



EFFICACY AND COMPLICATIONS IN SURGICAL RECONSTRUCTION WITH PROSTHESES FOR THE TREATMENT OF MICROTIA.

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Summary

- **Introduction:** The review focuses on establishing the efficacy and complications in surgical and prosthesis reconstruction in patients with microtia, which is defined as a malfunction in the course of ear creation during the first weeks of pregnancy (differentiation).
- **General objective:** To describe the efficacy and complications in surgical reconstruction with prostheses for the treatment of microtia.
- **Methodology:** It is qualitative, based on a narrative literature review. For the identification of studies related to the problem, the reference bank present in PubMed, Scopus and Latindex was considered through the use of health descriptions. We included studies published between 2019 and 2023.
- **Conclusions:** It concludes the surgical intervention have complications, which occur when performing a general surgical procedure. However, according to the review, it can be observed that its effectiveness focuses on the adaptation and acceptance of the human body to the prosthesis and the technique used by the specialist during the intervention.

Keywords: Complications, surgery, efficacy, microtia.

1. RESEARCH PROBLEM

The pinna is embryogenically derived from the first and second pharyngeal arches (1), and the disorder occurs between the fifth and sixth weeks of pregnancy due to a variety of circumstances, including genetic, teratogenic, and vascular abnormalities that affect normal development (2). Regarding surgical treatment, the techniques usually used are: logical implant restoration, prosthetic repair and autologous restoration through the costal cartilage (3,4).

The atrium defect is a defect that results in absence, deformation, partial or total loss of the atrium due to congenital or acquired causes, usually associated with trauma, congenital malformations and tumor pathology, which can occur unilaterally or bilaterally, with or without ears. External ear canal (5). The main treatment options for patients with microtia are reconstruction with cartilaginous costal grafts, MedPo grafts, and prostheses (6).

According to a study by Pérez et al. (7), To reproduce the relief of the ear, this study was carried out through an experimental study, using the normal ear as a model, in addition to placing a bone anchored

implant, which was fixed at six months. Among the main results obtained, satisfactory aesthetic results were observed and hypertrophic scarring was observed at one year and five months, in addition there were no complications with the use of the prosthesis, so it was considered an effective reconstruction method.

On the other hand, a study was conducted in the city of Guayaquil to verify the predominance and surgical intervention of microtia in 30 people with microtia under 15 years of age. Among the primary outcomes, it was observed that, of the operated patients, 95.5% underwent rib graft reconstruction and complications occurred in 30% of these patients (8). Also, in a study conducted by Sesman et al. (9) in a sample of 17 patients with microtia who received atrial reconstruction with osseointegrated implants at the same time. Among the main conclusions, the complications observed corresponded to crushing of screws and coverage of scar tissue, which amounted to 18%.

On the other hand, the study conducted by Sorolla et al. (10) aimed to evaluate the effectiveness of surgical methods in the microtia procedure, as well as the evaluation of the retrospective study, with a sample of 15 patients. From the primary outcomes obtained during 18 months of observation, it was determined that 16% of patients experienced complications corresponding to exposure of the upper third of the helix, poor definition of the atrial perimeter, dehiscence of the suture of the donor site and costal similarity.

The background exposed allows to evidence the problem of study, the same that focuses on patients with microtia, surgically treated with prostheses, the same that seeks to determine the efficacy and development of possible surgical complications, such as those shown above. Therefore, what is the efficacy and complications in surgical reconstruction with prostheses for the treatment of microtia? Therefore, the purpose of the inquiry is to describe the efficacy and complications in surgical reconstruction with prostheses for the treatment of microtia.

2. JUSTIFICATION

From a theoretical or scientific point of view, the study will provide bibliographic support for the improvement of subsequent research concerning the research question. Methodologically, the study sought to replicate in other health centers to compare the results obtained and benefit the community. Finally, this work aimed to verify the certainty of prostheses during surgical reconstruction from a practical point of view, benefiting patients with atrial hypoplasia who opt for this type of surgery, thus understanding the recognition and development of surgical complications of atrial aplasia. These patients. As a medical student, the study will serve as a bibliographic resource on the subject and as a basis for enhancing scientific research in professional practice.

3. THEORETICAL FRAMEWORK

Microtia

Microtia is defined as a defect in which the ears are small and malformed, occurring during differentiation during the first week of pregnancy (11). In addition, for the Stanford Medical School, it consists of a congenital anomaly of the outer ear in which it does not fully unfold in the first three months of pregnancy. "Microtia" symbolizes "little ear" and comes from the Latin words "micro" and "otia" (12). Also, for Leon, microtia is a congenital malformation in which the auditory pavilion (outer ear) is barely advanced and its shape changes, from a slight abnormality to the total absence of the pinna or absence of ear.

The most common manifestations are unilateral (79-93%) and right (60%) microtia, mainly in males associated with atresia or narrowing of the external auditory meatus. Where more than 80% of individuals harmed by this disease have conductive hearing loss on the affected side (13). It occurs in an average of 1 in 5,000-7,000 births. In 90% of them, only one ear is affected, which is known as partial microtia. If both ears are affected, it is called binaural microtia and requires immediate attention. Normally, they occur in infants in 65% and 35% in infants. Microtia is almost twice as common in the right ear (14).

Established risk causes include blood history of microtia, low weight, more uniformity, severe maternal illness, drug use, maternal diabetes, multiple births, maternal age, low maternal educational

level, previous blood pressure, perinatal viral infection, previous miscarriage, smoking, alcohol, drug or drug use, and Hispanic origin (15).

It is believed that genetic reasons and uterine vascular accidents during pregnancy are fundamental in the causes of microtia. Several groups have analyzed people with microtia and found evidence of inbred microtia and patterns suggestive of multifactorial succession. When combined with atresia or loss of the posterior atrial canal (low auditory subtlety), it indicates developmental failure. The ear is formed by the first gill arch (mandible) and the second gill arch (hyoid); It develops after the 5th week of pregnancy on both sides of the first ectodermal outer groove between the two arches, becoming the external canal (20).

Treatment

The procedure is surgical, for which various reconstructive methodologies have been specified. The most used are: implantological restoration, prosthetic restoration and autologous repair using costal cartilage, being the most accepted. Each technique has certain indications, as well as preeminences and prejudices; Similarly, protheses (artificial ears) are becoming less common (20).

Reconstructive surgical treatment

Reconstruction surgery is performed at age eight, as the ear has grown to 80 percent of its final size. The treatment is carried out in two stages and sometimes a third for its improvement. In the first, a mold of a healthy ear is used, from where the skeleton of the missing ear is built and a graft of its costal cartilage is extracted. This bone is implanted under the skin where the ear will burst, being attached to the testa and not protruding. In the next stage, the ear is raised using the flap rotation technique and complete skin graft to have the necessary symmetrical projection to the other ear (21-23).

Surgical reconstruction with costal cartilage grafts is a reliable technique that has been around since the 1920s. It usually takes two to four surgeries under anesthesia over several months to heal between each stage. There are several reconstruction techniques for grafting cartilage from the ribs. Both involve taking cartilage from the ribs of the chest and sculpting it into an ear-shaped structure in the first stage. The construction is then implanted into a lump of skin under the skin of the skull, where the new ear will be located. The newly created cartilage structure is now part of the individual's living tissue and fuses after 3 to 4 months, at which point the second stage of surgery takes place. In the second stage, an incision is made behind the ear to separate the ear from the skin of the scalp, and the cartilaginous structure is lifted so that it is free of only a sufficient projection. A skin graft is then used to help cover the back of the ear that has just been lifted. Sometimes additional small steps are taken to anatomically improve the silhouette of the ear and/or address the appearance of scars (24).

Treatment with the use of implants

The use of osseointegrated implants to secure external ear protheses gives us a new dimension in ear reconstruction. The improvement of ear protheses has enabled to fuse a variety of materials such as silicone and acrylic to mastoids with titanium bone, which has achieved a sufficient aesthetic effect in patients with cancer, burns, consequences of poor skin quality and patients with failures. Autologous atrial reconstruction is beneficial. External atrium protheses are designed by the prosthetist from a normal ear model to treat partial microtia; and models of the parent or sibling of a patient with bilateral microtia (25-29).

On the other hand, prosthetic ears can be made to look very real. Ear protheses can be worn with adhesives or attached to an anchoring system for a secure fit. They are made of a material that feels like skin and may be a good choice if other options don't work. A prosthesis with an implanted support allows the patient to swim and bathe using the prosthesis. This is a much less painful procedure and can be performed in a single stage. Some patients have difficulty applying medical-grade glue or implanting anchoring systems. An implanted anchor may have a risk of infection of the surrounding skin, in addition, the protheses wear out over time and need to be replaced.

4. OBJECTIVES

To describe the efficacy and complications in surgical reconstruction with protheses for the treatment of microtia.

5. METHODOLOGY

a. Studio Design

Methodologically, the study approach is qualitative, since a narrative literature review will be carried out to determine the efficacy and complications in surgical reconstruction with protheses for the treatment of microtia.

Within the structure of the study, an analysis of the research background will be carried out, that is; Related studies that were published before the study, in order to identify the current situation of the problem. Subsequently, the theoretical bases referring to the central pathology, that is, microtia, as well as the efficacy and development of complications related to surgical reconstruction will be identified.

b. Inclusion criteria - exclusion

Inclusion criteria

- Articles published in Pubmed, Scopus and Latindex databases.
- Articles published between 2019-2022.
- Studies that are related to the problem.
- Articles in English and Spanish.
- Systematic research, case studies, review articles, descriptive studies.

Exclusion criteria

- Non-indexed journal studies.
- Studies published in years less than 2019.
- Articles with incomplete information.
- Articles that address a different perspective to the problem analyzed.

c. Databases to use

Pubmed, Scopus and Latindex.

d. Keywords and methods.

For the identification of studies related to the problem, the reference bank Pubmed, Scopus and Latindex was considered from the opening of a user. The descriptors to be used correspond to the Health Sciences Descriptors (DeCs) and Medical Subject Headings of the National Library of Medicine of the United States (MeSH), which correspond to: "Complications", "Efficacy", "Microtia", "Surgery".

Similarly, the keywords in English and Spanish, to be used for the search, are: Efficiency, complications, surgical reconstruction, prosthesis and microtia, applying as Boolean operators "AND", "NOT", "OR". Studies published between 2019 and 2023 using articles according to the inclusion and exclusion criteria will be included.

6. CONCLUSIONS

The present study allows to establish the efficacy and complications of the surgical intervention based on the prosthesis in patients with microtia, within the main criteria of effectiveness of the intervention, is the anchorage that has this for a safe adjustment, in the same way, due to the characteristics of its components, they keep some similarity with the skin, In some of the techniques applied, such as the prosthesis held with implanted buttress, it allows the patient to perform their personal hygiene or swim without having to remove it. From the surgical point of view, it is less painful and can be performed in a single intervention. However, within the specific complications, it can be evidenced that some patients have problems with the medicine glue or the implanted anchor, in addition to producing a

cutaneous infectious process in the surroundings and the life time of the same, makes it necessary to be replaced.

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