

CASE REPORT

PROSTHETIC REHABILITATION OF AN ORBITAL DEFECT: A CASE REPORT

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ABSTRACT

Any damage or disfigurement to the face can lead to psychological and social problem. Trauma to the eye is a severe handicap to a patient because the most important sensory organ of communication is lost. Restoring these congenital as well as acquired defects is a very demanding task. When appropriately made it is the finest service that can be rendered to a patient who feels socially secluded because of facial deficiency. A sequence of steps for construction of custom-made ocular prosthesis is outlined.

Keywords: Maxillofacial prosthesis, Orbital defect, Custom-made ocular prosthesis, Acrylic resin, Iris

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INTRODUCTION

The removal of an eye and management of the anophthalmic socket requires the combined efforts of the ophthalmologist and the maxillofacial prosthodontist. The goal of any ocular prosthetic procedure is to return the patient to society with a normal appearance and reasonable mobility of the prosthetic eye. The disfigurement resulting from loss of an eye can cause significant psychological as well as social, consequences. However, with the advancement in ophthalmic surgery and ocular prosthetics the anophthalmic patient can be rehabilitated very effectively. Although implant supported eye prosthesis has a superior outcome, economic reasons may make it unacceptable to many patients. The goal is to give an eye prosthesis having a comfortable fit that will in turn motivate the patient to use the prosthesis.

CASE REPORT

A patient reported to the department of Prosthodontics with a history of missing right eye due to a road traffic accident (fig-1, a). On examination,⁽¹⁾ the tissue was free of inflammation. The patient did not complain of pain or discomfort in the defect area. A custom-made acrylic resin ocular prosthesis was planned.^(2,3)

An impression of the ocular defect was made with custom acrylic resin tray (fig-1, b). The patient was seated in an erect position with the head tilted backward at approximately 45 degrees. The socket was

initially filled with alginate (Tropicalgin, Badia Polesine, Italy) with the help of a 5ml disposable syringe (Dispo van, HSMD, Faridabad, India). The remainder of the impression material was placed on the tray to support the alginate in the socket. The patient was instructed to move back the head to the vertical position and both eyes up and down. This facilitated the flow of the impression material into all aspects of the socket. After the material had set, the cheek, nose and eyebrow regions were massaged to break the seal.⁽⁴⁻⁶⁾ The retrieved impression was checked for accuracy and voids. The excess impression material was trimmed with scissors.

The impression was poured in 2 sections. Initially it was boxed and poured until the height of contour with type IV dental stone (fig-1, c) (Kalastone, kalabhai Pvt Ltd, Mumbai, India). Four keyways are



Fig. 1



Fig. 2



Fig. 3

made for proper orientation of the mould. A layer of separating medium was applied and allowed to dry. Then a second layer was poured, to obtain a two-piece mould. (fig-1, d).

The wax pattern was fabricated using modelling wax (fig-2, a) (Rolex, Ashoo Sons, Ashok Vihar, Delhi). The pattern was tried in the socket repeatedly and sculpted to the correct shape until the eyelids closed completely over the wax pattern. The wax pattern was inserted by lifting the upper lid and the superior edge of the pattern was placed behind the lid and gently pushed upward. The lower lid was pulled down to place the inferior border of the pattern into the inferior fornix. The wax will not move as freely as the finished acrylic resin prosthesis, but the application of an ophthalmic lubricant will aid the movement.

Once the appropriate contours of the wax pattern were developed, the gaze and position of the iris was determined. The size and location of the iris were matched to that of the companion live eye. The correct size of the iris was determined by measuring the diameter of the patient's natural iris (fig-2, b, c). Custom iris, which matched closely with the patient live eye, was selected. The wax was removed from the pattern and the custom iris was placed and again checked in the socket (fig-2, d).

The corrected wax sclera was now invested. White scleral acrylic resin (DPI-heat cure, dental product of India Ltd, Mumbai) was packed into the mold, using the compression moulding method. The processed sclera was again checked and the iris is fixed to the sclera by resin. The iris was modified by color to resemble the live eye. The natural sclera has veins present that are usually apparent in both the nasal and temporal corners of the eye. Red cotton fibers were used to replicate the veins in the sclera. The fibers were separated and cut from the commercially available thread. The vein patterns of the natural eye are copied by tacking the fibers to the sclera with a brush and monomer. The scleral painting begins with the application of a wash of yellow comparable to that found on the patient's natural eye. Next, blue is added which is usually located inferior and superior to the iris. The iris and scleral painting were compared with the natural eye and final corrections were

made. Once complete, a thin layer of wax was applied to the sclera. The corresponding area in the flask was scrapped to make place for corneal prominence. The eye was processed finally with the application of a layer of clear acrylic resin (fig-3, a). After processing, the flask is cooled and the ocular prosthesis retrieved from the mold. Flash and irregularities are removed from the surface of the eye. The surface is smoothed with a fine white stone and polished with pumice.^(7,8)

The custom ocular prosthesis was then inserted (fig-3, b). The methods of inserting and removing as well as caring for the prosthesis are demonstrated to the patient. The prosthesis should not be allowed to come into contact with alcohol or solvents of any kind, as this could cause crazing of the acrylic resin. Follow up was done after 1 day, 3 days, and 1 week.

DISCUSSION

The rehabilitation of orbital defects is a challenging aspect of Maxillofacial Prosthodontics. It requires that the practitioner constant practice to gain confidence and expertise.⁽⁹⁾ The goals of the surgeon and the prosthetic specialist regarding the prosthetic rehabilitation of the patient with an ocular or orbital defect are closely allied.

Literature has suggested many techniques for the fabrication of ocular prosthesis.⁽¹⁰⁻¹²⁾ In 1575, Pare fabricated artificial eyes made of glass as well as porcelain. The glass eye was considered the state of the art until the advent of World War II, which made it impossible to obtain glass or glass eyes from Germany. Acrylic resins had replaced vulcanite as a denture base material by the early 1940's and the Naval Dental School tested the use of acrylic resin in fabricating a custom-fitted ocular prosthesis. Unlike a glass eye, an acrylic resin eye was easy to fit and adjust, unbreakable, inert to ocular fluids, aesthetically better, longer lasting, and easier to fabricate.⁽¹³⁾ Though undoubtedly implants are the best choice for retention of an orbital prosthesis, the high financial costs involved are the limitation for implant.

A simple procedure for fabricating the ocular prosthesis has been discussed here. Attention to details is mandatory in each step to bring out a satisfactory result.

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