Indian Journal of Dentistry 2012 April–June
Volume 3, Number 2; pp. 122–126

Case Report

Characterizing a custom ocular prosthesis-an esthetic challenge: A case report

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ABSTRACT

The loss of an eye requires early replacement so that the patient may return to a normal life. The primary objective in such cases should be to construct a prosthesis that will restore the defect & improve esthetics- thereby boosting the morale of the patient. This article describes the procedure for fabricating a characterized custom ocular prosthesis with ease without compromising on esthetics.

Keywords: *Ocular prosthesis, Custom ocular prosthesis, Acrylic resin eyes, Conformer*

INTRODUCTION

Physical defects compromise the appearance or function, which prevents an individual from leading a normal life, and usually prompts the individual to seek treatment that will reinstate acceptable normalcy.[1]

Sensory organs play significant roles in our daily lives. One of the most commonly occurring loss is that of an eye. The loss of an eye requires replacement so that the patient may return to a normal life.

An ocular prosthesis is a simulation of human anatomy using prosthetic materials to create the illusion of a perfectly normal healthy eye and surrounding tissues.

Use of artificial eye dates back to the period of the Egyptians in 1613 BC. They used silver eyes for mummies. Ambroise Pare (1510–1590), a French man was the first to describe the use of artificial eye made of gold & silver ("emblepharon") to fit an eye socket.[2] Pare' also used glass and porcelain for eyes, which was a great step forward and resulted in the use of the shell type of pattern rather than spheres.[3] But it was Ludwig Mueller-Uri (1830), a German glass blower who was credited with development of fine quality glass eyes. In those days, Germany was the main producer of glass eyes. During the World War II the supply of glass eyes from Germany to USA was halted. It was then that the Naval Dental School (USA) in 1943 tested the use of acrylic resin in fabricating ocular prosthesis.[4]

Today there are basically two types of ocular prosthesis-

1. Stock ocular prosthesis
2. Custom ocular prosthesis

Custom ocular prosthesis are more preferred because they have a close adaptation to the tissue bed, better motility & distribute pressure more equally, thus reducing the incidence of ulceration.

CLINICAL REPORT

A 39 yr old, male patient reported to the Department of Prosthodontics, with the chief complaint of missing left eye (Fig. 1). The Patient gave a history of trauma to the left eye during a road accident 7 years back, followed by enucleation (surgical removal of the eyeball after the ocular muscles and optic nerve were severed) of the left eye.

On examination, the tenon's capsule was intact; the intraocular tissue bed was healthy, with adequate depth between the upper and lower fornices for retention of the prosthesis. It was also noted that the lower eyelid had a little droop owing to the trauma sustained 7 yrs back and the lack of support since then. The patient's right eye had a lot of

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Received: 15.11.2011; Accepted: 8.2.2012

doi: 10.1016/j.ijd.2012.02.002

Fig. 1 Pre treatment view.

yellow ochre and crimson spots interspersed with minute meshwork of capillaries visible on the cornea. After thorough examination it was agreed that a custom heat cure PMMA custom ocular prosthesis would provide adequate support along with sufficient retention. Hence a decision was made to fabricate a characterized custom ocular prosthesis that would appear as real as the patient's right eye.

PROCEDURE

The first step was the selection of the iris (from a stock eye) for the prosthesis. For this a variety of stock eyes were held adjacent to the patient's natural right eye and the stock eye with the closest matching iris was selected.

1. Impression of the left socket was made in a self-cure perforated acrylic tray attached to the tip of a disposable plastic syringe. Patient was made to sit erect and irreversible hydrocolloid (Tropicalgin™, Zermack, Italy) was mixed and loaded into the disposable syringe and injected in the socket through the hole in the impression tray. The patient was asked to fix his gaze at a point 6 ft away at eye level. This allowed impression of the site with the muscles in a neutral gaze position (Fig. 2).
2. A 2-piece split mould was fabricated in type III gypsum (Fig. 3). The cast was poured in two layers. The first part or the base of the mould was fabricated up to the height of maximum convexity of the ocular impression by pouring type III gypsum in a rubber bowl over which the ocular impression was suspended with the help of two wooden tongue depressors and sticky wax. After the material set, three grooves were made over the first part and a thin layer of petroleum jelly (Vaseline®, Unilever, UAE) was applied over it. Then the Second part or the top of the mould was poured and allowed to set. Afterwards the two parts of the split mould were separated and cleaned by rinsing in warm water. The inner surface of the 2-piece split mould was then coated with mineral oil.
3. Using the 2-piece split mould a wax pattern was obtained by heating and pouring hard inlay wax (Sybron Kerr, Romulus, Mich) into the mould.[4]
4. The wax conformer trial was done (Fig. 4). Eye contour and lid configuration was checked from different angles. The height of convexity was centered over the pupil, slightly medial to the midline.
5. The wax pattern was invested & dewaxed in the conventional manner. Separating medium was applied to the mould cavity in the drag & cope portions of the flask.
6. First a thin layer of heat cure clear PMMA (Paladon® 65, Heraeus Holding GmbH; Hanau:Germany) was applied to the mould cavity representing the outer or

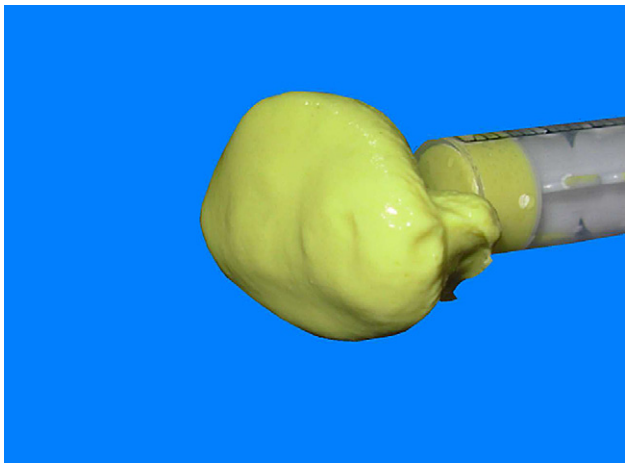

Fig. 2 Ocular impression.

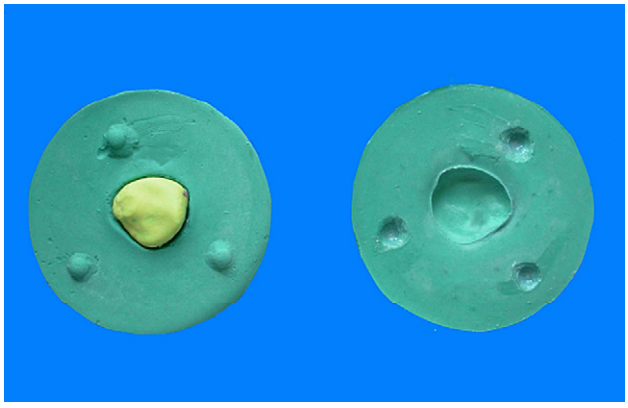

Fig. 3 2-piece split mould.