task is to rehabilitate their child, show great interest not only in the quality of cochlear implantation and its functionality, but also in the ability to use a device that is very obscure to others.

As an example, we present the pioneer of cochlear implantation - the latest developments from Cochlear - as the flagship of the Nucleus 6 speech processor network, which was registered in late 2016 and used in our country in the coming years. Nucleus 6, despite its name, features ninth-generation processors for Cochlear implantation systems. It entered the world market in 2013 and immediately became popular not only among CI system users but also among professionals. The Nucleus 6 speech processor is based on profile implantation and is compatible with all cochlear implants of recent decades. The results of using this implant in three years show that its reliability is 99.94%, which is a record in the field of CI manufacturing. It should be noted that the speech processor charger is a chip five times more powerful than the previous generation processors. Such a powerful platform allowed the manufacturer to be the first to use the "Smart Soundi Q" sound processing algorithm. "Smart Soundi Q" is a smart 6-core sound processing technology. For parents of young children, this is a real find - a variety of programs, speech processing and noise filtering algorithms, and the most useful SCAN program. According to statistics, only 20% of adult users are accustomed to switching processor programs due to the acoustic effects of the environment. However, children can't do this at all - and in a place where there are no distant parents (in kindergarten, playground, relatives') they suddenly lose the ability to hear. SCAN software scans the environment, automatically adjusts, improves speech clarity when you need to listen in a noisy environment, when several people are talking at the same time, or when you feel speech coming from different directions, or in difficult listening situations. The advanced technologies used in CI systems are designed for patients of different ages and are very useful for them in terms of obtaining a level of freedom that is not only beneficial but also human-specific in normal social life.

The hearing aids are individually selected and adjusted. Like glasses for small children, you can also choose hearing aids or CI in different colors. If the child has their own point of view on this, get involved in the selection. Ear supra patterns can also be provided with the flag color of your child's favorite football team. [14]

The creators of Nucleus 6 released the processor in two configurations - without a slot for wired accessories (CP910) and (CP920), and in 2015 they added wireless accessories compatible with the processor to this talk. Today, Nucleus 6 users have a rich assortment of wireless devices: a mini-microphone, a phone headset, and a TV transmitter to help you hear the speaker better in noise and distance, talk on the phone, listen to music, and watch TV. These devices are compact, stylish and use a Bluetooth protocol. These accessories are especially useful for socially challenged teenagers. The active use of accessories in the normal life of a patient with CI is of particular interest to peers, and the technical "bell and whistle" becomes a topic of attention, attention, and a pleasant event for communication with friends and classmates. In a sense, this

removes psychological barriers to communication with others and ensures that the teen with CI is treated equally by everyone.

The creators of the system for a full life are developing such accessories that will bring special joy to parents of CI children. One such valuable addition is the Aqua + accessory (with a special reel and cover), which allows a child who has installed a CI to maintain sound quality while swimming, even diving (while diving). Now a child with CI can play, bathe and swing on the beach, run in the water with their brothers or sisters, just like healthy hearing children. The CI system is a constant companion of patient life, so manufacturers try to remove all restrictions on full socialization. It should be noted that the manufacturers of the core 6 cared not only for patients, but also for professionals working with families of CI children. An important and user-friendly interface has been developed for them - data logging. The Nucleus 6 system analyzes the environmental parameters, the patient's living space, records them, and displays this information to the audiologist while tuning the speech processor. How many hours a child carries the processor per day, how much time the child spends in the speech environment, whether the situation is accompanied by background music, whether the child is mostly in a noisy or quiet environment are all recorded in the data diary. Such an analysis reveals the underlying causes of the low level of effectiveness of patient rehabilitation. Detailed analysis of the data with visual confirmation allows professionals to reasonably discuss the lack of communication with parents and the associated rehabilitation process and duration, to predict its dynamics and effectiveness, to believe in the need to change the relationship with the child.

CONCLUSION

Thus, if modern technical devices are needed in the development of hearing, parents should make a decision on the choice of product before surgery. However, for non-specialists, it is difficult to understand the technical details of hearing aids and KI, so the specialist may ask about external differences in hearing aids and CI features (size of external part and part to be installed during operation, remote control, batteries and water resistance, etc.) and ask for clarification of daily manipulations. These aspects are important along with the signal processing strategy used by the audio processor, the shape of the electrode network, and other technical details.

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