

Auricular Prosthesis Retained with Hair Clip and Earring: A Case Report

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Received: April 30, 2018; Published: June 21, 2018

Abstract

Auricular defects are the second most common craniofacial malformation after cleft lip and palate. They may be congenital or acquired. There are two basic modalities for managing an auricular defect; surgical reconstruction or prosthetic rehabilitation. Prosthetic rehabilitation has proved to be effective in managing maxillofacial defects. Adequate retention and support must be provided to the prosthesis if successful results are to be achieved. Compared to the conventional means of retention, excellent results have been obtained with the use of craniofacial implants. However, its use is limited due to the additional cost, insufficient available bone or refusal by the patient for a surgical option. Mechanical retention is a cost effective and esthetically acceptable alternative for holding the prosthesis in place. The article presents a novel technique for rehabilitating a patient with an auricular prosthesis using a hair clip and earring.

Keywords: Maxillofacial Defect; Rehabilitation; Ear Prosthesis; Retentive Aids

Introduction

Auricular defects are the second most common craniofacial malformation after cleft lip and palate. They may be congenital or acquired [1]. A facial deformity not only compromises the function but also causes a significant impact on patient's self-image and their ability to interact socially [2]. There are two basic modalities for managing an auricular defect; surgical reconstruction or prosthetic rehabilitation. However, surgically correcting the defect is challenging due to the complex anatomy of the human ear. A prosthesis, on the other hand, is a cost effective, non-invasive method which provides better esthetic outcomes [3]. The article presents a unique technique for rehabilitating a patient with an auricular prosthesis using a hair clip and earring.

Case Report

A 51 year old female patient reported to the Department of prosthodontics with a chief complaint of missing right ear due to burn injury 3 years back and desired to get it replaced with an auricular prosthesis. The patient gave a history of 2nd degree burn injury involving the right side of the face and neck which was surgically treated (Figure 1).

On clinical examination, the helical and anti-helical portion of the auricle was lost on the right side with intact external auditory meatus. There was no hearing impairment. The tragus was indistinguishable. Ear lobule was present with a ear hole pierced. The skin on the right side was scarred and pigmented. Left side of the face was unaffected and showed a normal ear and normal skin.



Figure 1: Defect caused due to Burn.

As the patient was against surgical intervention, she did not opt for surgical reconstruction of the ear or implant retained prosthesis.

Hence, a mechanically retained silicone auricular prosthesis was preferred. It was decided to retain the prosthesis using ear ring as the patient had an intact ear hole and a hair clip.

Procedure

- 1) The patient was seated on the dental chair in upright position for the impression procedure. Petroleum jelly was applied on the area to be recorded and was confined with boxing wax. The external auditory canal was blocked with cotton to prevent entry of the impression material.

- 2) Impression of the defect was made using addition silicone of medium consistency with putty backing. U shaped pins were inserted into the putty (Figure 2) and dental plaster was poured (Figure 3). This was done to provide support to the impression material. After the impression was retrieved (Figure 4), it was poured in type 3 dental stone to obtain the stone model.
- 3) For the impression of the contralateral side and the donor ear, the ear was supported by putty followed by alginate impression with plaster backing. Putty was used to prevent the collapse of the ear while making the impression.
- 4) Impression of the contralateral side was poured in type 3 dental stone and cast was obtained. This served as a guide for sculpting the wax pattern. For the wax pattern, the donor ear impression was poured in molten modelling wax to form its positive replica which was modified to the desired morphology corresponding to the patient's left ear.
- 5) The prepared wax pattern was adapted onto the stone model (Figure 5) and then it was checked on the patient's face for, esthetics, correct horizontal alignment and the projection of the ear in relation to the side of the head. This was followed by matching the shade of the silicone with patient's skin colour using intrinsic pigments.
- 6) The wax pattern was then invested in a dental flask using three pour technique. Routine wax elimination was done. After the complete removal of wax, silicone which was intrinsically coloured was packed and cured for 30 minutes in 100°C in hot air oven. After curing, the mold was cooled to room temperature. The prosthesis was carefully lifted out of the mold. Sharp scissors were used to trim the residual flash (Figure 6).
- 7) Since the patient had an intact ear hole, it was decided to retain the prosthesis using an earring and a hair clip (Figure 7). The lobule of the prosthetic ear was pierced at the same position as the patient's ear hole and an earring was inserted through it. To stabilize the prosthesis, a hair clip was pierced through the helical portion of the ear and carefully clasped with the patient's hair (Figure 8). The prosthesis was then checked for fit and stability (Figure 9). Since the prosthesis fit accurately, it eliminated the dependence on adhesive retention.
- 8) The patient was instructed to be careful while removing the prosthesis so that the thin margins would not tear and the silicone rubber would not separate from the hair clip. Proper removal by grasping a thick portion of the prosthesis and slowly disengaging the retentive elements was demonstrated to the patient and performed several times. She was asked to store the prosthesis in a dry, covered container away from sunlight to prevent discoloration and degradation of the prosthetic material.



Figure 2: Pins added on putty impression material for enhance plaster retention.



Figure 3: Plaster backing.



Figure 4: Impression



Figure 5: Wax Pattern.



Figure 6: Silicone prosthesis fabricated.



Figure 7: Hair Clip and Ear ring for mechanical retention.

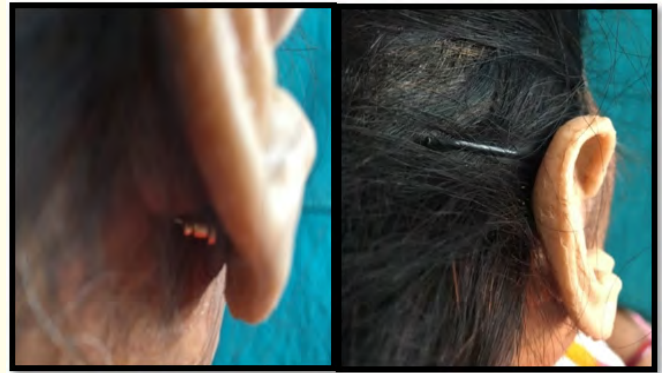


Figure 8: Ear Ring and Hair Clip retention.



Figure 9: Final Prosthesis.

Discussion

Auricular defects can be either due to congenital malformations or acquired from burns, trauma or malignancy [4]. These defects can be rehabilitated either surgically or prosthetically. The choice of rehabilitation depends on meticulous restoration of physical dimensions, external form, and surface landmarks to ensure acceptable esthetic outcomes [5]. Surgical correction involves multiple appointments and invasive autogenous graft reconstruction, which are often intolerable to patient and time consuming to operator. Patients also have to follow strict hygiene around the implants to maintain the soft tissue health at implant sites [6]. Also, the placement of extra oral implants requires adequate thickness of the bone in the temporal and mastoid regions [5]. On the other hand, prosthetic rehabilitation results in superior aesthetics at a considerably lower cost and risk to the patient [3]. Various factors have to be considered when rehabilitating with a prosthesis, such

as, location of the defect, amount of soft tissue loss, the condition of the tissue beds and retentive quality of the area [7]. Prosthetic retention is generally achieved via use of anatomical undercuts, use of adhesives, or through the use of implants [8]. In the present case, an anatomical undercut, the external auditory meatus was patent, and hence, was used to provide mechanical retention for the prosthesis. Moreover, a hair clip and earring were used to provide additional support and retention to the prosthesis. Medical grade silicone was used to fabricate the prosthesis due to its superior esthetic outcome. A three-piece mold was used to ensure easy retrieval of the prosthesis without tearing. The prosthesis was easy to fabricate and use. However, failure to correctly insert and remove the prosthesis would lead to tearing away of the thin edges or delamination of silicone from the retentive components. Other limitations of silicone prosthesis include, degradation of silicone and colour due to environmental exposure and shorter durability [9]. With continued advances in digitization, newer methods are being incorporated for fabrication of auricular prosthesis through rapid prototyping or computer aided design /manufacture [10].

Conclusion

Prosthetic rehabilitation has proved to be effective in managing maxillofacial defects. Adequate retention and support must be provided to the prosthesis if successful results are to be achieved.

Compared to the conventional means of retention, excellent results have been obtained with the use of craniofacial implants. However, its use is limited due to the additional cost, insufficient available bone or refusal by the patient for a surgical option. Mechanical retention is a cost effective and esthetically acceptable alternative for holding the prosthesis in place. The article presents a novel technique for rehabilitating a patient with an auricular prosthesis using a hair clip and earring.

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Volume 2 Issue 7 July 2018

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