

## Prosthetic Management of an Ocular Defect – A Case Report

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**Abstract:** Magnificent and complex, eyes are the most important organ of the human body. An ocular defect has both psychological and physiological effect on the patient. A removable custom made or stock ocular acrylic prostheses is a better option than implant retained ocular acrylic prostheses due to economic factors and it also helps uplift the patient psychologically and improve the confidence. This article presents a case treated with a stock ocular acrylic prostheses which has good adaptation and esthetics. The stock ocular prostheses showed movement in coordination with contra lateral side eye.

**Keywords:** Ocular defect; Evisceration; Enucleation; Stock ocular prostheses.

### I. Introduction

Eyes are generally the first feature of the face to be noticed. Loss of eye has crippling effect on the psychology of the patient. The ocular prostheses helps to rehabilitate the patient in the society with normal appearance and self-esteem. Surgical enucleation is indicated in irreparable trauma, fights, infections, tumors, blindness, pain in the eye and cosmetic reasons<sup>1</sup>. The surgical procedures for removal of an eye are classified by Peyman, Saunders and Goldberg into three categories: evisceration, enucleation and exenteration<sup>2</sup>. A maxillofacial prosthodontist plays a major role in rehabilitation of such patient with ocular prostheses. The ocular prostheses can be either custom made or stock ocular acrylic prostheses. The stock ocular prostheses are prefabricated ones and also it has less time consuming steps as needed for the fabrication of customized ocular prostheses. The use of stock prostheses is advocated when time is limited and cost is a consideration<sup>2</sup>. This case report describes a case treated with stock ocular acrylic prostheses to obtain optimum retention with functional and esthetic results.

### II. Case Report

A 36-year old male reported to the Department of Prosthodontics, Sharavathi Dental College and Hospital, Shimoga for replacement of left eye (fig1); Patient gave history of accidental injury 30 years back where he lost his sight. He was suggested to get left enucleation done because of damage to the retina and supporting structures. Later on, he was operated in Manipal for the same and complete left eye enucleation was done. Tissue bed was edematous and inflamed due to old stock eye.



Fig 1. Preoperative Photograph

#### Procedure:

Patient was explained about the treatment procedure. Thorough examination of the enucleated anophthalmic socket was done to ensure proper healing with absence of infection, movement of tissue bed, size and extent were noted. Prior to impression making the tissue bed was conditioned with tissue conditioner and patient was advised not to wear the eye prostheses for 15 days. The impression was made after the inflammation subsided. The patient was made to seat in an erect position, requested to stare at a distant spot and instructed to hold his gaze in a straight forward position with eyes open while making impression. An ocular impression of the socket was then made with irreversible hydrocolloid (Zelgan alginate impression material, Dentsply). A customized acrylic conformer attached to a 2ml modified plastic disposable syringe (Unolok, Hindustan syringes and medical devices Ltd) was used to carry the impression material for making the impression (fig.2).



**Fig.2.** Impression making

A cast was poured in dental stone (Kalrock –pink, Kalabhai.Co) to obtain sectional mold to know the size of the defect.<sup>4</sup> A stock eye shell with similar color and dimensions of the cornea, iris and pupil as that of natural right eye was then selected (fig3).



**Fig3.**Stock Eye Shells

It was modified according to the dimensions of the defect by trimming the borders with tungsten carbide bur and by addition of modeling wax (Golden modeling wax, Hindustan Pvt Ltd) wherever required (fig4).



**Fig 4.** Adaptation of eye shell to the cast

A proper orientation method was followed to determine the pupil position and the ocular portion in symmetry with that of right eye. Retention was obtained utilizing natural undercuts of the defect. Try-in was done and the eye movements with modified stock eye in place were verified. The final modified stock eye was invested using dental plaster (Kalabhai.Co) and dental stone (Kaldent – green, Kalabhai.Co) in two halves of the flasks respectively. Processing was done using heat cure acrylic resin (Travelon clear denture material, Dentsply India Pvt Ltd) (fig5).



**Fig.5.**Acrylization

The polymerized ocular prostheses was finished and carefully polished to preserve all the important form modifications. Final prostheses was inserted in ocular defect (fig.6) and patient was asked to relax for at least 10 min to allow orbicular muscles to relax, to permit critical evaluation. Patient was instructed on how to remove and place the prostheses. He was instructed to wear the prosthesis day and night, and asked to wash the prostheses with mild soap once every 1 week. More frequent cleaning would be indicated if particularly dusty or dirty conditions were encountered. Patient was examined 1, 3 days and 1 week after prostheses insertion. After 1 week post insertion, patient was fully adapted to the prostheses and no further modification in prostheses was done. He was kept on regular follow-up and 1 year follow has been done and no modification was required.



**Fig.6.** Postoperative Photograph

### **III. Discussion**

Many techniques have been used in fabricating ocular prostheses. Ocular prostheses are either readymade (stock) or custom made. They may be either glass or methyl methacrylate resin. Methyl methacrylate resin is superior to other ocular prosthetic materials in tissue compatibility, esthetic capabilities, durability, color permanence, adaptability of form, cost and availability. The use of stock prostheses is usually advocated when time is limited and cost is a consideration. The required clinical and laboratory time is less than custom made prosthesis.<sup>3</sup>

Several techniques of fabricating ocular prostheses have been discussed in the literature (Chalianetal, 1972; Bartlett and Moore, 1973). However, it is often more practical to take advantage of stock ocular prostheses that are commercially available in approximately 50 shades and iris formations, 8 sizes and shapes, and models for left and right. Also special scleral and pupil shading with different iris diameters may be obtained.<sup>5</sup>

The present article describes a case treated for the enucleated left eye with stock ocular acrylic prostheses which has restored functional and esthetic results with optimal retention. An alternative stock ocular prostheses is implant retained ocular prostheses in which the ocular implant will be placed or attached with the ocular muscles. The ocular implant thus moves as the muscles move in their normal course resulting in a more realistic ocular prostheses that are implant retained<sup>6</sup>. As implants are cost effective, removable ocular prostheses are commonly fabricated for treating patients with ocular defects.

### **IV. Conclusion**

An artist's perception, a sculpture's hand and a clinical expertise all go in the making of a good maxillofacial prosthetic rehabilitation. Although patient cannot see with this ocular prostheses, it has definitely restored his self-esteem psychologically and allowed him to confidently face the world.

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