

Custom Made Ocular Tray and Impression: A Case Report

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ABSTRACT

Background: The loss of the facial structures can have a physical, social and psychological impact on those affected. Prosthetic rehabilitation of an ocular defect can be successfully achieved with stock eye using well fitting ocular tray and a proper impression technique. Accurate impressions of these tissues facilitate a close adaptation of the custom prosthesis to the tissue bed resulting in better potential for movement by the patient. A custom-made ocular prosthesis is a good alternative. This article presents a technique for the fabrication of custom ocular tray and procedure for making impression of eye socket using the same.

Keywords: Ocular tray, ocular prosthesis, stock eye prosthesis.

INTRODUCTION

Ocular prosthesis is an artificial replacement of bulb of eye. A well fitting ocular prosthesis enhances esthetics, improves facial contours and helps the patient overcome psychological trauma. Ocular prosthesis are either ready made(stock) or custom made^[1]. Stock prosthesis are usually advocated when time is limited and cost is a consideration. No special skills or material are required for its fabrication^[2]. The use of stock ocular prosthesis of appropriate contour, size and colour can provide an acceptable aesthetic result. The tissues adaptation of stock prosthesis can be improved by making an accurate impression of anophthalmic socket using custom ocular tray.

The defect can range from en bloc removal of entire orbit, known as exenteration to removal of only eyeball, known as enucleation. Enucleation is removal of entire globe, including the cornea, sclera and a portion of optic nerve. The rehabilitation of such eyes can be relatively easy if an impression of socket is made properly. Evisceration is removal of the globe leaving the sclera and conjunctiva intact.

Exenteration, on the other hand, refers to a radical procedure removing the globe as well as the complete or partial removal of the soft tissues of the orbit. The prosthesis in exenterated cases cannot be retained like the former, so other retentive means such as spectacle, magnetic buttons, adhesive, pin and sockets etc are needed. Before starting the design of the prosthesis, it is essential to assess the psychological component in order to gain the confidence of the patient, in addition to a detailed medical history that includes the condition that led to the excision and enucleation in order to alert the possibility of recurrence.

A BRIEF HISTORY OF OCULAR PROSTHESIS

The art of making artificial eyes has been practiced since ancient times. Egyptian priests made the first ocular prosthesis, called Ectblepharons, as early as the 5th century BC. In those days, artificial eyes were made of enameled metal or painted clay and attached to cloth and worn outside the socket. The first in-socket artificial eye made in the 15th century was made of gold with coloured enamel. In the latter part of the 16th century, the Venetian glass artisans discovered a

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Fig 1: Preoperative photograph.



Fig 2: Stock eye shells



Fig 3: Tryin of stock eye.



Fig 4: Putty index of stock eye for making custom eye try.



Fig 5: Custom ocular tray.



Fig 6: Making of final impression.

formula that could be tolerated inside the eye socket. These early glass eyes were crude, uncomfortable to wear and very fragile. Today the vast majority of patients all around the world wear ocular prosthesis made of acrylic. Several techniques have been used in fitting and fabricating artificial eyes. Empirically fitting a stock eye, modifying a stock eye by making an impression of the ocular defect (Taicher et al, 1985), and the



Fig 7: Final impression.



Fig 8: Two piece mold.



Fig 9: Two piece mold.

custom eye technique (Benson, 1977) are the most commonly used techniques. The fabrication of a custom acrylic resin eye provides more esthetic and gives precise results because an impression establishes the defect contours, and the iris and the sclera are custom fabricated and painted. Keeping these in mind we at the Department of Prosthodontics, Panineeya institute of Dental Sciences & Research Centre successfully



Fig 10: Relining stock eye shell.



Fig 11: Investing of prosthesis.



Fig 12: Final prosthesis.



Fig 13: Final prosthesis tissue side view.



Fig 14: Postoperative view.

rehabilitated a patient for an ocular prosthesis of which the case description is as follows

CASE REPORT

A male patient aged 30 yrs reported to the department of prosthodontics, Panineeya institute of dental sciences, Hyderabad, with a chief complaint of missing right eye. He gave a history of traumatic injury to the right eye. On examination, intraocular tissue bed was healthy and with adequate depth between the upper and lower fornices for retention of the prosthesis. (Figure 1)

TECHNIQUE

A prefabricated stock eye that optimally fits to the socket was selected (Figure 2,3). It was disinfected, lubricated and tissue side of the stock eye was invested with dental plaster. After the plaster was set, notches were made on the edges. A small amount of poly vinyl siloxane putty (Aquasil, soft putty, Dentsply) was mixed and adapted over the top of invested prosthesis and into the notched edges. (Figure 4) After the putty was set, it was removed and a beveled sprue hole was made in the center of PVS cope. The prosthesis was removed from the mold, plaster surface was lubricated and putty cope was replaced on the mold. Self cure clear acrylic was mixed and poured into the mold space.

Once it was cured, the acrylic resin tray was removed from the mold and multiple perforations of three to four mm diameter were made in a tray and it was trimmed and polished. The tube to inject

impression material was fabricated by cutting the tip of a syringe by about 10 mm and it was secured to the ocular tray with cold cure acrylic resin. (Figure 5) The custom tray was disinfected and it was tried in patient for over extension and proper orientation.

IMPRESSION PROCEDURE

The impression tray was placed in the socket and the syringe was loaded with low viscosity poly vinyl siloxane. The impression material was injected into the tray and patient was instructed to perform all the movements of the eye. (Figure 6,7) After removal from the eye socket, the impression was invested first with dental stone till the height of contour and then with dental plaster to get a two-piece mold. (Figure 8,9) Stock eye that was selected matching the sclera and iris-pupil complex of the contralateral natural eye was trimmed precisely until it accurately fits into the socket. The bulge of the eye was gained as of the contralateral eye by the addition of wax onto the tissue surface. (Figure 10) Once the correct bulge was obtained, the tissue surface was relined with soft tissue conditioner and placed into the socket to record the functional movements of the eye^[3]. The relined tissue side of the ocular prosthesis was invested, dewaxed and packed with heat cure clear acrylic resin. (Figure 11) The entire assembly was cured in 70° c water bath for one and half hours followed by 100° c water bath 20 to 30 minutes^[4].

After the flask was cooled, prosthesis was separated from the investment and it was polished. The polished prosthesis must be free of roughness that could irritate the eye socket and encourage secretions to accumulate for additional irritation.

Prior to insertion of the polished prosthesis, it was disinfected in a solution of 0.5% chlorhexidine and 70% isopropyl alcohol for five minutes^[5,6]. After disinfection, the prosthesis was rinsed in sterile saline solution to avoid chemical irritation and inserted. (Figure 12,13,14)

DISCUSSION

A well-made and properly planned ocular prosthesis maintains its orientation when patient performs various movements. With the development of newer materials, the socket can be

finely recorded on which custom made ocular acrylic prosthesis (Sykes,1996) can be fabricated with exact fit and esthetics although the prosthetic rehabilitation may be enhanced with the use of implants, can coordinate the movements with natural eye, as they are not always possible or feasible. More, over the use of stock ocular prosthesis of appropriate size and colour cannot be neglected, a custom made ocular prosthesis provide better results functionally as well as aesthetically. The custom ocular tray is based on the patients existing anatomy and therefore conforms accurately to the socket and helps in obtaining accurate impression of the eye socket. This results in intimate adaptation of stock eye prosthesis to internal tissue surface of the socket.

CONCLUSION

The use of custom-made ocular prosthesis has been a boon to the patients who cannot afford for the implant replacements. Also, as discussed above, the esthetic and functional outcome of the prosthesis was far better than the stock ocular prosthesis (Cain, 1982). Although the patient cannot see with this prosthesis, it has definitely restored her self-esteem and allowed her to confidently face the world.

CONFLICT OF INTEREST

No potential conflict of interest relevant to this article was reported.

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