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CASE REPORT

Application of a modified healing cap in implant supported auricular prosthesis: case report

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ABSTRACT

Auricular prosthesis are fabricated generally in congenital deformities or tissue deficiencies gained by a trauma. Due to the difficulty of prosthetic localization, implant supported auricular prosthesis have important mechanical advantages when compared to those used with tissue adhesives. However, during the prosthetic preparation period of post implantation stage, problems like thickening of the skin tissue around the healing caps may be seen. This condition often requires a third surgical procedure for remodification of the healing tissues. This case report presents the application of modified healing cap which was attached to the prosthetic part of the patient which could not be rehabiliated due to the thickening of the tissue.

INTRODUCTION

Auricular prosthesis are one of the maxillofacial prosthesis that can be used in trauma or congenital deformities which can not be rehabilated with plastic surgery methods.[1-6] Osseointegrated implants are the first choice for auricular prosthesis in maxillofacial clinics for their high success rate.[1,2] After a successful implant surgery, healthy surrounding soft tissues that heal without any infection compose the first stage of the prosthetic rehabilitation during the preparation of implant-prosthesis connection.

In craniofacial implant systems usually two stage surgical procedure is applied.[1,4] In this surgical procedure, full thickness flep is removed and implants are placed in designated areas with the help of surgical stents which were prepared according to the radiographic study guidance. Implant screw caps are thighten and the flep placed back to the region to cover the implants. After the osseointegration process, caps are removed

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and the tissues surronding the implants are thinned before the healing caps are placed. In this way, before the insertion of prosthetic components the skin openning of the implants are shaped according to the healing caps.[1,3,4] Also, in some mastoid implant applications the implant and healing cap are inserted in same surgical procedure, but this application is generally preferred in childeren or radiotherapy patients.[7] The precautions that will take during the implantation to direct the healing of tissue and biomechanical precautions during the prosthetic stage will ensure long term success of the prosthetic rehabilitations.[4-10]

In case of insufficient surgical thining process, the transition to the prosthetic phase is prevented by the thickening of soft tissues around the implants.

This clinical report presents the application of modified healing cap (healing stopper) that prevents the tissue thickening of a patient that appealed to the prosthetic clinic after the healing stopper application and the comparison of the clinical results.

CLINICAL REPORT

A 22-year-old male patient was referred to the GMMA HEH Dental Service, Department of Prosthodontics after the healing cap application of a two-stage surgical procedure which was performed by using the ITI extraoral implant system in GMMA HEH Department of Plastic Surgery for the fabrication of auricular prosthesis. In clinical examination it was detected that the tissue was thickened for prevention of the prosthetic bar construction around the implant healing caps. Implementation of the modified healing stopper to the patient for the prevention of tissue thickening was decided. Treatment plan was described to the patient and his consent was approved.

LABORATORY PROCEDURES

1. Plate pink modeling wax (Neowax; Dentsply Trubyte, York, Pa) was chosen in order to mimic skin texture of the patient. After the wax plate was placed over the stone analogs, screw spaces were opened and in this way it was achieved to screw the prosthetic impression parts to the analogs without a barrier between them (Figure 1).
2. Firstly, prosthetic part over the wax plate was isolated with petroleum jelly to prevent the sticking of the acrylic resin. Cold cure acrylic resin powder and liquid (Lucitone Clear; Dentsply Trubyte, York, Pa) was mixed according to the manufacturer's recommendations and was conically shaped over the abutments and wax plate basement (Figure 2).

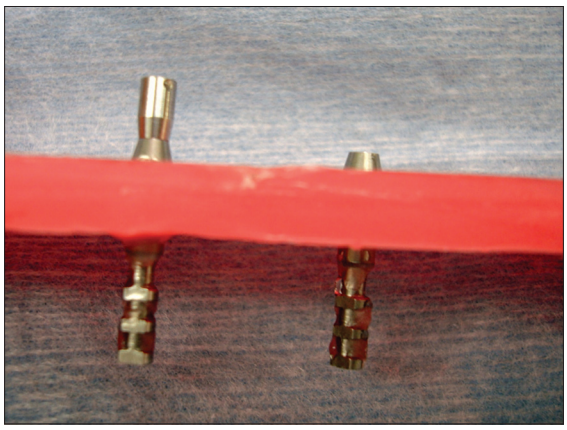

Figure 1. Wax plate was screwed implant's impression parts to the analogs.

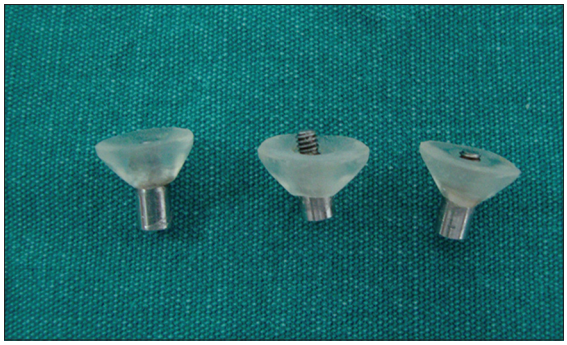

Figure 2. Modified healing stopper.

3. After the polymerization, the conical piece was removed from the abutments. Following the finishing and polishing procedure they were tried on the patient (Figure 3).
4. After the completion of the laboratory stages of the conical pieces, they were screwed to the both implants of the patient as modified healing caps and awaited two-week recovery period. In first and second week controls any infection and tissue around the implants was not inspected and even tissue thinning was not examined (Figure 4). At the end of the second week process of impressionn was started for the construction of auricular prosthesis. Silicone auricular prosthesis was performed to the patient by conventional methods.[6] In controls that performed in 1, 3 and 6 month intervals, it was examined that there was not any tissue reaction at the bar connection under the prosthesis and the patient mentioned that he can easily clean the prosthetic parts.

Figure 3. Tissue thickening around auricular implants.

Figure 4. Healing stopper on patient.

DISCUSSION

During implant application of maxillofacial defects, the health of the soft tissues around implant is important as it effects the duration of implant and prosthesis and also the success of the rehabilitation.[2] In literature, it is notified that in order to keep tissues around the implant retained maxillofacial prosthesis remain healty, the structures like scar tissue, hair follicle or tissue residues should be clarified and covered with tissue graft.[5] In the presence of tissues that thicker than 5 mm and non-adherent to the periosteum, arrangements should be made by a tissue flap thinning process.[8]

The aim of the tissue thinning procedure is to prevent the closure of healing caps and even prosthetic attachments by thickenning of the tissues that surround the implants.[3,4] However, it is not sufficient in some cases, during the healing period or prosthetic stages, thickenning of the skin texture makes the transition to the prosthetic phase impossible. Tolman et al, state the 2 mm thickness of tissues around the implants and their regularity as a success criteria.[6]

Albrektsson et al note that, especially in implant retained auricular prosthesis for the rehabilitation of congenital deformities, it is more likely to appear mobile and thick skin textures around the implant placed area.[3] The same researcher also suggests the split thickness skin grafts as an alternative.[3,4] As the case was known as congenitally deformation case, the inadequate remaining of the precautions taken in surgical applications are considered to be due to reasons mentioned in the literature.

In literature, it is proposed to find solutions to the tissue thickenning by plastic surgery methods before prosthetic rehabilitations, any alternative method is suggessted to be applied prosthetically.[3,4] Allen et al, state that keeping the surronding tissues under pressure during the healing cap placement session provides more properly healing tissue around the implants.[10] In this case it was suggested for the tissue thickening during recovery period of the congenital deformation patient after the two-stage surgical procedure which was performed in plastic surgery clinic; to hold the implant and surrounding tissue under pressure for the prevention of tissue thickenig as a non-invasive alternative method. It is evaluated that this alternative non-invasive technique has the advantage of any other surgical procedure for the patient.

For the risk of tissue thickening recurrence, the patient was controlled in 1, 3 and 6 month intervals. During and after the prosthetic rehabilitation of the patient it was examined that thickening of the tissue did not occur and also tissues around the implant-bar connection did not have any infection or tissue irregularity (Figure 5).

SUMMARY

In implant retained auricular prosthesis, inadequate surgical applications leads to changes in prosthetic rehabilitation. As in this case, the patient may need to apply a third surgical procedure for thinned surronding healing cap. In this case report, it was demonstrated that acrylic stoppers inhibit the thickening subcutaneous tissues around extraaoral implants. This alternative technique prevent the patient from other surgical procedure and began to prosthetic procedure in a shorter time.

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