Total and partial ear epithesis : two case reports with review of literature

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Received: 04 February 2013 Accepted: 07 March 2013

ABSTRACT
Auricular defects may be congenitally or occur secondary to trauma or surgical removal of a neoplasm. Treatment options for the reconstruction of the ear may include either plastic surgery or provision of an auricular prosthesis. The requirements of prosthesis are esthetics, retention and stability, alignment and positioning, biocompatibility, and longevity. In the present study, 2 patients (a partial and a total auricular defects) were rehabilitated with epistheses that were constructed on endosteal titanium implants of the ITI system with magnetive anchors in mastoid process. The success of both 2 epithesis compared in terms of function, aesthetics and psychological activity.
Keywords: Auricular defects, partial ear epithesis, total ear epithesis.

INTRODUCTION

Auricular defects may be congenitally or occur secondary to trauma or surgical removal of a neoplasm. Treatment options for the reconstruction of the ear may include either plastic surgery or provision of an auricular prosthesis.[1,2] The requirements of prosthesis are esthetics, retention and stability,[3,4] alignment and positioning, biocompatibility, and longevity. [5]All these requirements have been significantly improved by means of endosseous implants, hence, resulting in more natural appearing and functioning prostheses.[6]

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Bar or magnet, has been used to attach this removable part to the implants.[7,8,9,10] The use of bar attachment involved complex and expensive dental laboratory procedures. The use of magnets is advantageous over conventional bar and clips for maintenance because metal clips may fracture over time making revision and repair difficult.[11,12]

Facial defects can cause not only functional problems but also some serious psychological problems that could cause the individual to avoid social contact.[2,13,14]

In some cases, total losses consist of the ear, and sometimes a small amount can be found in the ear tissue. While the total ear losses are easier to maintain with aesthetic prosthesis, the partial tissue defects are much more difficult because of the requirement of integrity and provide a combination of aesthetics needings. In case of partial tissue defects, extraction of the remaining tissue may be a practical

Published online: 10 March 2013

approach, but this kind of patients believe that their tissues remain psychologically better. Consequently in both cases the ability to reconstruct a partial or total ear defect requires a thorough comprehension of the three-dimensional morphology of the ear.

In the present study, 2 patients (a partial and a total auricular defects) were rehabilitated with epistheses that were constructed on endosteal titanium implants of the ITI system with magnetive anchors in mastoid process. The success of both 2 epithesis compared in terms of function, aesthetics and psychological activity.

Case Report 1

Total ear epithesis

An 40-year-old male patient (Figure 1) with absent an left ear was referred to the Department of Prosthodontics from Ear Nose and Throat (ENT) department for fabrication of a left ear prosthesis. He explained that he had lost his right ear in a traffic accident 4 years before. The patient's expectations were for a flexible and relatively life-like fixed prosthesis. Preliminary diagnostic impressions were made with an alginate impression material and were then made a model. After blocking soft tissue undercuts on diagnostic model, an acrylic diagnostic template was fabricated over the diagnostic model in clear self-curing resin. This surgical template assisted in transferring the prospective site of implant as decided during diagnosis into actual placement of implants.

The surgery was done in two stages by plastic surgeons. In the 1 st stage the implants were placed. Five 4-mm flanged implants (model no.) were placed in the temporal bone.

In the 2 nd stage uncovering of implants by removal of soft tissue and placement of secondary healing caps 3 months after the placement of the implants (subsequent to osseointegration) was carried out. After healing soft tissues 5.5-mm abutments (model) were inserted.

Prosthetic ear fabrication comprised actual ear prosthesis fabrication with magnet. The next step was making impression of implant positions and soft tissues together.

Ear wax modeling on this model was created, according to reference of ear symmetric. Wax model with magnet retainers were tried on and necessery adjustments were made. Final wax model transferred in a denture mould and routine procedure performed. Silicone prosthetic material (VST 50 Silcone Elastomer, Factor 2, Inc, USA) that appropriately colored was placed into the mould and cured according to the manufacturers' instructions. Unworked prosthesis was removed from the mould, trimmed and the surface treatments (grinding and polishing) were conducted. After all, final ear prosthesis was applied to the patient who stated that he found satisfactory in terms of aesthetics and function. After 3 year follow-up, the patient has complained of the color change of prosthesis and wanted to have a newer one.

Case Report 2

Partial ear epithesis

An 44-year-old male patient (Figure 2) with right ear partial lost in a traffic accident, was referred to the Department of Prosthodontics. Implants were placed three months before the prosthetic treatment by a surgeon that experts in the field. Clinical and laboratory steps carried out as mentioned above. Differs from the previous, in this case it was difficult to maintain the adaptation of remained ear tissue with partial prosthesis. After the finishing procedures, the prosthesis applied to the patient but patient dissatisfaction was overlooked. Patient was used prosthesis during the first weeks but in course of time he reported not using.

Figure 1. Patient with left ear absent and final ear prosthesis.

DISCUSSION

Predictable esthetic results have made implant-supported auricular prostheses one of the most acceptedmodalities to treat both total and partial auricular defects. But patients with partial ear tissue resection, the prosthetic procedures such as impession and adaptation are much more complicated because of the remained soft tissue mobility. Therefore it has been recommended that impression materials must cause soft tissue distortion, for which irreversible hydrocolloid, polyvinyl siloxane, and polyether have been suggested without under pressure.

Kubon et al.[15] compared 2 impression procedure for creating a partial auricular prosthesis. Addiditionaly it is difficult to hide the soft tissue and prosthesis junction mark. In order to maintain this, the prosthesis border marks should cover the remaining amount of soft tissue. Because of all these adversities, total ear loss prosthesis has been much more successful rehabilitation compared with partial. But it should be keep in mind that, at least some patients feel psychologically better that their own remain living tissue.

Figure 2. Patient with right ear absent and the final appearance of the partial ear prosthesis.

Chen D et al.[16] restored 50 patients with auricular defect and they favor the prosthetic rehabilitation of patients requiring near total auriculectomy. And they advocated that large lesions may necessitate resection of critical amounts of auricle, such that surgical reconstructive efforts may prove to be futile.

In case of total ear loss, prosthodontic rehabilitation is much more successful than surgical approaches. Nevertheless, patients that have partial ear loss, final prosthesis will not be satisfactory as possible as expected. Tissue integrity is more acceptable with plastic surgical methods in the case of partial ear losses.

ACKNOWLEDGEMENT

We would like to express to dental technicians Nurcan Isık and Kadriye Ergi for their help during the laboratory studies.

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Published online: 10 March 2013