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CASE REPORT

Ocular Prosthesis

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ABSTRACT

Eyes are generally the first features of the face to be noticed. Surgical intervention of ocular and orbital disorders may result not only in ocular defects but also have a crippling effect on the psychology of those affected. An ocular prosthesis is an artificial replacement of the bulb of the eye. The present study describes the prosthetic management of patient with ocular defect with a custom-made ocular prosthesis, which can be carried out in a small clinical set-up and is a boon to the average patient.

Keywords: Custom-made ocular prosthesis, Enucleation, Maxillofacial prosthesis, Ocular defect.

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INTRODUCTION

"Eyes are the amulets of mind; one of the wonderful gifts, of nature is a glance of an Eye."[1] The unfortunate loss or absence of an eye may be caused either by congenital defect, trauma, or tumor. The disfigurement allied with loss of an eye can have a major effect on physical, social, and emotional well-being of the patient, and hence replacement of the eye as soon as possible is necessary. The options for an artificial eye can be either stock prostheses that come in standard sizes, shapes, and colors or ocular prosthesis. Stock prostheses are relatively inexpensive and can be delivered quickly. Often, however, a custom-made ocular prosthesis is indicated.[2] The advantages include intimate contact with the tissue bed that distributes the pressure more equally than stock prosthesis and decrease in the incidence of conjunctival abrasion. The intimate tissue contact improves the tissue health by reducing fluid accumulation in tissue prosthesis interface. Fluid accumulation can cause tissue irritation and increased bacterial growth, increased mobility of the prosthesis, improved facial contours, and enhanced esthetics which is gained from control over the size of the iris and pupil and color of the iris and sclera.[3]

This case report describes a simplified technique to fabricate an acrylic custom-made ocular prosthesis for an enucleated ocular socket which is a boon to the average patient.

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CASE REPORT

A 77-year-old male patient reported to the Department of Prosthodontics with the chief complaint of facial disfigurement caused due to shrunken eyelids of left eye. He had undergone total enucleation of the left eye 4 months back and had received prefabricated eye prosthesis from a private clinic, but was not satisfied with the adaptation and esthetics of prosthesis and wanted fabrication of new eye prosthesis (Fig. 1).

Examination of the socket revealed an adequately healed defect with the absence of eye ball, depth of the lower fornix was reduced, and movements of the musculature were normal. Patient consent for the same was received.

FABRICATION PROCEDURE

- A thorough examination of the defect was done and resiliency of the superior and inferior palpebrae was made through inspection and palpation (Fig. 2).
- A primary impression of the anopthalmic socket was made with irreversible hydrocolloid according to the modified impression technique as described by Allen and Webster (Fig. 3).

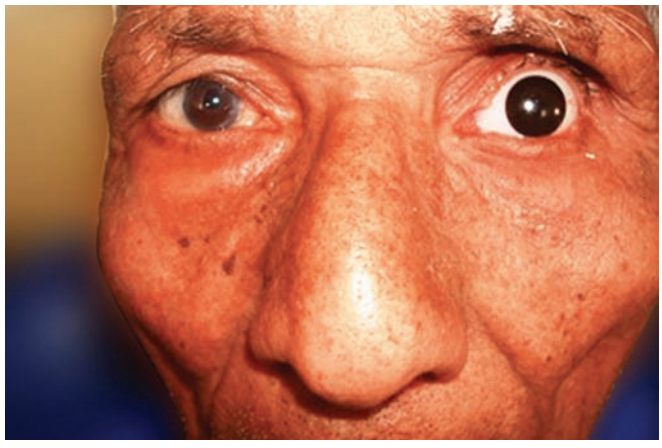


Fig. 1: Prefabricated eye prosthesis

Fig. 2: Preoperative photograph

Fig. 3: Impression of the defect made using irreversible hydrocolloid

Fig. 4: Iris disk adjustment done

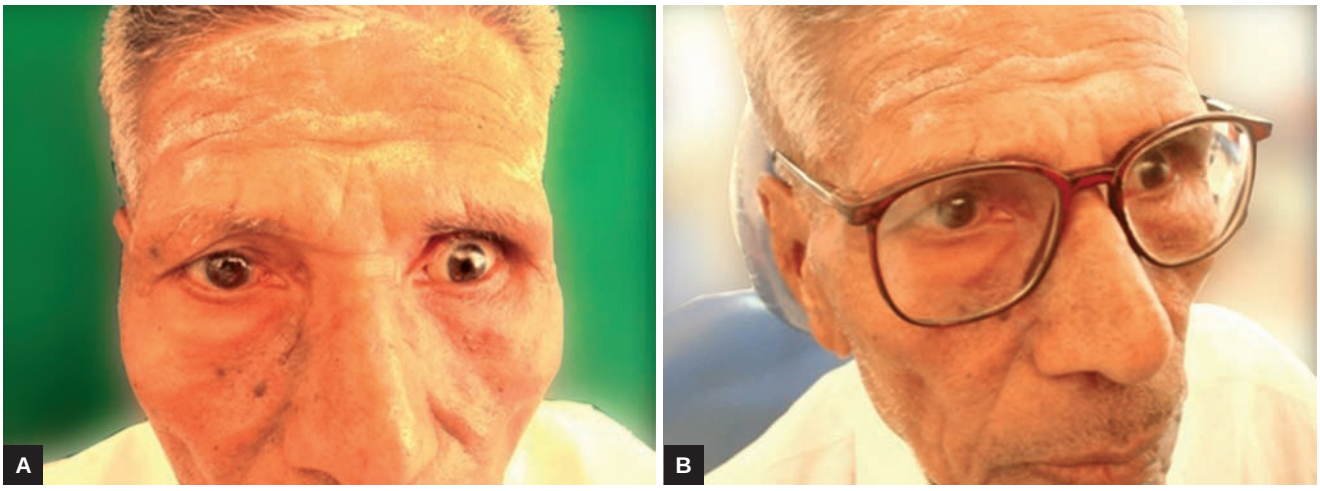
- Putty material (polyvinyl siloxane) was adapted around the impression and the putty index was made. Wax was poured and scleral blank fabricated.
- Patient's eye movements were checked for symmetry and function, and it was checked that the scleral blank moved and synchronized in harmony with the patient's natural eye movements.
- A prefabricated iris button, whose shape matches with the contralateral eye, was selected. The iris center position is then identified with an iris peg that identifies the center and plane. The patient was asked to gaze straight at an object kept 4 feet away. The operator then marked the vertical lines coinciding with the pupil of the natural eye. Similarly the point is marked at the center of glabella. Distance between the glabella and the vertical lines were noted using measuring scale and the same distance was maintained on the defected side by slight adjustments in wax pattern (Fig. 4).
- Flasking of the wax pattern is done and packing is done using heat cure clear acrylic.
- Prefabricated iris button is trimmed out and overall 2 mm reduction is done.
- Painting of the iris is done on the chairside and the necessary characterization is also done. After drying of the painting, the prosthesis was poured with polymer monomer syrup and allowed to dry. Then, a layer of clear acrylic was added and cured again, followed by finishing using fine sand paper and polishing using flour of pumice.
- The properly finished and polished prosthesis was inserted in the socket after being disinfected and lubricated with an ophthalmic lubricant. Adjustments were made at the time of delivery as per the patient's comfort (Figs 5A and B).

POST-INSERTION INSTRUCTIONS

- During insertion patient was asked to evert his lower eyelid and insert the lower part of prosthesis well into fornices and then upper eyelid was lifted and complete insertion of prosthesis was done. Patient was instructed to blink his eyes gently to make sure complete seating was done.
- Patient was recalled for follow-up after 1 day, 3 days, and 1 week.
- Patient was informed that there was no need to remove prosthesis except for cleaning and was instructed to clean the prosthesis once in 3 to 5 days with gentle soap and water. Daily hygiene to be maintained using ophthalmic solution as an irrigant.
- Patient was instructed to have his ocular cavity examined once in month or immediately when there is any irritation.

DISCUSSION

Rehabilitation of patients with ocular defects has always remained an enigma for the prosthodontist. Various



Figs 5A and B: Patient with final prosthesis

treatment options available for rehabilitation of such defects include prefabricated eye shells, custom-made ocular prosthesis, or bio-eye implant.[4]

Implants have superior outcome but it may not be advisable in all patients due to economic factors. According to Beumer and Zlotolow[5] intimate contact between the ocular prosthesis and the tissue bed is needed to distribute even pressure, so a prefabricated prosthesis should be avoided. Moreover, the voids in the prefabricated prosthesis collect mucus and debris that can irritate mucosa and act as a potential source of infection, which are minimized in custom-made prosthesis. However, the use of a "stock" prosthesis is usually advocated when time is limited and cost is a consideration.

In majority of cases of enucleation, custom-made ocular prosthesis is advantageous as there is improved adaptation to underlying tissues, increased mobility of the prosthesis, and acceptable esthetics due to better match of the size and color of the iris and sclera. The esthetic and functional outcome of the custom-made ocular prosthesis is superior to the stock ocular prosthesis. Because of the individual variations and diverse nature of the ocular injuries, patients would benefit from custom-made ocular prosthesis. The procedure used here can be carried out in small clinical set-up and has provided good results from patient esthetics, acceptance, and satisfaction point of view.

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