

A Blue Tooth – Auricular Prosthesis: A Case Report

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ABSTRACT

The absence of an ear is a considerable aesthetic problem which affects the patient's psychology and social behaviour. We are describing a case of 25-year-old male reporting to the Department of Prosthodontics, with a chief complaint of deficient left auricular tissue. This can be corrected surgically, prosthetically or through a combination of these approaches; but the choice of treatment depends on patient. The patient chose prosthetic rehabilitation over surgical procedures & retention becomes a critical issue in this approach. Out of many types of retentive methods, we selectively incorporated new materials and used the latest technology to ensure the highest quality prosthesis. Creative approach for each patient with a focus on their individual needs was considered as it gives more satisfaction to the patient. This article describes a new, simple and cost effective technique by embedding Bluetooth-headset device into the silicone elastomer of a mechanically-retained auricular prosthesis.

Keywords: Auricular defect, Adhesive retained prosthesis, Rehabilitation, Silicone elastomer

CASE REPORT

A 25-year-old male patient visited to the Department of Prosthodontics, with a chief complaint of deficient left auricular tissue and desire to get it replaced with an artificial prosthesis. Patient gave a history of trauma to the left ear due to a road traffic accident fifteen years back. On examination, the left ear showed loss of the helical tissue with no hearing impairment [Table/Fig-1]. Clinical examination demanded the need of fabricating ear prosthesis to cover the damaged ear. The restorative options like surgical autogenous reconstruction implant retained auricular prosthesis, silicone prosthesis retained with soft tissue undercuts and skin adhesives were explained to the patient. As the patient was apprehensive for surgical procedures opted for the prosthetic approach. Thus, silicone prosthesis was the treatment of option. As the patient was working employee in a call center office, in silicone prosthesis use of blue tooth headset for retention & aesthetic purpose along with skin adhesive was considered as innovative method.

Procedure

The patient was seated in a dental chair in upright position and viewed the existing condition of both right and left ear. The left auricular area was confined in boxing wax, and the area prepared for impression by applying petroleum jelly (Bioline, Bangalore). Cotton was placed in ear hole. Impressions were made using alginate hydrocolloid impression material (Algitek, DPI, Mumbai) by standard impression procedure [1]. A backing of plaster was given to provide support to the impression. After setting, it was removed keeping in mind the angle of existing undercuts to prevent tearing. The impression was inspected for accuracy. The same procedure was followed for the contra lateral ear and also facial impression for reference and for sculpting of wax pattern was taken. Impressions were poured in dental stone (Kalstone, Kalabhai Karson Pvt Ltd, Mumbai) and casts were obtained.

Sculpting Technique

After the casts were obtained the defective ear was reproduced in wax compared to the normal ear using mirror image technique [2] [Table/Fig-2]. Appropriate changes were made in the basic contours at the next (try in) appointment, when the wax ear was positioned



[Table/Fig-1]: Case with auricular defect [Table/Fig-2] Wax pattern of the auricle



[Table/Fig-3]: Checking the wax pattern on the patient



[Table/Fig-4]: Lab procedures for prosthesis

and adapted to the defect to achieve natural symmetry in all planes with the opposite side.

Try In

The wax pattern was tried on the patient and modified to suite his facial appearance [Table/Fig-3] and the following were checked:

1. The fit of the prosthesis on the tissue.
2. The correct horizontal alignment with the opposing normal ear.

Investing and Processing Technique

The wax prosthesis was seated to the model and the leading edge thinned as much as possible so as to allow the silicone edges to feather into the natural skin. Processing was followed similar to a conventional denture procedure in 2-part brass flasks. Room temperature vulcanizing silicones (MP Sai, MP SAI BIOMED, Mumbai) were used, mixed with the pre-determined intrinsic stains by comparison with the patient's normal/natural ear and skin colour and packed in moulds obtained from above step [Table/Fig-4]. They were kept under clamped pressure at room temperature for a day. Once the silicone prosthesis was processed, it was carefully retrieved. The flash was removed by trimming with a sharp blade and scissors.

Extrinsic Colouring

A small amount of extrinsic stain (acrylic colour) was applied to the external surface to blend with the skin colour of the normal ear and for added colour tone enhancement. The extrinsic colour application was completely allowed to air dry and tried onto the patient until apparent colour matching was achieved with the skin colour and normal ear.

Retention and Care of the Prosthesis

Retention of the prosthesis was achieved by spraying skin adhesive (Medical adhesive, Hollister) onto the fitting surface. After 1–2 min, the adhesive will turn clear in colour which gives the patient an indication that the prosthesis is ready to be applied. The bluetooth-headset was then placed into the patient's ear according to his comfort and secured in that position using cyanoacrylate resin over the interface between the device clip and the prosthesis in the back [Table/Fig-5]. Patient was instructed to keep the skin surface clean and free of natural oil secretions to ensure proper adhesion of the appliance. He was also instructed to remove the prosthesis while sleeping and taking bath.

DISCUSSION

Auricular defects are seen commonly due to trauma, congenital abnormalities and malignancies which result in disfigurement of the pinna [3,4]. The existing treatment modalities for replacement of missing ear are surgical and prosthetic [3-6]. Surgical reconstruction using autologous tissue is the most natural method of restoration



[Table/Fig-5]: Auricular prosthesis in place by using bluetooth for retention

of any missing tissue [7,8]. This requires multiple surgeries over a period of time and the resulting structure may not closely resemble the contra lateral ear or be positioned to provide facial balance [9]. Prosthetic replacement may provide an anatomically correct and aesthetically pleasing prosthesis [10-12].

The prosthetic replacement options include adhesives retained, Implant retained or prosthesis using anatomico-mechanical undercuts as means of retention [4,6,9,10]. Rehabilitation using adhesive retained silicone prostheses is a conservative and a reversible treatment [11]. The disadvantages of using adhesive-retained auricular prostheses are: less retention, allergic reactions to the adhesive and difficult to maintain [1]. Implant-retained prosthesis may not be an ideal option in majority of cases due to financial constraints and apprehensions for surgical interventions. Also, the extra oral implant requires adequate thickness of the bone in the temporal and mastoid regions that may be deficient in certain cases [4,6,12]. Good retention of the prosthesis in the facial region is difficult to obtain unless precise lab work and skill in the entire procedure is followed. So in present case, the retention of the prosthesis was achieved by a wireless-headset device and adhesives, which was applied to the fitting surface of the prosthesis.

Hence, the choice of rehabilitation depends on meticulous restoration of physical dimensions, external contour, and surface landmarks to ensure satisfactory aesthetic outcomes for the prosthodontist and their patients.

Continuous wearing of bluetooth may be a limitation of the prosthesis but as it enhances retention and aesthetically pleasing the present case was highly satisfied with this type of modification. But removal of the prosthesis during night time was advised. Newer, innovative techniques may not be always universal but, when individual interest is added, it enhances the satisfaction levels.

CONCLUSION

The fabrication of an extraoral facial prosthesis is as much an art as well as science. The retention of auricular prostheses is a major factor influencing the successful outcome of rehabilitative treatment following cancer, surgery or trauma. The advantages of the present technique include added retention, easy placement by the patient, prevention of micro movements of the auricular prosthesis and rendering more confidence to the patient. Moreover, it is cost effective and aesthetically acceptable for patients who decline or need to postpone implant retained prosthesis reconstruction.

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