



## RESEARCH ARTICLE

### FABRICATION OF AURICULAR PROSTHESIS: A CLINICAL REPORT

Dr. Renu Gupta, Dr. Luthra, R.P. and \*Dr. Savisha Mehta

Department of prosthodontics, Himachal Pradesh Govt. Dental College, Shimla, India

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#### ABSTRACT

Rehabilitation of patients with facial deformation requires multidisciplinary approach. Repair of auricular defects can be a difficult task replicating pronounced convolutions and severe undercuts with wide range of clinical presentations and available treatment options. Surgical reconstruction is not possible in all situations, thereby necessitating fabrication of esthetic prosthesis. This clinical report presents an outlined procedure for fabrication of an auricular prosthesis using 3-piece die technique which is cost effective, less time consuming and provides cosmetically acceptable prosthesis.

#### Key words:

Ear Prosthesis, Rehabilitation, Triple layer impression technique, 3-piece die, Room temperature vulcanizing silicone.

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## INTRODUCTION

Maxillofacial prosthodontics is the art and science of anatomical, functional, and cosmetic restoration by means of artificial replacement of head and neck that are missing or defective. Face is the most noticeable part of the body and provides a sense of distinctiveness and, is the sole source of visibility, hearing, taste and smell. Thus facial defacement whether acquired or congenital has the potential to cause multiple problems and psychological dysfunction, requiring multidimensional approach for optimal post treatment outcome, focused on area involved for rehabilitation such as eye, ear, nose or midface. A prosthetic replacement of an external part to provide a life like, integrated, esthetically and anatomically harmonious prosthesis, which amalgamates with the body, is termed as epithesis. (Mantri *et al.*) Replicating natural contours and convolution on contralateral side presents a challenge while rehabilitating unilaterally missing ear. (Gajdha *et al.*, 2015) This case report describes the procedure for fabrication of a prosthetic ear as a suitable alternative to autogenous bone grafts and bone anchored prosthesis.

#### Case report

An 8 year old male patient reported to the Department of

Prosthodontics, H.P.G.D.C. Shimla, Himachal Pradesh with unilateral microtia. It was decided to rehabilitate the case with auricular prosthesis using room temperature vulcanizing (RTV) silicone material.

#### Impression

The patient was seated in an upright and comfortable sitting position. Coordinates of vertical and horizontal axis were marked on the patient's skin (Fig. 1) and transferred on the working model to help in orientation over the defect while making new ear form. Triple layer impression technique (fig. 2) was used for making impression as described by Mohammed K *et al* (Mohamed *et al.*, 2013). Impression was made using irreversible hydrocolloid and a custom made tray to suit this technique (Fig. 3). Working cast was poured using class IV stone after boxing the impression (Fig. 4).

#### Form contouring

An ear form was selected by choosing an individual with a similar ear proportions. Impression was made in similar manner as described earlier. Molten baseplate wax was poured into impression. The tissue surface of the retrieved wax form was softened and seated on the defect area of the working cast using marked coordinates (Fig. 5). Sculptured form was completed and checked for symmetry by removing the form from the working cast and placing it over the patient's defect site. Working cast was notched at its borders to create keys for surface die alignment.

\*Corresponding author: Dr. Savisha Mehta,  
Department of prosthodontics, Himachal Pradesh Govt. Dental College, Shimla, India.



**Fig. 1.** Co-ordinates of x and y axis marked on patient



**Fig. 2.** Triple layer impression technique



**Fig. 3.** Alginate impression obtained



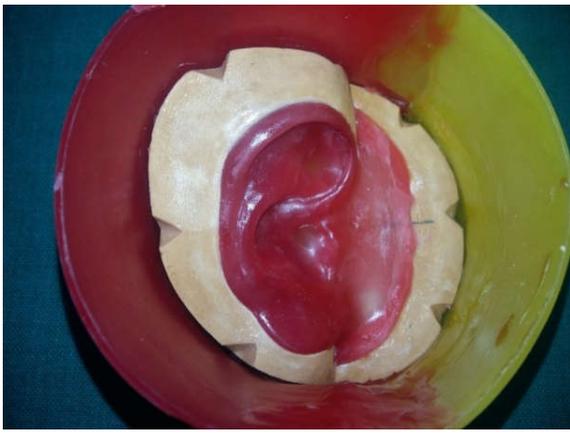
**Fig. 4.** Working casts fabricated in class IV stone



**Fig. 5.** Sculptured ear form attached to working cast



**Fig. 6.** Posterior undersurface registered in class IV stone



**Fig.7. Boxing of complete cast**



**Fig. 8. Three piece mold fabricated**

#### **Surface die fabrication**

The sculptured ear form, while seated on the working cast, was boxed in wax along the height of contour of the helix and lobe enclosing all of the posterior aspect of the form. The complete posterior undersurface of the sculptured ear was registered by pouring Class IV stone into the boxed area (Fig.6). Border of the posterior stone cast registration was notched and lubricated. Complete working cast was boxed as shown in Fig. 7 with the sculptured form, including the posterior stone registration and Poured with class IV stone into the boxed area completely

covering the external Surface of the wax form and the outer surface of the posterior stone registration (Fig. 8).



**Fig. 9. Final prosthesis**

By this procedure, all aspects of the sculptured form were registered by the two external surface registrations and by the working cast itself. All artifacts and aberrations which might prevent the approximation of the die surfaces into a tightly fitting mold assembly were removed.

#### **Silicone painting**

A generous amount of a selected base color of silicone compounded was poured onto a glass mixing slab by incorporation of various amounts of different resin pigments. Patient was seated near the dentist for convenient referral in evaluating the skin tones and color highlights. Various pigment tones were slowly incorporated into the major pool of resin to form the basic intrinsic color. Blend was compared to the natural skin by occasionally holding a sample on the mixing spatula near the ear of the patient. After final matching blend a sufficient amount of base color was set aside until the mold was prepared for the final packing procedure. Generously all three die surfaces were painted with basic color silicone and dies were accurately assembled Using keyed margins. Sufficient pressure was applied to insure complete contact of the die borders, and secure them in place. After complete curing mold was disassembled, and processed silicone was carefully retrieved. Prosthesis was inspected for color and for any bubbles within the cured material and tried on the patient (Fig.9). (Brown, 1969)

#### **DISCUSSION**

Fabrication of auricular prosthesis is one of the most challenging reconstruction regarding severe undercuts and pronounced convolutions, but can provide excellent cosmetic results. Autogenous grafts are gold standards for repair, but prosthetic replacement is a suitable alternative in patients whom repair with autogenous grafts is not possible. Prosthetic replacement has several advantages over surgical or plastic

reconstruction as being simple, relatively cost effective, less time taking, allows for periodic evaluation and cleaning of site, complete control of color shape and position of prosthesis and orientation of ear prosthesis is critical to achieve specially in unilateral missing ear. Disadvantages include need for remaking, dependence on adhesives and retaining devices. Impression technique plays vital role in accurate reproduction of affected and unaffected ear, orientation of ear during wax trying and fabrication of ear prosthesis. Triple layer impression technique has several advantages like less distortion of ear, easy retrieval of model and wax pattern, less voids. (Mohamed *et al.*, 2013; Singh *et al.*, 2013; Shiva, 2014)

### Summary and conclusion

This article presents an outline of the fabrication procedure of an auricular prosthesis employing a three piece stone mould for processing silicone. The critical steps are systematically summarized including impressions, sculpturing and processing to insure good quality prosthetic replacements. The placement of artificial prosthesis serves as a great psychological, social, and cosmetic benefit in rehabilitation of the patient. (Singh *et al.*, 2013; Shiva, 2014)

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