

Critical Review: The Effect of a Cochlear Implant compared to Traditional Amplification on Speech and Language Skills for persons with Large Vestibular Aqueduct Syndrome

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This critical review examines the speech and language outcomes of children and adults who, once identified with a Large Vestibular Aqueduct Syndrome (LVAS), become successful users of a cochlear implant. Overall, research supports the current thoughts that a cochlear implant will lead to improved speech and language skills. However, there is a disparity in the results as it has been found that a cochlear implant will benefit some people and not others. At present, a concrete statement regarding the benefits of a cochlear implant with LVAS patients and improvement in speech and language abilities can not be made, due to the limited research directed at this question and the rarity of known affected individuals with LVAS.

Introduction

In recent years, concerns in the audiological field have been raised about the appropriate age and

with LVAS. All of the participants used traditional amplification and as their hearing levels worsened, the hearing aids became ineffective and a cochlear implant was seen as a more viable treatment option.

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Data Collection

Results in the literature search yielded five articles that were congruent with the selection criteria case study () and retrospective reviews. ()

Results

Five studies have been conducted to determine the speech and language gains in cochlear implanted children and adults with LVAS.

Au and Gibson (999) studied 0 children with profound hearing loss at a cochlear implant centre. Over the course of three years, the hearing levels in all of the participants declined to a range whereby a cochlear implant was warranted. The children in this study all showed evidence from radiological assessments that the vestibular aqueduct was wider than 2 mm. The average age of implantation was . years. All children were unilaterally implanted with a Nucleus Multichannel Cochlear implant with the exception of one child who received a bilateral cochlear implant.

The Bamford-Kowal-Bench (BKB) sentences and the Phonetically Balanced Kindergarten word list (PBK) were open-set words used to assess the child's listening skills in sentences and syllables.

Pre-surgical measures of listening performance revealed poor listening skills. Post surgical measures at , 2 and months revealed significant improvements in listening abilities. Overall, the children improved at each assessment and scored from to 9 on BKB tests, from to on average word score and from to 0 on average phoneme score in six months. (p.) From six months to three years, there were slight improvements on each test, but none that were significant. Overtime, these children showed significant benefits of a cochlear implant as a viable route to aural rehabilitation and thus as an enhancer of their speech and language skills. Based on parental and teacher's reports, they were able to integrate more with their normal hearing peers and did not require as much external hearing support personnel as required prior to the surgery.

Bent, Chute and Parisier (999) conducted a study with eight children with a mean age of years old. All of these children had a bilateral sensorineural hearing loss (SNHL) and received limited benefit from amplification. The PBK words and phrases were used, including common phrase sentences. One of the children had global developmental delays

language skills. All of the tests used were to assess the child's awareness to sounds and speech, which were poorly represented prior to the surgery.

The studies described above used a few subjects and this can be justified because of the rarity of this type of hearing loss that occurs in the general population. Random assignment to groups and random sampling was not possible given the above reasons. The participants were seen over a short