

Post Traumatic Ocular Rehabilitation with Eye Prosthesis Case Report

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Abstract: Ocular defects that may be caused due to any maxillofacial traumatic injuries may alter not only facial appearance, but also result in psychological trauma to a sufferer. Although the basic steps of custom ocular prosthesis may be same that may be used by different maxillofacial prosthodontics, or text, but ultimate goal of aesthetics result after fabrication depends largely upon case selection, skill of technique and material used. This article describe a technique by which the state of the art custom ocular prosthesis has been fabricated in a case of traumatic injuries to eye by making accurate functional impression with fine details of the eye socket and following all the step of fabrication meticulously.

Key Word- Rehabilitation, Eye Defect., Ophthalmic Injury, Functional impression

I. Introduction

Although fabrication of artificial eyes¹ has been known to man by early ancient times, but satisfactory ocular fabrication actually result after the development of refined plastics. Ocular defect that may result following maxillofacial trauma may impair normal life of an individual. Prosthesis should be provided as soon as possible to individual in order to provide acceptable aesthetic facial appearance, and prevent further mental trauma.

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 produced desired movement at its full extent. This article describes the fabrication of custom ocular prosthesis in a patient who loos their eye ball due to trauma.

II. Case Report

A 32- year old male patient was referred to the Department of Prosthodontics, College of Dentistry Indore from the ophthalmology Dept. of M.G.M. Medical College Indore for prosthetic rehabilitation of left ocular defect.

The patient was having unsightly, small, sunken, non functional eye (fig 1) which is caused due to traumatic injuries by some blunt object. On examination, it was found that injured eye was able to perform and coordinate all the possible movements in unison with right eye, so following clinical and laboratory steps were carried out for a successful ocular prosthesis.

The patients was instructed to sit straight looking in front at the level of eyes. Apply 4% lignocaine hydrochloride jelly (4% xylocaine, Astra-IDL Ltd. Bangalore, India) to reduce the irritability of mucosa while taking the impression. A modified impression technique^{2,3}, where an impression tray is in the shape of an ocular prosthesis was used. Autopolymerizing resin impression tray (Dentsply RR pink Dentsply Milford, Del) was fabricated in the shape of eye shell and a hollow needle cover (Medisafe 5 ml disposable syringe, Manoj surgical Indore was attached as handle (fig 2). The impression tray was placed within the socket. The irreversible hydrocolloid impression material was mixed with water in the ratio of 1.5 part of water and 1 part of powder, and injected into socket with syringe through the hollow handle of the impression tray. The operator stabilized the tray throughout this procedure.

Once the impression material was set the patient was instructed to blink the eyes to break the air seal and impression was carefully removed from the socket.

The two piece dental stone mold was prepared⁴ (fig 3). The dental stone (kalstone Mumbai) was poured to immerse the lower half of the impression after boxing. Once the stone sets keyholes were cut, separating media was applied and the mold was completed with second mix of stone. Prepared mold was used in wax pattern construction. The mold was lubricated with petroleum jelly (Vaseline; Hindustan Lever, Pondicherry, India.) and a medium -hard dental wax (Modeling wax; DPI India.) was poured to prepare the wax pattern.

The altered sclera pattern was prepared by modified technique^{5,6} using wax pattern . A medium viscosity polyvinyl siloxane impression material (Aquasil; Dentsply, Milford, Del.) was mixed and painted over the tissue surface of wax pattern.

The wax pattern was repositioned in the socket and patient was instructed to move his eye in various directions with head in upright position till impression material had set completely. Remove the pattern and trim the excess material. This pattern is now represents the sclera blank of the eye. This scleral blank is inserted into socket and a dot was placed with red ink in the location of centre of pupil. A circle was marked and a thin layer of approximately 0.5 to 1mm of waxed was removed and the iris-corneal button that is prepared from stock shell eye (Corneal button; SMR Ophthalmic & Co. Mumbai) fig 4, was placed over there and margin were flushed.

This wax pattern with iris-corneal button was tried and checked for its accuracy in terms of position and movement supero-inferiorly and mesiodistally correlating with right eye.

The pattern was flaked and dewaxed in the conventional manner. The iris-corneal button was retrieved and placed back in the stone mold, and then mold was packed with white acrylic resin (DPI Tooth molding powder shade-E; DPI). Flask was closed and polymerized according to manufacturer's instruction. Polymerised ocular prosthesis was retrieved from the mold, finished and polished. In order to tint the anterior sclera surface as per the patients sclera to give the effect of veins, 0.5 to 1-mm of acrylic was removed from the anterior sclera surface around the iris-corneal button, and on this surface apply mono-poly mixture. This mono-poly mixture is made by following procedure^{7, 8,9,10}. Take 10 parts of heat polymerized monomer in a beaker, and this beaker is now placed on a pan of boiling water. When monomer is warm then trickles down 1 part of clear polymer (Dentsply heat polymerized, clear; Dentsply) slowly and stirring continuously with a glass rod for 10 minutes, until mixture get converted to a thick viscous oil. Then dark red and tan floccs (KT-899; Factor II Inc, Lakeside, Ariz) Was added in mono-poly mixture and this was applied on anterior reduced sclera surface of prosthesis to match the anterior sclera surface of natural eye. This layer is then partially polymerized with Light Cure Gun. The separating media was applied again in previous mold, and ocular prosthesis was refitted in the mold at the tissue surface side. The mono-poly solution was filled on anterior surface and mold was packed again and polymerized. Polymerized prosthesis was carefully removed, finished and polished.

The finished prosthesis was inserted in the eye socket and examine for its aesthetic appearance and degree of movement by instructing the patient to perform the movement in various direction (Fig 5,6,7,8,9) Post insertion instructions- Remove prosthesis only as necessary, and whenever removed it is always kept in water or soft contact lens saline solution. Wash the eye between your fingertips with a antibacterial soap.

1. Figures:



Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5



Fig. 6



Fig. 7



Fig. 8



Fig. 9

References

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