

ORIGINAL RESEARCH ARTICLE

Bioethical thinking of cochlear implant in the treatment of deafness

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ABSTRACT

Otolaryngologists engaged in cochlear implant surgery are very careful to require a variety of complex medical and clinical examinations in order to make a clear diagnosis and perform surgery to improve hearing and speaking. From a biomedical point of view, this is not controversial. However, in the analysis, if the personal, social, family and environmental factors of deaf people are not considered as important as pathology, the wanted results may be undermined. This reflective article highlights these situations, which are part of the bioethics view and considered to be a necessary supplement to the rehabilitation of deafness. The dilemma and conflict in bioethics are defined so as to put the pathology of deafness, the deaf and their environment in the framework of the concept of overall health and the doctors' responsibility, then to reach the bioethics principles of Beauchamp and Childress. Its purpose is to show that cochlear implantation can be attributed to a valuable cutting-edge technology operation behavior, and the prejudices and values of this medical technology must be surpassed and understood, which directly or indirectly, positively or negatively affect the deaf.

Keywords: bioethics; deafness; cochlear implant.

1. Introduction

If the hearing loss is not serious or profound, it can be corrected by surgery, low, medium or high-tech prostheses or hearing aids. When hearing loss is severe, or when there is scab, i.e. complete deafness or the use of prosthetics has no positive impact, then use other communication methods: Oral communication through lip reading, or sign language

communication in the absence of oral communication. In fact, in Europe and other countries with similar advanced health and education, more than 90% of 1 million affected people communicate orally and 6% to 8% use sign language^[1].

However, in addition to the above alternatives, for people with hearing impairment or loss of hearing due to disease or trauma, cochlear implant technology opens up opportunities to obtain hearing ability in the absence of hearing, restore hearing

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ability in the condition of hearing loss, or ameliorate severe hearing impairment, which could not have been achieved many years ago.

Cochlear implant is a cutting-edge electronic technology system, which is used for medical and surgical treatment of the above cases for deaf rehabilitation. In order to make cochlear implants succeed, candidates must fully comply with the required protocols and, most importantly, undergo rigorous hearing and language rehabilitation after surgery. The ultimate goal of cochlear implantation is to obtain auditory interaction in order to develop appropriate oral English. If this is not possible, cochlear implantation is meaningless. Therefore, the agreement on the selection of patients with cochlear implantation must be fully observed.

The protocol for cochlear implant patients clearly stipulates many necessary tests for medical research and hearing pathological diagnosis, as well as the evaluation and results of hearing and speaking^[2,3]. However, there is little application in social, family, psychological and educational aspects, as well as in the bioethics of the deaf and their family core. These factors are basic and necessary and need to be considered like other medical examinations in order to have a positive impact on the quality of life of cochlear implant patients.

Neither biomedical care with the help of scientific progress nor technical or technical assistance alone is sufficient to manage patients with the above-mentioned deaf mutes. It also requires other aspects that have been identified, such as arriving on time and in an appropriate way. It must also consider aspects related to bioethical dilemmas and conflicts in the management of deaf mutes and cochlear rehabilitation patients, so as to improve their quality of life.

Although cochlear implant surgery is an important part of the rehabilitation process, the surgery itself does not correct deafness. Continuous and selective hearing and language rehabilitation is required after surgery for one or more years to obtain, restore or correct hearing and language loss. Inter-

disciplinary team management is the basis for achieving the best results.

In Spain, the best time of cochlear implantation for deaf children is 0–3 years old, and their hearing and language levels have improved by 90% to 95%. Among them, 80% to 90% children have developed hearing and language skills, just like children with normal hearing. Among adults, 80% have improved hearing, quality of life, mental health and social life^[4]. Although not all deaf people are candidates for these cochlear implants, 40% of live born deaf people are considered candidates for cochlear implants. These results indicate the usefulness of this type of implant for deaf people who fully meet the requirements of the protocol and the requirements of rehabilitation and follow-up treatment.

2. Dilemma and conflict

All implant operations, especially those for deafness and cochlear implant treatment, require serious bioethical reflection. As described below, especially when doctors face real and inevitable conflict situations, many questions may be raised before deciding to implant or not.

Ethical dilemma is a brief historical narrative. In this narrative, a possible situation appears in the real field, but it is conflicting at the moral level. The actor is required to either solve the conflict rationally or analyze the solution chosen by the protagonist of the story. Generally speaking, this situation gives only one choice: the protagonist is facing a decisive situation, in which there are only two options (a) or (b), both of which are equally feasible and defensible^[5].

For Beauchamp and Childress^[6], the only way to fulfil one obligation is to breach another. Either way, all obligations must be breached. It is wrong and misleading to say that under such circumstances, we must take these two actions at the same time. We must fulfil this obligation, which, according to the circumstances, takes precedence over what we are fully obliged to fulfil in the absence of conflict. The conflict between moral requirements and

self-interest sometimes leads to practical difficulties, not moral difficulties. If moral reasons conflict with non-moral reasons, it is difficult to determine priorities even if there is no moral dilemma^[6].

In order to make specific moral judgments, it is often necessary not only to resort to more general rules or principles, but also to specify and weigh the rules according to specific circumstances. In the process of regulating and measuring standards, as well as in making specific judgments, it is necessary to take into account beliefs, cultural expectations, the most likely results, precedents and similar issues about the world in order to supplement and measure standards, principles and theories^[6].

In medicine, there are usually balanced judgments. These principles have not changed in the whole history. For example, doctors should not use patients for their own interests, and the interests of patients should be the primary consideration. Entrepreneurs are not always bound by rules such as customer interests. The difference between medical and business ethics stems from the above rule, i.e. the weighted judgment of doctor-patient relationship^[6].

For Beauchamp and Chaidris, the so-called comprehensive reflective balance is achieved by evaluating the advantages and disadvantages of all relevant moral judgments, principles or theories, i.e. incorporate the widest possible range of legitimate moral beliefs, including the most difficult situations experienced. The characteristics of this process are ideal: no matter how wide the range of beliefs is, there is no reason to believe that the process of polishing, adjustment and consistency will end or be improved. Any set of theoretical generalizations obtained through reflective balance may be inconsistent with weighted judgment, and the only appropriate model of moral theory is to be as close to overall consistency as possible^[6].

3. Deaf people and their environment

Deafness is a disease invisible to the naked eye. However, its impact on personal emotional, social and educational development is unimaginable. The isolation that a person may suffer because he or she is unable to establish free and normal contact with others is a huge obstacle to his or her full participation in life, which will produce huge rust in many cases. In the face of reality, deafness inevitably leads to personal isolation, and it often leads to an increase in loneliness^[7].

Through hearing, we can perceive the background sound or environmental noise. It is a warning signal that can express sentiment, emotion and thought. Deafness hinders the emotional and social development of deaf children and adults, limiting their expression of thoughts and feelings and their understanding of their surroundings^[7].

Understanding and comprehending the situation of deaf people and their families must be complemented by adequate information on possible solutions and the risk of violations of their rights. Therefore, it is necessary to seek the possible help of other disciplines to solve the problems related to this pathology. The role of voice, psychological and social workers in addressing these issues is crucial.

4. Comprehensive health care and deafness

If we regard the change of health as a disease of the body, it is necessary to understand the body beyond the biological conditions. This means that changes take place in other different situations, such as social and family areas. It must also take into account the characteristics of freedom embodied in human reality. This freedom in personal, social and economic structures^[8].

Comprehensive health is considered a right enshrined in Article 26 of the UN *Universal Declaration of Human Rights*^[9]. The right to health is not only the right to be free from disease, but also the ability to be in a welfare state and planning for the future. Man is not just a biological entity. Living

does not mean that an organic system works like a well lubricated machine. It is a person who is developing his physiological and biological abilities. Therefore, it is also related to their culture, relationships, society, history, projection and moral abilities^[10]. Therefore, in this case, listening, hearing and developing a language does not just mean maintaining the function of biological organs and systems. They mean living a healthy life, i.e. the condition of being able to develop all the abilities of human being, no matter how many or less.

5. Doctors and doctors' responsibilities

From the perspective of Hippocratic medicine, the reasons why practicing medicine is related to goodness and charity are well founded. Hedonism ethics finds the legitimacy of human behavior in the process of pursuing good. Since the time of Hippocrates, doctors have traditionally repeated the practice of oath, i.e. to let God or any entity higher than themselves as witnesses and judges of their actions, and committed to providing absolute benefits to their patients^[10]. However, "such advanced technological medicine emphasizes biological reductionism, which reflects the epistemological deviation of what human medicine was, is and should be"^[8]. In the world of modern medicine, it was called "life medicine" by Mainetti^[11]. Patients and doctors are conquered by the necessity of technology: This is why most of the time, one person and another's decision will experience this charm. Doctors must be responsible for the use of this drug and be aware of the limitations and the dangers involved in the use of technical measurement procedures which involve and exacerbate the possession of drugs in life^[12].

From the perspective of our analysis, welfare must start with defending the right to health, which is more important than the right to disease care. It must enable people to exercise their rights so that they can live a healthy life. There is no doubt that respecting the right of patients to live a healthy life, the right to be cured when they lose their health, and the right

to participate in these two behaviors must be put into practice unconditionally. This can be interpreted as an absolute benefit to humans^[10].

6. Bioethics and its principles

Reverend Fritz Jahris known as the "father of bioethics"^[12] because he first used the term "bioethics" in an editorial published in the German Journal of natural science Kosmos in 1927^[14]. He later developed his view of universal bioethical orders in small-scale publications to replace Kant's formal absolute orders^[15].

American biologist Van Rensselaer Potter of the University of Wisconsin^[16] may not be aware of this when explaining the conflict caused by technical knowledge and its application in medicine and the emergence of planetary ecological challenges. Potter described the conflict as follows: If two cultures seem unable to talk to each other—Science and humanities, if this is one of the reasons why the future looks suspicious, then we may build a bridge for the future. As a new subject combining biological knowledge with human value system knowledge, I define "biology" as biological knowledge, i.e. life system science. I choose "ethics" to represent the knowledge of human value system^[16].

In 1978, Tom Beauchamp published the Belmont Report without excluding other bioethical theories. A few years later, he co-authored the Book *Principles of biomedical ethics* with James Childress and founded his theory of principles. This theory is particularly dominant in the United States and provides a basis for the purpose of this article. In this article, cochlear implant, as a kind of technical knowledge, creates difficulties and conflicts, and doctors and patients are committed to this treatment.

Cochlear implants need bioethical analysis to comply with beneficial and harmless bioethical principles, which correspond to medical management, mainly the obligation to treat when possible without causing further problems. Respecting the principle of patient autonomy, which explains freedom and free decision, their ambition to obtain or not

to obtain these technological benefits, and the principle of justice. They must reflect society, through the state, in their role to provide timely and fair existing technology to all those who need it^[6,8].

These principles are not formulated as a strictor rigid rule. Cases include the weight of each principle in a particular case. Beauchamp and Childress^[6] set out a preliminary obligation to perform, unless it conflicts with another equivalent obligation. As mentioned above, this leads to a trade-off between principles to find the reason why it must prevail.

7. Respect for the principle of autonomy

Beauchamp and Childress define autonomy as a rule that requires respect for the ability of autonomous decision makers^[6]. These authors refer to the ability to make decisions without being influenced by others, as well as the correct understanding and significance of the situation. Therefore, autonomy means the possibility of independence and autonomy in elections, acting according to one's will without being influenced by others^[6].

In order to make autonomy possible, Beauchamp and Childress pointed out that three criteria need to be met: Intentionality, understanding and lack of influence in deciding action. Autonomy is considered part of the theory of rights because it allows the use of these rights in decisions about ownership and the exercise of these rights. Since autonomy is seen as a right in health science, individuals must give informed consent to investigation procedures, interventions or actions against individuals.

Although autonomy is the recognition of individual self-management ability, there are some difficulties in its application because the conditions of self-control do not always exist. For example, it covers people who have difficulties in making decisions, such as minors, persons with mental or cognitive disabilities or older persons. Adults with sufficient intelligence but relying on others or technical

language beyond comprehension are also limited. In this case, because the information and circumstances do not allow understanding, the decision will not have so much autonomy. It should be added that autonomy is exercised within a social framework, its values are culturally clear, and there are social and relational practices. Therefore, the essence of this concept must include care and respect for the individual^[17].

With regard to cochlear implant, the most sensitive point about respecting the principle of autonomy is the decision made by parents or guardians in favor or against whether cochlear implant is needed. For Joel Feinberg, these rights must now be protected in order to be exercised in adulthood^[18]. The decision of parents as legal guardians is legal, but not about autonomy, so there is a need to protect the scope of children's future decisions. However, if this protection is implemented on children, it may be late for cochlear implants.

Deaf mute children also have their declared rights. In order to respect these rights, we must start with respecting individual freedom. However, it cannot exist if society does not consider it vulnerable^[19]. Most deaf children are not born in the world of deaf people. Therefore, the level of interest of them or their guardians should be reasonable. As cautious people, they should choose the world of deaf people. If children are born in the deaf world, it is different, because their parents are deaf, and they believe that their deaf is the basis of their education and integration into the culture they manage. However, no one has the right to limit physical capacity indefinitely, for whatever reason, as do children born in deaf communities^[20]. In school-age children, when their intellectual ability makes it possible, even if it has no legal significance, their wishes or decisions must be taken into account.

8. No malice principle

This principle was originally proposed by Beauchamp and Childress and is known as the "obligation not to harm others"^[6]. In this sense, it is

consistent with the Hippocratic maxim “at least don’t hurt”. Injury is defined as a bad thing done to a person. It usually refers to an event, state or event that is unfavorable to someone. The author constructs the concept of injury according to the concepts of pain, disability or death. This principle includes both non-injury and prevention of pain or suffering. It is of great significance in medical ethics and research because it believes that despite the existence of informed consent, damage to personal health or living conditions should not be recognized^[6].

For the author, the principle of doing good or promoting good takes precedence over the principle of interest, taking into account the obligation not to cause harm^[6]. However, in some cases, non-malicious obligations are more stringent than charitable obligations, even if the most utilitarian results are obtained through charitable acts. Beauchamp and Childress warned that caution should be exercised in prioritizing the above axioms, as charitable acts do not always occur after acts that do not cause harm. Although non-malicious acts may prevail over other principles, it depends on the specific circumstances. In other words, non-malice only needs to avoid intentional injury and take actions to prevent and avoid injury and promote goodness in charity activities.

The author envisages the concept of “due care”, i.e. full and appropriate care to avoid damage based on a reasonable and careful assessment of the situation^[6]. This is the framework of negligence, known as “lack of proper care”. The term can be understood as deliberately and unreasonably imposing a risk of damage, or inadvertently and unknowingly providing a risk, both of which are morally reprehensible but assessed on conditions that mitigate responsibility^[6].

Beauchamp and Childress also include the meaning of non-malice in their specifications when considering the decision to treat or not to treat^[6]. In addition, non-harmfulness takes into account the use of ordinary or special treatment according to the

frequency of use or habit. From a moral point of view, the most important point must be whether treatment is beneficial to anyone receiving treatment or, more specifically, whether it will make them feel stressed.

The author considers whether intentional behavior can lead to foreseeable adverse effects^[6]. In this case, the effects of good and evil must be seen. Therefore, good and evil, whether direct or indirect, must be treated and defended independently. Therefore, the motivation of the behavior should also be considered, which may help to solve its intention.

9. Charity principle

For Beauchamp and Childress, this principle includes “all forms of action aimed at the benefit of others”^[6]. Charity principle is a moral obligation to do good to others. Although not all charitable acts are inevitable, some forms are inevitable. The following are prudent and valuable decisions on the indications of cochlear implantation.

The concept of charity has changed, especially in the doctor-patient relationship and the recognition of individual autonomy. For the author, active charity is the obligation to provide benefits, and the utility principle is the principle to examine the risks and benefits of behavior. This is because charitable activities may have a negative impact. Therefore, the decisions taken must measure the difficulties that may arise in order to take the most appropriate action^[6].

In dealing with this principle, it is particularly note worthy to take into account the conflict between paternalism and autonomy. The charitable behavior of health workers is often what they think is most suitable for patients, including behavior that may exceed the wishes of patients, without respecting the autonomy they are entitled to^[6].

The ethical dilemma of paternalism is to determine whether the interventions taken are morally justified and what happens in these interventions.

Generally speaking, it is through laws or rules to regulate paternalistic behavior, especially when the ability of individuals to make appropriate decisions is limited^[6].

Beauchamp and Childress's charitable principles are also based on the best consideration of the benefits, risks and costs involved in health care, which must be weighed. Its definition of cost is economic, i.e. based on the resources needed to realize profits. Risk is considered to be possible damage in the future, thereby impeding people's well-being, health or life^[6].

Benefits refer to values such as health or life that can take action, as well as reducing and preventing risks. His position is based on the principle of utility and proposes three common tools in the use of health policy, research and medical technology: Cost-benefit analysis or risk-benefit^[6].

10. Principle of Justice

Fairness is a set of rules to ensure the fair distribution of benefits, risks and costs. Justice is a principle that transcends the personal sphere and can be introduced at the social level. Although it involves individual rights, it involves the protection of individual rights in different situations^[6].

Beauchamp and Childress interpret it as "just, fair and appropriate treatment based on due or obligation to individuals"^[6]. These authors cite the term "distributive justice" to recognize that "just, fair and appropriate distribution is determined by reasonable rules in social cooperation"^[6].

In addition, they indicated that their implementation involved policies to allocate or restrict resources in terms of ownership, taxes, benefits, privileges or opportunities. In other words, they believe that distributive justice is the distribution of all political or civil rights and responsibilities in a society. An important aspect of Beauchamp and Childress's method is the principle of justice. On the one hand, it puts forward forms and materials. There must be a balance between the two, especially when

the conditions existing in an environment are not sufficient to meet the needs of all members of a social group. In this regard, the exercise of the principle of justice can be changed, modified or reduced^[6].

In a non-philosophical sense, the principle of material justice stipulates the characteristics of equal treatment in health care according to basic needs, which is the primary standard of distribution^[6].

Distributive justice has always been a problem of seeking theoretical resources, which helps to determine the forms of distribution that can be taken, including the utilitarian theory of pursuing the maximization of social welfare, and individual rights is based on this premise. Therefore, its significance lies in the pursuit of the greatest public interest, on which the sense of justice will be based^[6].

This principle is important for health policy and its impact on equitable access and distribution. For Beauchamp and Childress, there are two reasons for the right to health. On the one hand, there is collective social protection, i.e. giving priority to health care in the government's political agenda, providing basic services to citizens, and recovering social investment in the training of health personnel and technological development^[6]. It also includes consideration of the "fair opportunity rule". His view is that individuals should not enjoy social benefits because of uncontrollable personal property, nor should they deny those who do not own such property^[6].

All doctors using biotechnology must be aware that budgets for health are often insufficient to meet the needs of patients and health professionals for modern biotechnology. The aspirations of these people, whether fair or not, must be limited, because they are regulated by the state, where discrimination, inequality and inequality arise. In democracies, they try to avoid this situation by carrying out human rights mandates, but paradoxically, the market economy operated by these countries uses currency as an important tool of legal discrimination. Therefore, money has become the main legal source of discrimination and inequality in all societies^[21].

11. Conclusions

Many dilemmas and conflicts of cochlear implantation may affect different analysis principles. The same dilemma, in addition to becoming a doctor, can also be bioethical. For cochlear implant, before making any decision, otolaryngologists must carefully consider the considerations described in each principle and carefully analyze these factors, because it will have a positive or negative impact on deaf people. Medical indications do not necessarily mean bioethical indications.

Cochlear implant is a high-tech operation, which has a good effect on deaf people who need and meet the requirements of the agreement. In order to obtain the best results, this should be the wish of every doctor who orders or performs implants. It must be considered that the biomedical program itself is not the only reason for the success or failure of the process.

Conflict of interest

The author declares no conflict of interest.

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