

# Auricular prosthesis after Complication of Surgical Reconstruction of Auricular Defect

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## ABSTRACT:

Reconstruction or rehabilitation of paediatric patients with craniofacial deformities should be done as early as possible in order to reduce the psychological impact on the patient's development. Autogenous reconstruction or use of alloplastic implants for surgical reconstruction sometimes have surgical complications leading to removal of the reconstructed part. In such a situation, prosthetic rehabilitation can be carried out as an alternative treatment option. Retention of auricular prosthesis can be achieved by use of spectacles, head bands, adhesives or implants. Extracranial implant treatment in the auricular region however should be deferred until completion of growth. The following case report describes the fabrication of an adhesive retained auricular prosthesis for replacement of an ear defect in a young patient who had to undergo removal of surgically reconstructed right ear due to infection.

**Key words:** Auricular prosthesis; adhesive retained; surgical complication.

## INTRODUCTION:

Auricular defects may be congenital or acquired. They are the second most common craniofacial malformations after cleft lip and cleft palate. The most common congenital auricular defect is microtia. It is a congenital deformity of the pinna, which can be unilateral or bilateral and occurs in about one out of 8,000 - 10,000 births. In unilateral microtia, the right ear is most typically affected.<sup>1</sup> These abnormalities can subject the individual to social ostracism and ridicule, thus resulting in low self-esteem.<sup>2</sup>

Surgical correction and prosthetic rehabilitation are the two options available for correction of auricular defects. Auricular reconstruction can be done surgically by implantation with autogenous cartilage grafts or various alloplastic prosthesis implantations.<sup>3</sup> Tissue engineering is a newer method for potential clinical application in auricular reconstruction.<sup>4</sup>

Patients with auricular deformities should be considered surgical candidates first. If they are not surgical candidates for reconstruction because of high operative risk, severely compromised tissue, or failed previous autogenous ear reconstruction, then ear prosthesis should be considered as an alternative treatment.<sup>5</sup>

This case report is a brief description of fabrication of adhesiveretained silicone prosthesis for a patient who had a failed autogenous reconstruction of the right ear.

#### **CASE REPORT:**

A 12 year old female patient was referred to the Department of Prosthodontics, Sibar Institute of Dental Sciences, Guntur, with a unilateral auricular deformity on the right side. The patient's guardian gave a history of a failed ear reconstruction two years ago. The reconstruction had to be removed due to infection.

Clinical examination showed redundant tissue behind an intact tragus. Scar tissue was present extending upto 4 cm behind the tragus and 6 cm in length. (Fig 1) An adhesive retained silicone prosthesis was planned as an interim option, till the patient is old enough for implant placement, keeping in mind the psychological impact of the deformity on the patient's development. The patient's guardian refused surgical removal of the redundant tissue.

#### **PROCEDURE:**

Impression was obtained with the patient lying on her side in a supine position. Condylar movements were examined to check for mobility of tissue that may affect the placement of the margin, tissue coverage and retention of the prosthesis.<sup>(6)</sup> After applying petrolatum to the adjacent hair a large casting ring was used to contain the impression

material. Irreversible hydrocolloid was mixed with 50% more water to improve its flow properties and facilitate impression procedure. The material was allowed to set and then removed and inspected for inaccuracies following which a working cast was poured. (Fig 2)

#### **SCULPTING**

The wax pattern of the ear was obtained by 'donor technique'. The donor ear was closest to that of the patient's normal ear. An impression was made of the donor ear and melted wax was poured into the impression. The wax pattern thus obtained was adapted to the working cast and sculpted to mimic the contours of the normal ear closely. Surface texture on the pattern was created by using a damp sponge (Fig 3). The pattern was also extended to cover the scar tissue. This was done to increase the area over which the adhesive could be applied. The outline of the scar tissue and the intact tragus helped orient the wax pattern during try in (Fig 4).

#### **THREE PART MOLD FABRICATION**

V-shaped notches were prepared on all four corners of the working cast. After applying a separating medium, the posterior under-surface of the sculpted ear was registered by placing a mix of type III stone posteriorly along the greatest dimension of the helix and lobe enclosing all of the posterior aspect of the form. After the material had set, escape channels for silicone material were prepared by placing strips of wax (Fig 5).

After application of another layer of separating medium, the entire working cast with the second part of the mold was boxed and type III stone was poured to completely cover the rest of the wax form and the outer surface of the second part of the mold. Dewaxing was done after the mold had set. The three parts of the mold were separated (Fig 6).

#### **PACKING OF THE MOLD**

RTV silicone material (MP Sai Enterprise, Mumbai) was used for fabrication of the prosthesis. Liquid pigments (Principality Skin Shades) were used for matching the skin tone of the patient. The evaluation of the shade was done under natural light. After applying separating medium (soap

solution), a little darker shade than the patient's basic skin tone was brushed onto the mold surface in places where shadows were observed. The three parts of the mold were approximated into a tightly fitting mold assembly after generously coating the entire mold surface with the basic color silicone. The final prosthesis was allowed to cure for 24 hours before retrieving it for finishing. The mold was preserved for use when the patient would require a replacement. The final prosthesis was then placed in position using medical adhesive (Fig 7 & 8).

### RETENTION OF THE PROSTHESIS

Medical adhesive (B-200-R, Daro Products, USA) was applied in a thin film on the tissue surface of the prosthesis and on cleaned skin surface and allowed to dry. The prosthesis was then placed in position by applying slight pressure. The guardian of the patient was taught how to place and remove the prosthesis using the tragus and scar outline as guideline. They were also instructed to keep the skin clean and free of oil secretions. While cleaning the prosthesis they were advised to ensure complete removal of the adhesive both on the skin and the prosthesis.

### DISCUSSION

Prosthetic rehabilitation of auricular defects is performed due unsuitability of the patient for surgery, due to surgical complications<sup>5</sup> or because of economic constraints.<sup>7</sup>

Retention of prosthesis can be achieved by mechanical means or by adhesives or implants. Mechanical retention may be by way of tissue undercuts or skin tunnels, attachment to spectacles or headband.<sup>8</sup>

Implants are the preferred mode of retention for the auricular prosthesis as they have better patient acceptance and treatment satisfaction.<sup>9</sup> The placement of extraoral implants, however, should be deferred to allow the completion of growth in children. Placement of implants during active craniofacial growth may decrease the functional life of implants. Moreover, long-term stability of implants may be further compromised at puberty

when the mastoid air cells undergo their greatest development. Moreover, children from ages 5 to 12 are considered at a higher risk for complications because of thinner and softer temporal bones and are at an increased risk for disruptive accident injury.<sup>5</sup>

In order to delay the treatment for a few years until the growth of the patient is completed, however, one must consider the psychological impact of the deformity on the patient's overall development. Psychologic problems in children with craniofacial deformities have included lack of emotional attachment between parent and child, inadequate development of peer relationships, and the experience of shame related to a poor body image.<sup>5</sup>

While delaying the implant treatment, we fabricated an adhesive retained auricular prosthesis to be used by the patient for a temporary period.

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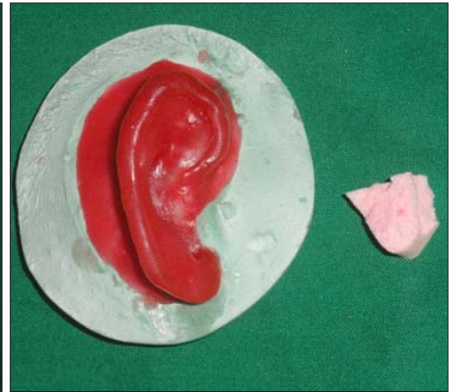
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**Fig 1:** Scar tissue after failed ear reconstruction



**Fig 2:** Impression of the defect



**Fig 3:** Wax Pattern and sponge used for surface texturing



**Fig 4:** Try in of the wax pattern



**Fig 5:** Second part of the mold with wax strips placed to form escape channels



**Fig 6:** The three part mold after dewaxing



**Fig 7:** Final Prosthesis in place viewed from the side



**Fig 8:** Before and after views