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Implant-Retained Auricular Prosthesis: A Case Report

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ABSTRACT

Extraoral implant retained prosthesis have been proven to be a predictable treatment option for maxillofacial rehabilitation. This case report describes the clinical and laboratory procedures for fabricating an auricular prosthesis.

In this case report, an auricular prosthesis was fabricated for a patient who lost the left and right external ear in an electrical burn. Extraoral implants and bar-and-clip retention for the proper connection of the auricular prosthesis to implant were used. This prosthesis was acceptable to the patient because of excellent support, retentive abilities and the patient's appearance. (Eur J Dent 2010;4:71-74)

Key words: Auricular prosthesis; Implant retained prosthesis.

INTRODUCTION

Causes of facial tissue loss are known to often be acquired the congenital malformation, tumoral lesions or accidents. Facial defects can cause not only functional problems but also some serious psychological problems that could cause the individual to avoid social contact.[1-3] In view of this; the first aim of maxillofacial rehabilitation should be solving esthetic problems.

Long term success of a facial prosthesis is mainly depends on retention.[3,4] Most articles relate tissue health to long term success, not retention. Anatomic undercuts, skin adhesives and implants are important factors to provide sufficient retention. Extraoral implant retained prosthesis have been proven to be a predictable treatment option for maxillofacial rehabilitation.[5-8] Implant-retained auricular prosthesis provide multiple advantages for the patient: convenience, security, consistent retention and positioning, elimination of the need for adhesives, and maintenance of

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marginal integrity[9-17] and longevity. Not using adhesives long term can prolong the life of the prosthesis. Specifically, they eliminate disengagement caused by surrounding soft tissue movement or perspiration, which can result in loss of contact of the silicone prosthesis margins.[17] Also, elimination of adhesives can eliminate tissue irritation caused by the adhesive. The implant-retained auricular prosthesis has become a viable treatment alternative for auricular deformed patients because of its predicable results.[9,11] Numerous attachments are available for the retention of implant-retained prosthesis.[9-17] Locator and O-Ring should be mentioned. Implant-retained auricular prosthesis usually require a bar with clips or retentive elements in addition to the prosthetic ear.[8,18,19] This article describes the clinical and laboratory procedures for fabricating implant-retained auricular prosthesis for a children who have an ear defect resulting from an electrical burn.

CASE REPORT

A 12-year-old man who lost the left and right external ear in an electrical burn was referred by his plastic surgeon to the Prosthodontic Clinic at the University of Selcuk.

Two 4 mm EO implants (Straumann, AG, Switzerland) were placed for each temporal bone by plastic surgeon. After soft tissue healing and osseointegration is confirmed, 5.5-mm abutments were inserted (Figure 1a,b). Hair adjacent to the ear was coated with petroleum jelly (Vaseline; Chesebrough-Pond's USA Co, Greenwich, Conn), placed cotton in the ear canal. Impression of the auricular defect was made with polyvinyl siloxane impression material (Elite H-D, Type 1, Zhermack, Italy). The impression is boxed and poured in die stone.

An ear pattern was created using the "donor technique," in which a relative or a person with ear contours that closely mimic those of the patient acts as the donor to make an ear impression. The prepared wax pattern was then adapted to the stone cast. The whole morphology of the cast was corrected according to visual knowledge and the patient's own descriptions of his preoperative appearance (Figure 2).

Gold cap were connected to abutment replicas on the cast. Gold bar was cut to size and sections were positioned appropriately using small amounts of silicone putty. The sections of gold bar to the gold cap were fixed using cyanoacrylcate adhesive (Zapit, Dental Ventures, Corona, CA). The bar invested in soldering investment (Deguvest L, Degussa, Hanau, Germany). After soldering, the assembly is freed from the investment. Two retention clips were positioned on the gold bars, and fabricated an acrylic substructure (Figure 3). Acrylic substructure into the ear wax pattern was incorporated. Wax pattern between the patient and cast for accuracy of fit, orientation, and esthetics with the patient in the physiologic rest position was verified. Wax pattern was placed into a flask and conventional procedures for wax elimination of the mold were followed (Figure 4). After the complete removal of wax, the silicon elastomer (A-RTV-30, Factor II, Lakeside, USA), which was colored intrinsically (Intrinsic Coloring Kit Factor II, Lakeside, USA) was then bulk filled, and the material was processed according to the manufacturer's directions. After processing, the prosthesis was removed from the mold; excess flash from the anterior margin of the prosthesis was cut. The remaining excess was trimmed after the prosthesis was evaluated on the patient.

Figure 1 a,b. Right and left auricular defect with two extraoral implant.

The final corrections were made, and the silicon prosthesises were then adapted to the defect area (Figure 5a,b).

DISCUSSION

Maxillofacial defects can prevent a patient from returning to normal daily activities.[2,20] Many patients with these defects have been rehabilitated successfully with prosthetic restorations.[2] Secondary mechanical factors (tissue undercuts), skin adhesives, and implants can provide retention.

Figure 2. Completed wax pattern on stone cast.

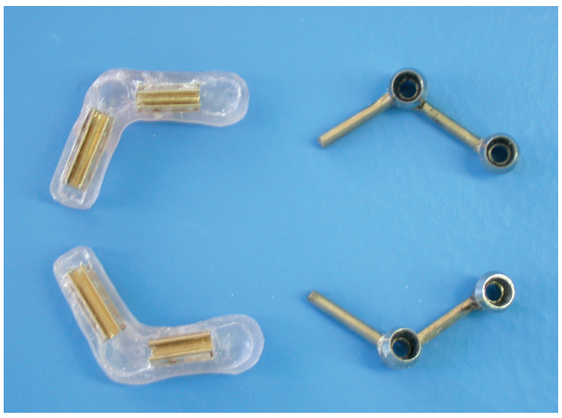

Figure 3. Bar and clip retention elements.

The use of craniofacial implants for retention of extraoral prosthesis, such as ears, offers excellent support and retentive abilities and improves a patient's appearance and quality of life.[21,22] However, a satisfactory outcome may only be achieved by careful planning in terms of the number and position and orientation of the implants and the proper connection of the auricular prosthesis to implant retention structure.[23]

It has been shown in clinical and biomechanical studies that two implants are sufficient to retain an auricular prosthesis. Magnet and bar-clip retention are the two primary forms of retention used in the auricular region.[24,25] The bar-clip system provides good retention for the prostheses. However, bars may limit access for performing hygiene procedures and make it difficult to insert and remove the prosthesis. Magnetic retention can be selected because of hygiene, mechanical, and esthetic considerations. Individual magnets provide ease for cleansing.[26] In this case report, bar-clip retention was used for retention. The extrinsic and intrinsic coloration of maxillo-facial silicone elastomers has always been a challenge

Figure 4. Completed mold with space created by the wax pattern.

Figure 5 a,b. Finished implant retained auricular prosthesis positioned in place.

for the clinician in order to obtain a perfect, durable integration with the surrounding skin tissues.[27]

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