Role of Prosthodontist in restoring esthetic in patients who lost eye–A Case report

Shakya P1, Sonkesriya S2

1 22, Grandeur, Sector–20, near Central Bank of India, Kamothe, Navi Mumbai–410209, Maharashtra, India
2 Department of Prosthodontics, Government Dental College and Hospital, Indore-452 001, Madhya Pradesh, India

Abstract
Ocular injuries not only affect the visual ability of the persons, they will also influence patient’s dignity and self confidence. The aim of rehabilitation should be to restore and mask the disfigurement and to give A normal aesthetic appearance. This case report represents importance of Prosthodontist in the rehabilitation of an ocular defect of a twenty one years old male patient who lost his eye due to injury.

Key words: Rehabilitation, Eye defect, ophthalmic penetrating injury, customized ocular prosthesis.

Cite this article as:

Source of Support: Nil, Conflict of Interest: None declared
Introduction
Eyes are the most precious gift of Almighty given to a human. A person communicates to the outer world with vision, consciousness, way of expression and dignity by Eyes. Loss of an eye is a misfortune to a person because, as it is one of the important sensory organ. This sensory loss not only alters facial appearance, but also results in emotional and psychological trauma to a sufferer. Orbital defects can cause significant psychological trauma to the patient. These defects can occur due to irreparable trauma, congenital defects, a painful blind eye, sympathetic ophthalmic, trauma or tumors [1]. The changes that happen to the face subsequent to the removal of the eye can lead to severe psychological trauma and stress to these patients. Rehabilitating such patients by providing ocular prosthesis plays a major role in enhancing their esthetics and improving social acceptability [2].

The process of prosthesis to the affected eye must resemble the remaining eye as closely as possible so as to create uniformity in the appearance. The prosthesis must be able to accurately duplicate the color, contour and positioning to appear more realistic. The basic requirement of custom fabricated ocular prosthesis is its close adaptation to the tissue bed, so as to provide more natural surface for normal lacrimal tear function and to produce desired movement at its full extent. Accurate reproduction of the iris during the fabrication of the prosthesis will ensure good esthetic match with the remaining eye [3].

Ocular prostheses are either readymade (stock) or custom made. They may be made of either glass or methyl methacrylate resin. Glass is not the material of choice because it is fragile and breakable and surface deterioration from contact with orbital fluids that results in a usable life expectancy of only 18 to 24 months. Methyl methacrylate resin is superior to other ocular prosthetic materials in tissue compatibility, esthetic capabilities, durability, color stability, adaptability of form, cost and availability. Reproducing the colour of the iris and the shape of the eye is a challenging procedure. The process of fabricating an ocular prosthesis can be either custom made for the patient or a stock prosthesis [4] can be chosen. Custom made prosthesis often requires several steps in fabrication, is time consuming and expensive [3]. Stock prostheses are available in several sizes, are less time consuming and cost effective [5]. This article describes the case report of a patient who had prosthetic rehabilitation of an orbital defect with an orbital prosthesis which was custom made and was retained primarily by naturally occurring undercuts.

Case report
A 21 years old male patient was referred to the Dental OPD with the chief complaint of facial disfigurement due to the loss of his right eye (Figure-1).

Figure-1: Pre-treatment photograph

A complete clinical examination and psychological evaluation is essential to assess the extent of tissue loss and the expectations of the patient from the prosthesis. History revealed that his right eye was badly damaged due to a penetrating injury by knife and was eviscerated 12 years back. On examination, the ocular defect was completely healed and mucosa was healthy and all the movements of the eye socket were found to be favorable for prosthesis. The fornices of upper and lower eye lids were evaluated for movement in the open and closed position. The internal anatomy of orbital tissue bed was checked in resting and in full excursive movement of the eye musculature and there was sulcus depth sufficient enough to retain the restoration. A custom acrylic resin orbital prosthesis was planned for the patient. An informed consent was obtained from the patient before proceeding further.

Fabrication of the prosthesis
A 4% lignocaine hydrochloride jelly (4% xylocaine, Astra-IDL Ltd. Bangalore, India) was applied to reduce the irritability of mucosa while taking the impression. The socket was cleaned by irrigating with the cold saline solution and dried with cotton pallets. A sheet of modeling wax was used as a spacer and custom ocular tray was made with auto-
Role of Prosthodontist in restoring esthetic in patients who lost eye—A Case report


A hollow plastic cap of 2 ml disposable syringe was attached in the center of the acrylic tray with the help of acrylic resin (Figure-2a). The tray extensions were adjusted in the ocular socket. An accurate impression of the defect was made with an elastomeric impression material. Fast setting vinyl polysiloxane impression material (Reprosil, Dentsply Pvt Ltd, India) was injected in the eye socket through the hollow plastic tube and impression was recorded under the functional movements of the ocular muscles (Figure-2b).

The impression was then poured with split-cast procedure with type IV dental stone (Kalstone, Kalabhai Pvt Ltd, Mumbai, India) (Figure-2c). A stock eye shell was selected whose shade and size of the iris matched with the contra lateral iris. The position of the iris was determined with the help of a line drawn through the facial midline and another line drawn through the centre of iris of the contra lateral eye. The wax pattern (Y Dent, MDM Corporation, Delhi) was then fabricated with measurements from the contra lateral eye.

The completed wax pattern (Figure-2d) was then tried in the patients’ socket after application of petroleum jelly to duplicate the movements of the eyelid over the wax pattern. The eyelid was evaluated in the closed position and the contour of the globe was assessed in relation to the contra lateral eye. Support and contour was compared visually with eye open position to that of natural eye. The shade of the sclera portion was selected using the tooth colored acrylic shade guide. Wax pattern was flaked and processed using the selected heat cured acrylic resin (DPI heat cure, Dental Products of India Ltd). The processed surface smoothen with white stone and pumice polishing was done. Characterization was done using floccules and oil paints. The prosthetic eye was then washed with soap water and placed into the socket. Insertion was accomplished by lifting the upper lid with the thumb and forefinger and sliding the eye as far as possible under the upper lid and pulling the lower lid down to allow the prosthesis to slip in to the socket. Removal was accomplished by pulling the lower lid down and engaging the lower margin of the prosthesis with one finger so that it is expelled down into the hand (Figure3). The method of insertion and removal was demonstrated to the patient.

Discussion

The science and art employed in profession of dentistry can play an important role in the fabrication of an orbital prosthesis. Anophthalmia (the loss of an eye) not only impairs patient’s vision but also create a noticeable deformity on facial appearance and esthetics. A Prosthodontist as an integral member of the craniofacial rehabilitation team can help to raise the spirits and ease the mind of affected. An orbital prosthesis plays a major role in restoring esthetics and social acceptability in anophthalmic patients. The prosthesis should also have reasonable levels of mobility to mimic the natural eye as closely as possible [3]. The advantages of custom made prosthesis over stock prosthesis include improved adaptation to the underlying...
Role of Prosthodontist in restoring esthetic in patients who lost eye-A Case report

tissues, increased mobility of the prosthesis, improved facial contours and enhanced esthetics gained from the control over the size and colour of the iris and pupil [6]. However, a custom-made prosthesis is more expensive than a stock prosthesis and several steps are required for its fabrication. The common techniques for the fabrication of custom made prosthesis are paper iris disk and black iris disk technique. This case report highlights a modified stock ocular technique for the fabrication of an ocular prosthesis which is an excellent alternative, is relatively inexpensive and is easy to fabricate. Various factors, including systemic conditions and financial constraints, limit the use of osseo integrated implants in patients which is a popular approach since it offers an improved retention compared to the existing alternatives [7].

**Conclusion**

Loss of the most important sensory organ of the face is a very traumatic experience for the patient. Prosthodontic rehabilitation of such cases is a challenging task. Precise procedure and attention to every detail is necessary to bring out satisfactory esthetic result. This case report describes the technique for fabrication of an orbital prosthesis after evisceration of the eye. The technique greatly helped in reducing chairs side time, is cost effective, custom made and can achieve good esthetics.

**Reference**