

■ Case Report

A spectacle retained acrylic orbital prosthesis for rehabilitation of an exenterated eye

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Abstract

Exenteration of an eye causes massive disfigurement and psychologic as well as social embarrassment as facial appearance is severely crippled. Prosthetic rehabilitation of such patients, if done meticulously, will improve the appearance as well as their self confidence. This case report describes an orbital prosthesis fabricated to rehabilitate a patient with exenteration of right eye, with the most economical material and easily available technique.

Keywords: exenteration, orbital prosthesis

Introduction

Fabrication of an orbital prosthesis is most challenging due to the fact that the orbital prosthesis contains within a separate ocular prosthesis, which must be correctly matched to the remaining natural eye in size, contour and position exactly in three dimensional space to simulate the correct gaze as well as correct inter-lid opening.¹⁻⁴ There are various techniques and materials for fabrication of the orbital prostheses and various means of retaining them.⁵⁻¹⁰ Acrylic resin can be used as it is durable, colour stable and easily coloured extrinsically or intrinsically but its disadvantages include rigidity and water sorption property. Medical grade silicone is another material frequently used for extraoral prostheses as it is biologically inert and colour stable but their disadvantages include the need of sophisticated equipments, poor edge strength as well as colour deterioration on exposure to sunlight.⁷

Retention of orbital prosthesis can be achieved by tissue undercuts, attaching it to different parts of a spectacle, use of magnets, use of adhesives or use of osseointegrated implants.⁸⁻¹⁰ Considering the

complexities of prosthesis fabrication and increased cost, retention of orbital prosthesis by attaching it to different parts of spectacle can be chosen for majority of cases.

This clinical report describes the management of a patient with an orbital defect using easily available most economic material and technique.

Clinical report

A 58 year old woman who underwent a right orbital exenteration due to sebaceous cell carcinoma presented to the Department of Prosthodontics and Maxillofacial Prosthetics, College of Dental Surgery, BPKIHS for assessment and rehabilitation of the orbital defect.

As been evident from her treatment records, at the time of tumor resection the orbit was not lined with grafts. The patient did not receive pre or postoperative radiation therapy. History taking revealed Staphylococcal infection of the defect two weeks after the surgery that was treated with antibiotics (oral *Cloxacillin* 500 mg q.i.d.) for a week.

On examination of the defect, completely healed anophthalmic socket with a small sinus opening on the medial wall was evident (Fig. 1).

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Figure 1: Well healed anophthalmic socket with small sinus at medial wall

Various treatment options for rehabilitation of the defect including implant retained orbital prosthesis; magnet retained orbital prosthesis as well as spectacle retained acrylic orbital prosthesis was discussed with the patient. Considering the economic status of the patient and the expertise and the materials available in the department, it was planned to fabricate a hollow spectacle retained orbital prosthesis.

Procedure detail

Fabrication of the facial moulage was started with the outlining the boundary of the area of interest using softened modelling plastic impression compound (Samit™ Impression Composition, Dentokem, Delhi, India) to confine the impression material (Fig. 2). To prevent the intrusion of the material into the sinus cavity, moist gauge piece was packed into it. The impression of the defect was obtained with irreversible hydrocolloid (Zelgan Plus™, Dentsply India Pvt Ltd, Gurgaon, India) and reinforced with type II dental plaster (Plaster of Paris IP, The Ramarajan surgical cotton mills Ltd., Kerala, India) (Fig. 3). The impression was boxed with modelling wax (Hindustan modelling wax No-2, The Hindustan Dental Products, Hyderabad, India) and poured with type III dental stone (DENSTONE™, Pankaj Enterprises, M.P., India).

To make the prosthesis hollow, it was decided to fabricate two-piece prosthesis; the inner piece conforming to the tissue wall of the defect, and the outer piece containing the ocular prosthesis. For

fabrication of inner piece, a single layer of modelling wax was adapted on the defect present in facial moulage and the adaptation and the extension was verified in the patient. Once satisfied, it was processed with heat polymerized acrylic resin (Trevalon™, Dentsply India Pvt Ltd, Gurgaon, India) using water colours (Camel Water Colour Cakes, Camelin limited, Mumbai, India) to match with the patient's skin colour. The processed inner piece was again verified in patient for the fit and colour matching.



Figures 2: Area to be impressed is outlined with modelling plastic



Figure 3: Impression made with alginate and plaster backing

Once the inner piece was found satisfactory, the outer piece was attached to it using stock acrylic eye (Speedway Surgical Co, Delhi, India) and the eyelids were sculpted using the modelling wax (Fig. 4). Then the outer piece was processed in the heat polymerized acrylic resin matching with the patient's skin colour as described before. Two small auto polymerized acrylic pins were luted to the ocular portion of the outer piece to maintain the orientation of it during boil out and curing process (Fig. 5). The processed outer piece was finished and polished using acrylic trimming bur (No. 180-203, Dentaaurum, Ispringen, Germany), emery papers and pumice rag wheel in sequence. It was then joined to the previously processed inner piece with autopolymerized acrylic resin (RR powder and liquid™, Dentsply India Pvt Ltd, Gurgaon, India) to make a single prosthesis. Artificial eyelashes (Yaqun™, YA QUN EYELASHES, Hangzhou, China) were attached to the finished prosthesis to give it a life-like appearance (Fig. 6).

The prosthesis was finally tried in the patient's defect for its final appearance and adaptation. After the operator and patient's satisfaction, it was then

attached to the nose pad of the eye glass frame that the patient was using for her daily use, using autopolymerized acrylic resin (Fig. 7).



Figure 4: Verification of inner piece and wax sculpting for eyelids



Figure 5: Acrylic nails luted for proper orientation during processing

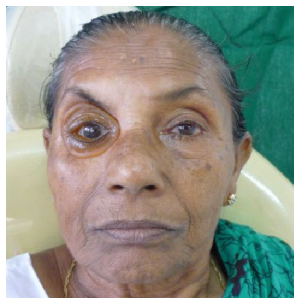


Figure 6: Verification of completed prosthesis on the socket



Figure 7: Prosthesis attached at the nose pad of spectacle

The prosthesis was inserted into the defect (Fig. 8) and the patient was instructed for its home care and maintenance. To sanitize the wound, the patient was instructed to gently remove the exudates with wet cotton soaked in 5% Betadine solution (Win Medicare, Delhi, India) and clean the tissue contacting surface of the prosthesis once a day.

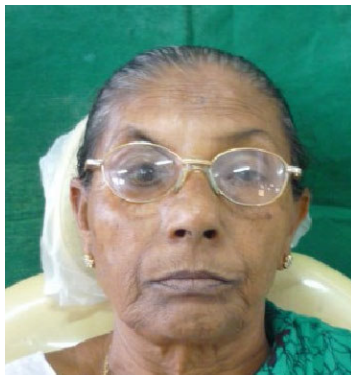


Figure 8: Spectacle retained orbital prosthesis in situ

The patient was scheduled for the first post-insertion adjustment one week after the insertion to ensure the health of the tissue bed, to relieve the prosthesis for pressure spots on the tissues and to emphasize hygiene and home care. Further follow up was scheduled for evaluation of any recurrence of the pathology.

Summary

The associated psychological effect of the orbital defect requires immediate management and rehabilitation. Out of the several techniques and materials available, the technique used here describes the fabrication of the orbital prosthesis in an anophthalmic patient using the most economical heat polymerized acrylic resin with spectacle retention, thus restoring patient's symmetry and satisfaction with acceptable aesthetics in minimal cost.

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