

Restituting the Missing Oculus Sinister: A Case Report

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Abstract:- Patients who have undergone surgical procedures like enucleation or evisceration resulting in an anophthalmic socket can be prosthetically rehabilitated. A stock eye prosthesis or a custom ocular prosthesis can be provided. The present article is an illustration of the procedures involved in the fabrication of a custom ocular prosthesis that incorporates a prefabricated iris button.

Keywords:- Enucleation; Ocular Prosthesis; Prefabricated Iris.

I. INTRODUCTION

Individuals who have lost ocular structures through orbital evisceration or orbital enucleation, are the ones who require the fabrication of an ocular prosthesis. Evisceration is the surgical procedure that involves the removal of the contents of the globe, but leaving the sclera and on occasion the cornea in place. Fairly good mobility of the prostheses is usually possible because of the presence of intact extraocular muscles.¹

Enucleation involves the surgical removal of the eyeball after the eye muscles and optic nerve have been severed.²

The disfigurement that is a result an eye loss can lead to psychological, as well as social consequences. However, with the improvement in ophthalmic surgery and ocular prosthetics, such patients can be rehabilitated effectively.²

Rehabilitation of defects resulting from evisceration and enucleation can be achieved with aesthetically acceptable results using custom made ocular prostheses. The presence of intact eyelids and ocular muscles aid in a well retained prosthesis.

If needed, the soft tissue constituents may be fabricated using silicone elastomers. Their retention can be done using suitable eye-frames or by the use of local undercuts and commercially-available adhesives.³

This article presents a case report of fabricating a custom ocular prosthesis with a prefabricated iris button.

A written informed consent was obtained from the patient.

Ethical approval was obtained from the Institutional Ethics committee, A J Institute of Medical Sciences & Research Centre.

II. CASE REPORT

A 32 year old female reported to the Department of Prosthodontics, with the chief complaint of missing left eye. History revealed that the patient had undergone enucleation surgery at the age of two and at the same time she was provided with a prosthesis that she used till date. She complained of “sliding” of the prosthesis and requested for a new one. Examination revealed enucleated oculus sinister (left eye) socket (Figure 1). The socket revealed healthy conjunctival lining and absence of any signs of infection.

➤ Treatment Plan:

The treatment plan included fabrication of custom made ocular prosthesis with a prefabricated iris button.

➤ Procedure:

Petrolatum jelly was applied on eyebrows and eyelashes of the defective side before making the impression.

The plunger of a syringe was separated from the syringe assembly. Four small holes were made on the flanged portion of the plunger. This served as an impression tray (Figure 2).

Next, light-bodied addition polyvinylsiloxane impression material (Photosil, DPI, The Bombay Bumrah Trading Corporation Ltd., Mumbai, India) was injected in the anophthalmic socket and simultaneously also loaded on the tray. The tray was inserted into the socket and held gently without applying any pressure to prevent distortion of socket mucosa. The patient was instructed to perform eye movements to facilitate the flow of the impression material to all aspects of the socket. With gaze maintained in a forward direction, the patient was instructed to gaze at a far-off spot situated at eye level.

The impression was recovered from the socket and inspected after the material had set.(Figure 3).

The impression was poured with the type IV dental stone (Goldstone, Stone Plaster Type III, Asian Chemicals, Gujarat, India) to obtain a three-piece cast.

A wax pattern was fabricated using modelling wax (Surana Modelling Wax, Surana Industries, Mangalore, India). The fit of the wax pattern was evaluated and necessary adjustments were made.

The contra lateral iris was used as a reference to determine the size and color for the iris component of the prosthesis. A suitable stock eye was selected and the iris portion was trimmed.

Certain guidelines were placed on an adhesive tape placed on the patient's forehead that helped to establish an acceptable position of the prefabricated iris on the scleral wax pattern. The guidelines included the vertical midline, the distance from the right eye medial canthus to the midline and left eye medial canthus to the midline; the distance from the right eye lateral iris border to the midline (Figure 4). Similarly, horizontal lines corresponding to the center, inferior and superior limits of the iris on the right side were marked on the face, which were transferred to the defective side by the use of the graph grid (Figure 5).

The iris button was then positioned on the wax pattern using the guidelines and concurrent use of a transparent graph grid.

A stalk was attached on the iris button to facilitate in easy handling of the assembly and to prevent wax distortion (Figure 6). Shade selection for the scleral bank was done using tooth colored acrylic (Self-cure tooth moulding powder, DPI, The Bombay Bumrah Trading Corporation Ltd., Mumbai, India) with the right eye sclera as reference.

The wax pattern with iris button was processed in a conventional manner and packed using acrylic resin.

Approximately 1 mm of acrylic resin was trimmed from the anterior scleral curvature. Characterization was done by the use of red silk fibers in order to mimic veins.

Addition of self cure clear acrylic resin (DPI-RR Cold Cure, DPI, The Bombay Bumrah Trading Corporation Ltd., Mumbai, India) was used for recontouring the anterior scleral curvature; followed by finishing and polishing procedures.

Insertion of the custom ocular prosthesis was done and necessary adjustments were made inserted (Figure 7 and Figure 8). The patient was instructed about the usage and maintenance of the prosthesis.

Follow up was carried out after a period of 1 day, 3 days and 1 week.

III. DISCUSSION

The satisfaction provided by an ocular prosthesis in terms of esthetic and psychological benefits has prompted a persistent research in enhancement of its prosthetic technique. Most authors believe that simulation of the natural eye is the foundation of masking the loss and accomplishing an esthetic outcome for individuals with ocular defect.⁵ Numerous techniques for fabrication of a custom ocular prosthesis has been described in literature, including Black iris technique, paper iris technique, modification of stock prostheses, application of digital imaging etc.^{1,2,4}

Accurate iris reproduction to match the functional eye is a critical factor during fabrication of an ocular prosthesis.⁶

The described technique is simple, requires less treatment time and minimal artistic skills.

Irrespective of the technique used during fabrication, a custom ocular prosthesis should retain the shape of the socket, maintain the shape and allow proper muscular functioning of the lids, prevent fluid accumulation, maintain palpebral opening, color, proportions and a gaze akin to the natural eye.¹

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Figure 1



Figure 2

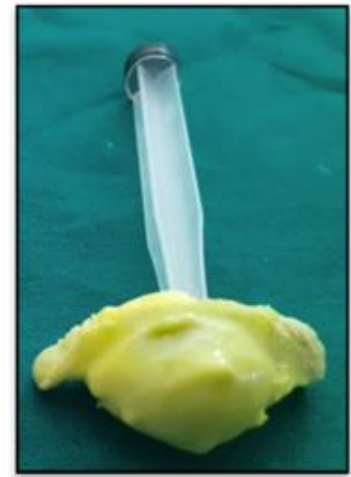


Figure 3



Figure 4



Figure 5



Figure 6



Figure 7



Figure 8