



Journal Homepage: -www.journalijar.com

INTERNATIONAL JOURNAL OF ADVANCED RESEARCH (IJAR)

Article DOI:10.21474/IJAR01/16242
DOI URL: <http://dx.doi.org/10.21474/IJAR01/16242>



RESEARCH ARTICLE

CUSTOMIZED THERMOPLAST RETENTIVE AID FOR PARTIAL AURICULAR PROSTHESIS-A CASE REPORT

Dr. Indu Raj¹, Dr. Femitha Syed² and Dr. Tony Joy³

1. Professor, Department of Prosthodontics, Government Dental college, Kottayam.
2. Senior Resident, Department of Prosthodontics, Government Dental college, Kottayam.
3. Junior Resident, Department of Prosthodontics, Government Dental college, Kottayam.

Manuscript Info

Manuscript History

Received: 10 December 2022
Final Accepted: 14 January 2023
Published: February 2023

Key words:-

Auricular Prosthesis, Silicones,
Maxillofacial Prosthesis

Abstract

Auricular prostheses were traditionally retained using chemical adhesives, mechanical retentive aids or natural undercuts at retention sites. These methods have the limitation of frequent loss of retention, skin reactions to adhesives, or unnatural movements of the prosthesis. Osseo integrated implants which has superior advantages over others have disadvantages for patients with financial constraints and/or who are apprehensive of surgery. Also, extraoral implants require adequate thickness of bone, which may be deficient in certain cases. In this case report, we have described about a new technique of fabricating and incorporating a customized thermoplastic auricular retentive aid thus utilizing both anatomic and mechanical retention.

Copy Right, IJAR, 2023., All rights reserved.

Introduction:-

Man's need for beauty has probably existed as long as man himself. Artificial replacements for lost body parts have been documented well even from ancient times. Restoration of facial defects is a difficult challenge for both the surgeon and the prosthodontist.

Auricular defects, ranging from microtia to anotia, can be due to congenital malformations, trauma, or surgical removal due to neoplasms.

Surgical reconstruction of the ear is considered as a demanding challenging for the plastic surgeon due to the complex helical morphology of the ear which is difficult to reconstruct similar to the opposite ear.

Prosthetic treatment is gaining more popularity due to low cost, better shade matching, shorter treatment time, and less invasiveness.

Auricular prostheses were conventionally retained using chemical adhesives, natural undercuts at retention sites, mechanical retention using spectacles or hairband. However, these methods were unsatisfactory because of frequent loss of retention, skin reactions to adhesives, or unnatural movements of the prosthesis. Osseo integrated implants have become a popular option with superior advantages over others. However they have disadvantages for patients with financial constraints and/or who are apprehensive of surgery. Further, extraoral implants require adequate thickness of bone, which may be deficient in certain cases⁽¹⁾.

Corresponding Author:- Dr. Femitha Syed

Address:- Senior Resident, Department of Prosthodontics, Government Dental College, Kottayam.

In this case report, we have described about a new technique of fabricating and incorporating a customized thermoplastic auricular retentive aid thus utilizing both anatomic and mechanical retention.

Case report:

A 46 year old female patient reported to the Department of Prosthodontics, Government Dental College, Kottayam, with chief complaint of unesthetic appearance of both her ears. (Figure 1,2,3) She gave a history of losing her ears due to burn 5 months back. Since then she is under treatment for the burnt parts of her face. Hence invasive surgical reconstruction or implant-placement as retaining aid were not considered as good options.

Impression stage:

To make an impression, the patient's head was tilted with the auricular area as horizontal as possible. Facial skin and hair around the defect and the contra lateral ear were covered by a thin layer of petroleum gel. The external auditory canal was blocked with gauze to prevent entry of impression material. Wax sheets were used to make a box shaped tray for supporting the impression material. Impression of the both the residual ears were taken by injecting light body into the helical portions followed by placing putty for supporting the impression. (Figure 4) Care was taken not to compress the remaining ear lobule. The impressions were poured with type III gypsum. (Figure 5)

Impression of the patients sibling's left and right ear was also taken (donor technique) in a similar way and poured in type III gypsum.

Fabrication of customized thermoplast aid :

5 × 5 inch PVC thermoplastic sheet was adapted on the model of the residual ear with a vacuum former machine for making a customized ear retentive aid. (figure 6)

Wax try-in:

Wax pattern of both the ear was made using the template ear model and it was adapted onto the customized splint. This was then tried on the patient. The retention of the splint and orientation were checked and necessary alterations were made. Skin folds, wrinkles, and stippling were created on the pattern, which was then finished to achieve proper texture and margins were merged and sealed on the model. (figure 7,8,9)

Investment and dewaxing:

Investment of the wax pattern was done using 3 pour technique. The first pour was done up to the base of the pattern. (Figure 10) After application of separating media, the second pour was done to the level of the helix. (Figure 11) The third pour covered the first and second pour entirely. (Figure 12) This reduced the chance of the prosthesis tearing during recovery, or mould fracturing during deflasking. Dewaxing was done in boiling water for 10mins. The splint was not removed from the mould

Shade matching and packing:

Before packing of the mould with silicone material, the shade selection of the prosthesis was done. (Figure 13) For darker area the nape of the neck was taken as reference and for lighter areas back of the ear was taken. Slightly darker shade similar to patients burnt discolouration was painted onto the first layer of mould followed by which silicone (Factor II) was injected into the helical area. This was followed packing the entire mould with the base colour selected. (figure 14)

Final prosthesis:

The polymerized prosthesis was retrieved, trimmed and polished. It was then tried on the patient for fit, colour, and translucency. Further colour matching was done with extrinsic stains. Redder/pinker shade of extrinsic stains were given at anterior border to merge with patients burnt skin. The customized splint was bonded to the inner surface of prosthesis using Silicone Platinum Primer. (figure 15) Earrings were also attached to this prosthesis (figure 16). Retention of the prosthesis was adequate with the customized aid and the patient was satisfied with the aesthetics. (figure 17,18)

Discussion:-

The difficulties encountered during prosthetic rehabilitation of auricular prosthesis include obtaining accurate impression of the defect without compressing the tissue, orientation and sculpting of the ear accurately, obtaining a satisfactory shade, achieving adequate retention and finally merging the borders with the natural skin.

In this article we have described a method of customizing the retentive aid by adapting a pvc sheet over the remanant ear and fabricating a splint. Previous articles have described about the using pvc splint but this was removed after dewaxing stage^(2,3). In this report ,the thermoplastic aid was incorporated into the final prosthesis. The advantages of this technique include ease in repeated trials, coverage of the entire ear leading to better retention and eliminated the use of conventional mechanical retentive aids or chemical adhesives which have theiron limitations.

Silicone has been the material of choice for many years, for properties like esthetics, flexibility, biocompatibility, ability to accept intrinsic and extrinsic colorants, translucency, chemical and physical inertness, moldability, softness, and ease of cleaning.

The limitation of this case included difficulty in shade matching due to burnt areas on the face . As of this writing, the patient has used the prosthesis for 1 year and the patient presented with no complaints.

The final prosthesis made by this technique showed adequate retention and esthetics, along with being economical and convenient. We have used mechanical anchorage in the form of a customized aid to lock into the anatomical auricular undercuts. This technique can be successfully used as a mode of retention for partial auricular prosthesis rehabilitation.

Figure 1:- Pre treatment photograph.



Figure 2:- Residual right ear.



Figure 3:- residual left ear.



Figure 4:- Impression of the right and left ear taken using light body and putty.

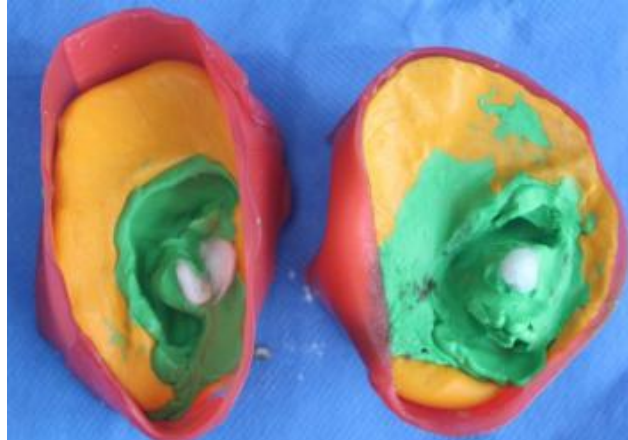


Figure 5:- Impression poured in type III stone.



Figure 6:- 5 × 5 inch PVC thermoplastic sheet adapted with a vacuum former machine.



Figure 7:- Wax trial.



Figure 8:- Wax trial with thermoplast retentive aid.



Figure 9:- Wax trail of left ear.



Figure 10:- 1st pour upto base of the pattern.



Figure 11:- 2nd pour upto helix.



Figure 12:- 3rd pour covering 1st and 2nd pour.

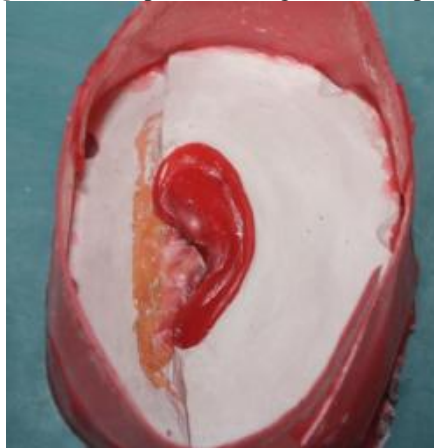


Figure 13:- Shade matching.



Figure 14:- Laminar glazes added over the mould.

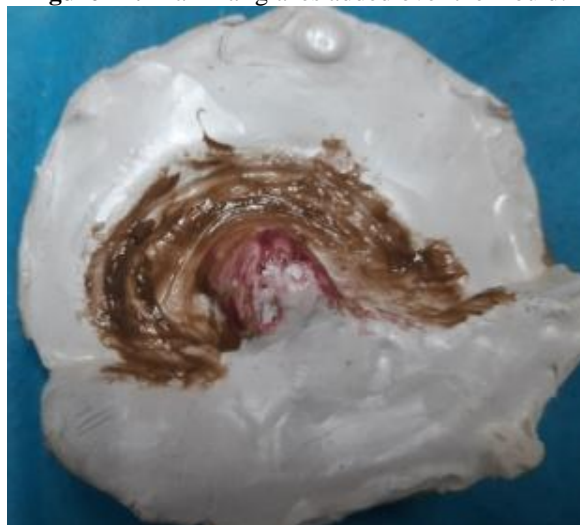


Figure 15:- Inner surface the prosthesis with the retentive aid incorporated.



Figure 16:- Final prosthesis with earrings attached.



Figure 17:- Post treatment picture.



Figure 18:- Post treatment-lateral view.



References:-

1. Dilber E, Koc O, Ozturk AN, Karamese M. Craniofacial Implant-Retained Auricular Prosthesis: A Case Report. *J Oral Implantol.* 2013 Aug 1;39(4):479–82.
2. Nonimplant, Nonadhesive Overlay Approach to Retain a Partial Auricular Prosthesis - Raghuvanshi - 2019 - *Journal of Prosthodontics* - Wiley Online Library [Internet]. [cited 2022 Apr 26].
3. Aggarwal H, Kumar P, Singh S, Singh R. JPD auricular pattern. 2015 Mar 4.