

CASE REPORT

PROSTHODONTIC REHABILITATION OF A PATIENT WITH UNILATERAL AURICULAR DEFECT: A CASE REPORT

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ABSTRACT:

Disparity in the balance of shape and size of body organs are perceived as flawed and this perception can subject the individual to low self-esteem and can cause psychological trauma to the patient. Maxillofacial prosthetics aids in rehabilitation of such patients. It is the art and science of anatomical, functional and cosmetic reconstruction of the missing or disfigured structures of head and neck. This article presents the clinical and laboratory procedures for fabrication of auricular prosthesis for a patient with trauma related unilateral auricular deformity using triple layer impression technique and three-piece die fabrication.

Keywords: Auricular prosthesis, maxillofacial rehabilitation, room temperature vulcanizing silicone.

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INTRODUCTION

Maxillofacial trauma leads to facial disfigurement resulting in great psychological trauma to the patient thereby affecting the quality of life adversely. The rehabilitation of patients with unilateral missing ear poses a challenge in terms of replicating the natural convolutions and contours present on contralateral side. Fabrication of an auricular prosthesis is more of an art than science. Close approximation of form, color and texture of the prosthesis to the surrounding natural tissue is the sole responsibility of maxillofacial prosthodontist. Various treatment options available nowadays are traditional mechanically retained prosthesis, bio-adhesive retained prosthesis, implant retained, and Computer Aided Designing-Computer Aided Machining (CAD-CAM) developed prosthesis.^{1,2}

Surgical reconstruction can be done to restore the defect but in certain situations like age, medical condition or financial constraint of a patient does not permit surgery.³ Prosthetic reconstruction as being cost-effective, time-saving and simpler alternative with less morbidity is considered. Acceptance of such prosthesis by the patient depends mainly on retention. Various retentive aids available are medical adhesives, anatomical undercuts, and mechanical devices like hairbands, magnets and implants. Medical and financial constraints often doesn't allow patient to undergo implant placement. In such patients, biological adhesives provide adequate retention. This case report describes the procedure of prosthetic rehabilitation of a patient with unilateral missing ear using silicone ear prosthesis.

CASE REPORT

A 37 year old male patient reported to the Department of Prosthodontics, H.P Government Dental College, Shimla Himachal Pradesh with unilateral auricular deformity on right side. He gave a history of trauma 2 years back resulting in auricular defect. Clinical examination revealed deformed helix, antihelix, concha, antihelical fold and lobules (Fig.1). Patients left ear was normal with normal hearing pattern. Hearing pattern is normal in right side external auditory canal. It was decided to rehabilitate the case with auricular prosthesis using room temperature vulcanizing (RTV) silicone material.

PROCEDURE

Impression was obtained with the patient lying on his side in a supine position. Clinical landmarks were marked, superior horizontal line through superior tarsal plate and nasion, inferior horizontal line through base of nose, anterior vertical line through outer rim of orbit and perpendicular to horizontal lines, and posterior vertical line through angle of mandible and perpendicular to horizontal lines. These lines will be transferred on the working model to help in orientation over the defect for fabrication of new ear form. Triple layer impression technique was used for making impression using custom made tray with irreversible hydrocolloid impression material.⁴ The impression material was allowed to set, the inferior aspect of the tray was relieved with fingers and lifted to support the impression material(Fig.2).

The impression was carefully retrieved. Working model was prepared with Type IV gypsum after boxing the impression. Similar impression procedures were carried out

for the contralateral ear, and a stone cast model of the same was also prepared (Fig.3).

SCULPTING

A measurement of patient's normal ear was done using calipers. A donor ear of similar dimension was chosen. Impression was made in similar manner as described earlier. Molten modeling wax was then poured into the donor ear impression and allowed to cool completely to avoid distortion. The wax pattern was retrieved and tissue surface was softened to seat it on the defect area of working model. Free hand carving was done keeping the contralateral ear model as a reference and sculpting was completed. After sculpting, try-in was done by placing over the patient's defect site (Fig.4). Notching of working cast was done at its borders to create keys for surface die alignment.

SURFACE DIE FABRICATION (3-PIECE DIE)

The sculptured ear form, while seated on the working cast, is boxed in wax along the greatest dimension of the helix and lobe enclosing all of the posterior aspect of the form. Posterior undersurface of the sculptured ear was registered by pouring type IV stone into boxed area. Notch the borders of the posterior stone cast registration and lubricate the exposed surfaces. Type IV stone was poured into the boxed area completely covering the external surface of the wax form and the outer surface of the posterior stone registration. By this procedure, all aspects of the sculptured form are registered by the two external surface registrations and by the working cast itself (Fig.5). All artifacts and aberrations which might prevent the approximation of the die surfaces into a tightly fitting mold assembly were removed.

PACKING OF THE MOLD

An adequate amount of a selected base color of silicone compounded was poured onto a glass mixing slab by integration of diverse resin pigments. Patient was seated nearby for suitable referral in assessment of skin tones and color highlights. When final matching of color was established, it was adequately coated on entire mould surface. Keyed margins were used to accurately assemble and create the complete mold form. Mold was placed at room temperature for curing to occur, and after complete curing mold was disassembled. The silicone prosthesis was then examined for defects and porosities prior to being trimmed and finished using scissors and burs (Fig.6).

RETENTION AND CARE

Instructions were given to the patient to keep the skin surface clean and free of oil secretions to ensure proper adhesion of prosthesis. Apply silicone probond adhesive (Technovent) in a thin film to the periphery of prosthesis.

Remove old adhesive films from skin and surface of prosthesis for each new application (Fig.7).



Figure 1: Auricular defect



Figure 2: Impression



Figure 3: Final cast



Figure 4: Try in



Figure 7: Prosthesis insertion



Figure 5: 3-piece Die

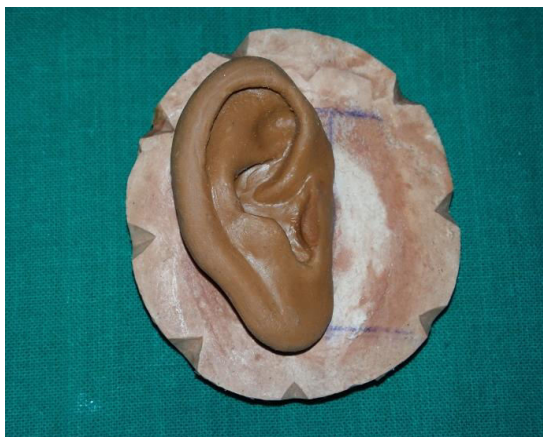


Figure 6: Final silicone prosthesis

DISCUSSION

Auricular deformity affects the psychological well-being of patient adversely thereby affecting the quality of life. It can be repaired or reconstructed surgically using autogenous tissue grafts but it is not feasible in patients due to medical or economical reasons.⁵ Fabrication of auricular prosthesis using room temperature vulcanizing silicone is a good alternative. It has several advantages like cost-effectiveness, time-saving, complete control over color and shape of prosthesis.⁶

Impression technique used here i.e. triple layer impression technique is advantageous over conventional technique as it causes less distortion of ear, easy retrieval from three layers of impression surface, easy retrieval of the wax pattern and less voids.⁴ Adhesives are used which require patience and precision of the wearer to obtain correct initial placement of the prosthesis. Allergic contact dermatitis is known to occur with skin adhesives. Some prostheses may be lined with urethane to improve adhesion. Large silicone auricular prostheses can be attached to the head with the use of magnets, when osseointegrated titanium implants are used, thus avoiding the need for adhesives.⁷

CONCLUSION

The present article outlines the rehabilitation of a patient with trauma induced unilateral auricular deformity with adhesive based silicone auricular prosthesis employing a three piece stone mould for processing. Successful use of prosthesis may depend on the patient's psychological acceptance of it. Patient's participation in the decision making process with realistic expectations is also of vital significance. Patient was informed well about the limitations and care of the prosthesis.

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