

Cochlear Implantation in Adolescents: Four Candidates, Four Routes to Cochlear Implantation

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Article received on February 5th, 2007. Article approved on November 21st, 2007.

SUMMARY

- Introduction:** The candidate selection and post implant adaptation in adolescents is a widely discussed issue among professionals due to its inherent difficulties and peculiarities.
- Objective:** To evaluate how the personality conditions and the family dynamics interact in the decision process of implantation.
- Method:** We present four cases unique in their content and in the way they were conducted. They led us to different choices of evaluation instruments specific to each one. An interview, Wechsler Intelligence Scale for Children, Mental Maturity Scale Columbia, Graphic test of perceptual organization L. Bender, Pedagogic Test, Wartegg Test and the House, Tree, Person were applied in different combinations. In some occasions a brief individual and family support were also necessary.
- Results:** An adequate patient and family was observed in the first case with good outcomes after the implant. The second case showed a dysfunctional family and patient. His evaluation was negative for the implantation by that time. In the third case there was a co-dependence among the member of that family, showing good results after implantation. In the fourth one due to a progressive hearing loss and all of them needed therapeutic intervention.
- Conclusion:** It is fundamental the acceptance of the deafness by the patient and the family, the patient desire, with adequate personality conditions and parents who give support and allow the patient to assume its own individuality.
- Key words:** adolescent behavior, deafness, motivation, cochlear implantation

INTRODUCTION

Cochlear implant is an electronic device surgically placed into the inner ear. That can help to provide a sense of sound to a person who is profoundly or severely deaf and is hardly or not benefited by usual aids, which are acoustic amplification devices. Hearing aids amplify sounds and are not applied for people with sensorineural profound deafness, since in these cases the cells that pick up sounds are highly damaged, and hearing does not depend on sound volume. Thus, the cochlear implant plays the ear role through electrical stimulation, by making sound electronically encoded (1, 2).

Parents' requirement, family dynamics, patients' wish and their social relation, which involves their identity such as maturity level and emotional behavior should be taken into consideration when those patients (for cochlear implant) are adolescents.

Psychoanalysis science states that each body sign or symptom is distinctive from person to person, because everyone has different life experiences and those involve past situations as well as perceptions we take from them (3). NASRALLA (4) reports, in general terms, that it is important to know patient's motivations, awareness regarding implantation, emotional and pedagogical behavior and family dynamics to be considered capable for the implant.

The advantages of implantation are to provide a sense of sound to patients and improve their communication quality. Therefore, the "new sound" provided is different from normal hearing and not so clean and distinct. Patients have to learn how to understand sounds. Results are not immediate, because the speech processor is only connected around one month after surgery, so learning is a continuous process since then. Professionals should be concerned about warning patients on all those aspects (5).

The post-implantation cochlear selection and adaptation in adolescents is an important issue among professionals due to patients' inherent difficulties regarding emotional development as well as generation gap conflicts with parents, who are the closest partners during this process. Also, we aim at evaluating how both sides relate.

OBJECTIVE

To evaluate how personality behavior and family dynamics interact with the decision process of the cochlear implantation.

METHOD

We have selected four cases, unique in their content and differently performed. They led us to different choices of evaluation instruments specific to each one. The first case/patient was only interviewed. The second one, besides the interview, was intellectually evaluated through Wechsler Intelligence Scale for Children (WISC, 1970) (6); Mental Maturity Scale Columbia (COLUMBIA, 2001) (7); L. Bender's Graphic test of perceptual organization (ZAZZO, 1968) (8); Wartegg Test (FREITAS, 1993; KFOURI, 1999) (9, 10) and Pedagogic Test (POPPOVIC, 1968) (11); and psychotherapy sessions (mother and patient together). The third patient was also interviewed; went through Pedagogic Test (POPPOVIC, 1968) (11) and Wartegg Test (FREITAS, 1993; KFOURI, 1999) (9, 10). Family was also instructed. We are still dealing with the fourth case, in which the patient has been seen with her family (father, mother and sister). She is under psychological therapy and has been evaluated through the House-Tree-Person test (BUCK, 2003) (12). All patients were evaluated by a speech doctor and physician team. Pseudonyms were used in order not to reveal patients' identity.

First case: Ricardo, 17 years old – assisted on January 21st, 2005.

He became deaf at the age of 4 months after being affected by meningitis. At the age of 4 yrs. his father died and mother went back to work. Ricardo, up to the age of 4, had not acquired language despite being under phonoaudiological therapy since he was 1 yr. old. He missed his father with whom he was close but is able to report some memories of them being together. At the time of his father's death, he used to only shout and was not able to express his feelings; started a process of encopresis (involuntary fecal soiling), expressing his sadness through body. His grandfather replaced his father picture and Ricardo became his grandfather's son. His mother married again but remained working in order to keep work benefits. At the age of 5, patient changed to another speech therapist, who was also specialized in speaking disorders, and at 6 he began to speak. He is now a high school senior; does not understand his teachers, so he self-studies; "loved by the girls" who actually help him; writes poems; owns excellent language skills both oral and written; intends to go to either Civil Engineering or Architecture or Medical School; enjoys medical programs on TV; is good at math and never fails; hears louder sound and when wearing aids, hears bass one (or "listens to the loudest music with the loudest devices"); has learned how to make sound distinction; is diagnosed with profound deafness; communicates himself

through mobile messages. His sister has been admitted in four universities, so she will have to study a lot. He has been gathering information on cochlear implant since 1999, being encouraged by the speech doctor. His targets on that are to improve his hearing and to play the drums, what he believes he will be better at when wearing the device. He is concerned about answering the phone and talking to his future clients. He is aware of his inherent limitations; has contact with people who underwent implantation through Internet, and has total support from his mother. Patient presented excellent use from cochlear implant with good language production after procedures. Now, he also presents normal hearing in all frequencies, recognizing 100% of speech close set sentences. His recognition of open set sentences has improved 70%; has started telephone conversation and is highly encouraged by this speech doctor.

Second case: Pedro, 13 yrs and 4 months old – assisted on February 5th, 2003.

His medical record, made by the speech doctor, reported congenital deafness. He owns devices, but does not want to wear them despite their benefits. He applied for cochlear implant and was required to go through evaluation.

Patient attended psychological evaluation on March 11th, 2003; he behaved indifferently with no interaction and slept all the time. Both mother and father work in the navy. She moved from Rio de Janeiro to Brasília 18 years ago and her boyfriend at the time (now husband) followed her. He saw advantages in doing that. Pedro has two older sisters. Mother was infected with rubella (German measles) during pregnancy and Pedro suffered from anoxia, with a delay in NPMD (neurological and psychomotor development) and deafness, detected when assisted by an ENT doctor for having breathing difficulties at the age of 8 months. At first, he attended school for special people, but was advised to go to a regular school in order to raise social behavior. Mother reports he suffered prejudice by other parents to accept his “problem”. She also reports patient was able to hear when wearing aids and was good at lip reading. He delayed in learning reading and writing; also showed attention disturbance and so was assisted by psychology and psychopedagogy therapists. He felt underestimated due to the fact that family was advised not to demand much from him. Mother started a half-time job in order to look after him, to take him to speech, psycho and psychopedagogy therapy. He is still seeing his psycho therapist who is also doing some work with the whole family.

Mother wishes he would undergo cochlear implantation to have his hearing problem aided; also

reports she should now listen more and speak less. She reports patient was very anxious during the flight from *Brasília* to *São Paulo*; ate all the time and verbally attacked her, and father did not seem to mind.

Response from analysis/treatment: the resistance to wearing devices was not evaluated; we noticed the problem is beyond hearing disorder. Patient was characterized as an adolescent with indifferent behavior, no interaction with others, and besides slept during evaluation. Mother accepts all decisions that might be taken. Family relationship should be improved. It seems that cochlear implantation is the only remedy, but still, is not his only problem. The mother is rejected by both son and husband.

One month later, patient returns to service in order to be cognitively evaluated through Mental Maturity Scale Columbia (COLUMBIA, 2001) (7); Wechsler Intelligence Scale for Children (WISC, 1970) (6) and L. Bender’s Graphic test of perceptual organization (ZAZZO, 1968) (8). Pedro improved intellectually under some limitation with difficulty in abstraction and evaluation (IQ=78 – at Columbia), with a 3-year-delay in perceptive and motor organization in space. He was submitted to WISC test, presenting difficulty in memory retention of acquired information from studies and also in understanding everyday life situations by using language, immediate memory and attention. His production improves when he is required of arithmetic, logical and verbal judgement. His VIQ = 57, thus, his production was reduced at the level of educable deficit, what does not meet his inferior medium potential, so he must be stimulated through previous therapy. Not understanding what has been required might be what is damaging his production. Next evaluation will be through WISC test. Nevertheless, the highpoint of this assistance was to make his mother allow Pedro to think and assume his own personality while being accepted as a handicap. At the present, mother/son relationship is spoiled and frustrating, so it can not be productive.

They only return to our service on August 19th, 2003 reporting financial difficulties, not being able to afford hearing aids. The patient leaves the office to watch TV. Mother is sympathetic to the need of wearing conventional device, though cochlear implant (CI) is an alternative, but the father does not seem interested in being informed about it. Patient is willing to wear hearing aids, but complains of pain. He does not interact with other handicaps. Through Wartegg test (9, 10), he presents himself as non-ambitious, with difficulty in recovering from sadness, and, despite his capacity of accomplishment and his vital energy, he becomes aggressive against himself by not facing arduous situations.

Mother is now more attentive of her own anxiety behavior and less involved to her son's problem; the father silently agrees with the facts, with no involvement at all.

Such findings might elucidate the non-using hearing aids fact, and one may believe if these aspects are better conducted (psychotherapy), the acceptance of wearing aids and their discomfort will be surpassed. He has not so far been approved to undergo implantation process. His audiological evaluation presented a low speech and hearing performance, which is not consistent to the benefits from hearing aids. Thus, he has to wait some more time, what can be satisfactory for raising some interest.

Third case: Carlos, 15 years old – assisted on June 8th, 2003.

He was diagnosed deaf due to being affected by meningitis at the age of 1 yr and 3 months. Mother, at the time, saw different doctors trying to find explanation for the problem; nowadays she is psychologically able to talk about it. The boy undergoes speech therapist treatment, who is a specialist in speaking disorders. He is also assisted by a pedagogist six hours a week in three sections. Carlos is very responsible and interested in learning. His family relationship is favorable and they are very supportive and positive regarding implantation issue. He is good at lipreading and is able to verbally express himself; he is the only child. Parents have decided to give him full attention. They had been working hard in order to get him to the oral level he is now. Gestures that used to follow verbal instruction are not necessary nowadays. He is attending the last year of primary school; is good at English subject. He was evaluated through Wartegg test (9,10), showing interest, difficulty in understanding at first, protection need, intelligence, no ambition or easiness for relationship.

He is creative and is able to face certain situations, but searches family when in moments of conflict. He was asked to return to service in order to have his expectancies analyzed. Parents did not mention implantation issue. The topic was discussed with speech therapist, but no clear patient's opinion was achieved, for parents being too careful, they raised a kind of barrier.

There is a dependence relation within the family. Patient once came to service by himself with the purpose of being evaluated regarding his interest in surgery. He reports the wish to hear through cochlear implant; is aware of the difficulties of the process and sound quality; does not complain being deaf but says it is nice to hear and speak. He affirms he can try to listen to music, for he

understands the topic. He knew about implantation by his parents from a written message. He did not understand when asked about his indifference in doctor meetings with his parents, but is sure that when wearing aids, he will be able to hear and will be supported by his parents and speech therapist and added that his parents warned him "to talk little to you".

We conclude that his oral communication is not always understandable and the written one has not much fluency, making understanding difficult. It is important for him and parents to be in contact with other people who underwent implantation. Ossified cochlea was assured through MRI. Results were not satisfactory, but accepted by both patient and parents, and seven electrodes were placed and activated through surgery, and being later double numbered by the speech doctor. At this point, patient is feeling well, opposing to parents, and does not want the presence of parents during sessions. This affirms his mature behavior acquired after implantation process, what did not happen to parents. He was encouraged to undergo implantation, though, is not having much gain for not having worn conventional devices previously. He does not recognize sounds, but speech. By this time he has been trained to detect his own name. And, since he has been wearing the device all day, he is more independent and satisfied.

Fourth case: Regina, 14 years old with progressive hearing loss of the right ear; wears devices. She became right-ear deaf at the age of 11yr and 6 months, and therapy was not successful by then.

She was first assisted in January 2006, which was one month after losing her hearing.

Patient now is able to hear; she sounds assertive and confident. Parents report she is absent-minded especially regarding personal care. Both parents and patients are discontent. Patient tries to visually follow her mother and sister and blame them to be against her. She feels her sister receives more attention, then the conflict focus lies among mother, sister and patient. Mother complains patient's psychotherapist does not deal with family situation, a type of therapy they were suggested to search. The whole family feels uncomfortable with the situation for not having a right monitoring in how to relate among themselves. Father wants to know more about cochlear implant, and mother wants to know more about her daughter's motivations.

Regina is a good student, has good reading and speaking skills by making use of high vocabulary. She is always daydreaming, because fears real life. She is willing to undergo implantation; is good at ORL (Oral Facial

Language), but feels uncomfortable for not being able to talk on the phone.

They returned to service one month later reporting she had become socially isolated, and questioned if this was due to her hearing loss and whether cochlear implant would not be welcome. Parents believe she fears implantation. At the same time they consider she can live like that, it is the right time for implantation, once she has just lost hearing ability. Patient is anxious and sensitive; she hides her sadness and inner emptiness by pretending being cheerful. She is very introspective, reserved but can express her feelings of anxiety and freedom need. Although showing lowering of mood, depressive thoughts, she is hopeful and sympathetic to others. In short words, she has been through a difficult time, but seems to be confident to deal with it.

Patient reports not being able to deal with losses, by referring to her grandfather's death, and also says that being a child is better than being a grown-up.

On the following day, she seems more disturbed; hates being named 'deaf'- what she does not claim herself; blames herself for not having recognized her real friends; depends on OFL, but considers cochlear implant.

She has contact with other handicaps through Internet and states that is a fact to be faced.

She tries to find self-assurance in famous deaf people, and fears not being accepted by normal hearing friends.

Eventually, all members of the family seem to be living in ambivalence, although being together. They realize that they are aiming at the same things from different angles. Patient is worried about her friends, and parents are concerned about the device.

After 15 days, she seems to be well but is not sure about the implantation anymore. She does not want her parents' interference. They are guided to respect her indecision and be patient regarding her maturation on the topic.

After 3 weeks, she sounds thankful because I helped her to make a decision on whether to go to a party or not, by explaining to her that when choosing one way, the other option is left behind.

They went to see a speech doctor, who disagreed that the family was open to accept implantation; however they wanted further information on cochlear implant in order to make a decision. Patient is a good

candidate to be submitted to cochlear implant because she has progressive post-lingua deafness (Enlarged Vestibular Aqueduct Syndrome), which means good prognosis. She has worn hearing aids since childhood, but the first obstacle was esthetical, as she needed larger devices as hearing worsened. After awhile she became used to it.

During next visit, she goes back to the party topic and adds a trip with her parents, which was making her value family relationship and realizing her parents' support when taking her to see the doctor, who is 8 hours far by car.

When asked to draw a picture of herself, she presents another person; short hair, no ears and says she knows it is not her, but it is the way she feels, tired, hearing nothing, speaking little, lacking support and not thinking of the implantation, what she will undergo.

In the end, she was in doubt regarding implantation, but, searched support from the doctors and during therapy meetings she revived affliction-suggested situations, such as grandfather death, social isolation, difficulty in decision-making, self-aggression, and mother/sister relationship. As she became more confident, she could decide whether to undergo implantation, which is still questionable. Parents are still under orientation as well, and even more supportive. She is considered to undergo implantation.

DISCUSSION

Emotional state of the deaf candidates to cochlear implant has always been focused during evaluation process (ZENARI et al., 2004) (13), as well as their psychotherapy both before and after surgery (YAMADA et al., 1999) (14).

We have reported four cases. The first was a 17-year-old boy who became deaf at the age of 4 after being affected by meningitis. He had his own history and a supportive mother. The second case, a 13-year-old boy, with congenital deafness. He was benefited from hearing aid, but refused wearing it. A very intelligent boy, but overwhelmed by his mother's wish of a cochlear implant, what was not related to his attitudes or intellectual development. That made him close himself off from others, from sound experiences and from cochlear implant consideration. Both patients were assisted with the purpose of leading them to a psychotherapy that might raise new conditions. According to MATHOS and BROUSSARD (2005) (15), all feelings that arise inside the family, due to a child's deafness, can lead to anxiety situations. For

this reason, cochlear implant was not authorized at the moment.

In the third case, there was a co-dependency situation among the members of the family, and all depending on the doctors. Patient wanted cochlear implant and became more confident afterwards, despite results that were previously analyzed due to cochlea ossification. Low self-esteem was reported in the literature by SAHLI and BELGIN (2006) (16), with expectations of improvement after implantation.

The fourth case, a 14-year-old girl, recently deaf. She became deaf after losing her grandfather, and was also overwhelmed by her parents' wish, by rejection of feelings for other people and by her own indecisive behavior. She visited doctors with a certain frequency requiring support. Her parents were supportive but also sensitive regarding the situation, what also made them need help.

We agree that it is important to deal with patient's wishes and parents' interference during process of decision. In many cases, because parents are not prepared to accept their child's deafness, they end up to become patients. It is also important to evaluate patients' emotional conditions, by analyzing if they are self-conscious; how they deal with their anxiety feelings; their ability to face inner and outer challenges and also how they will face their new condition with cochlear implant.

CONCLUSION

The ideal scenario consists of the acceptance of deafness by all the involved individuals, patient's wish to undergo cochlear implant followed by awareness, ability to face challenges and conflicts with good energy and parents' support, by allowing their children to assume their identity.

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