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ART OPENS THE FINEST EYE – A CASE REPORT

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ABSTRACT

Defects of the eye may involve entire loss of orbit or a part of it which leads physical and psychological setback to the patient. A custom-made ocular prosthesis is a good treatment option for those patients. A 17-year male patient reported to our department with congenital under developed eye. Pt has very little eye opening and his main concern is to restore aesthetics. Patient was explained about various treatment options and finally because of his financial reasons a custom-made acrylic prosthesis was given. Prosthetic rehabilitation fulfils aesthetic as well as psychological requirements for a patient. A correctly placed prosthesis should restore the normal opening of the eye, support the eyelid, restore a degree of movement, be adequately retained and aesthetically pleasing.

Keywords: Ocular Prosthesis, Custom made Ocular Prosthesis, Eye Prosthesis, Acrylic paints, Iris Button

INTRODUCTION:

The human eye is the organ that provides us with vision, and it allows us to learn more about the world around us than any of our other four senses. Facial aesthetics largely depends on the eyes.¹ Patients with disfigured eyes may express self-consciousness about their appearance as well as issues related to functional limitations.² When an eye is lost for any reason, it is apparent that a person experiences profound emotional, social, and psychological distress.¹ The loss of an eye, whether partial or entire, impairs the patient's vision and causes a visible deformity. A prosthesis should be provided as early as possible to raise the spirit and ease the mind of the afflicted. Treatment should be aimed to improve patient's aesthetics, restore and maintain health of the remaining structures, and consequently provide physical and mental well-being.³ A prosthetic alternative for an enucleated eye ball is an ocular prosthesis. A well-adapting prosthesis enhances the patient's psychological state while also increasing the patient's confidence and aesthetic value.⁴ It has long been acknowledged that an ocular prosthesis with acceptable aesthetics and sufficient motility is critical in restoring normal appearance in individuals with anophthalmia. There are a variety of methods for processing an ocular prosthesis. The most frequent approaches are empirically fitting a stock eye, altering a stock eye by making an impression of the ocular defect, and the custom eye technique.⁴ The presence of mucoid discharge from the eye socket also has an

impact on prosthetic eye wearers' quality of life.² Ocular prostheses are either readymade stock or custom made. The custom -made ocular prosthesis provides better fit, close adaptation to tissue bed, optimum aesthetics and less discomfort to patient. A solid ocular prosthesis would cause sagging of lower fornix due to its weight and asymmetrical alignment. Moreover, exact shade matching of sclera and iris is difficult to achieve aesthetic requirements.⁵

Aims of treatment with an ocular prosthesis include repairing deformities of the eyeball, recovering facial aesthetics, protecting the anophthalmic cavity, restoring the lachrymal direction, and preventing accumulation of lachrymal fluid in the eye cavity. However, the presence of movable tissue layers may affect the quality of ocular prosthesis retention and cause irritation of the tissue layers.⁶

Functional rehabilitation of a lost eye is still a subject of research. But one can provide an ocular prosthesis to aesthetically rehabilitate a patient.

CLINICAL REPORT:

A 19-year-old male patient reported to the Department of Prosthodontics and Crown & Bridge of Lenora Institute of Dental Sciences, with a chief complaint of congenitally underdeveloped left eye. The patient's primary concern is about esthetics, and wants to get it prosthetically restored. On clinical examination there was hypoplastic ocular tissue bed of the left eye which had no vision (Figure 1). The

tissue was non inflammatory and healthy. The patient was explained about various treatment options, but due to the economic reasons of the patient, we opted for a custom made removable ocular prosthesis.



Figure 1 (Pre operative photograph)

Procedure:

A primary impression was made of the left eye with stock tray using polyvinyl siloxane impression material (Figure 2).



Figure 2 (Primary Impression)

Then a primary cast was poured in dental stone and a custom tray was fabricated using self-cure clear acrylic.



Figure 3 (Primary cast)

Multiple holes were made in the custom tray to provide mechanical retention to the impression material (Figure 4).



Figure 4 (Custom tray)

At the center of the custom tray a comparatively larger hole was made to attach a 5ml injection syringe. A secondary impression was made with polyvinyl siloxane using the custom tray for more detailed record of the tissue Figure 5.



Figure 5 (Secondary impression)

Master cast was poured in die stone and grooves were made on the land area to make a stone index Figure 6.



Figure 6 (Master cast and stone index)

A mixture of modelling wax and hard wax was poured into the mold space and the plaster index was repositioned over the master cast. The wax pattern was tried in the patient and checked for the contour in relation to the contralateral eye. Iris is tinted in layers with acrylic colors on the ocular disc and on each layer, monopoly syrup was coated Figure 7.



Figure 7 (Custom painted ocular disc)

Ocular button was positioned and attached to the iris disc. Position and size of the iris was determined using a custom-made ocular grid comparing to the contralateral eye and was transferred to the wax pattern Figure 8.

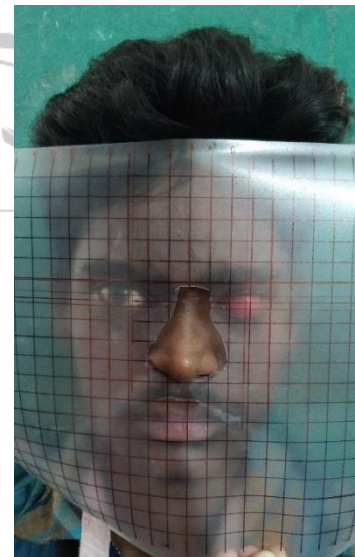


Figure 8 (Ocular grid)

The wax pattern with the custom-painted iris was tried in the patient, which appeared satisfactory. The wax pattern was flaked and dewaxing was done. Tooth colored heat cure acrylic was packed and polymerization was done Figure 9.

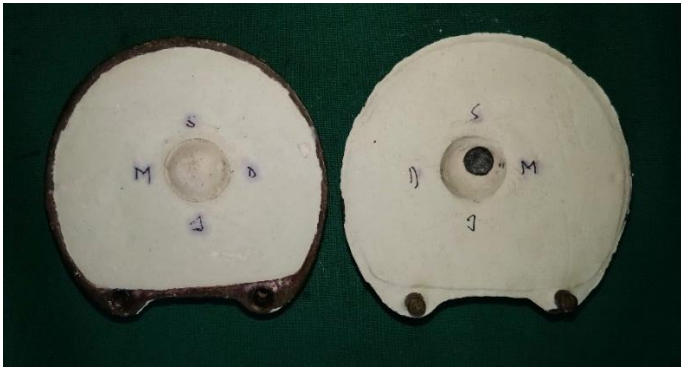


Figure 9 (Polymerized ocular prosthesis)

The prosthesis was finished and polished and tried in the patient. Characterization of the sclera was done using acrylic colors and rayon fibers were used to simulate blood vessels of the eye and was secured using monopoly syrup Figure 10.



Figure 10 (Characterization of ocular prosthesis)

Utilizing the previous flask's, a layer of heat cure clear acrylic was packed onto the prosthesis.

The prosthesis was again finished and polished and delivered to the patient Figure 11.



Figure 11 (Post insertion photograph)

Discussion:

Every human being is created with a pair of eyes which serve as sense organs of sight and adds to the beauty of the face. It also performs various other functions including a very important role in nonverbal communication. Unexpected trauma, pathology or congenital deformity may necessitate a surgical intervention leading to the loss of eyeball. Ocular disfigurement can drastically lower the victim's quality of life through its physical and psychological handicap.⁷ A custom-made ocular prosthesis replicates the orientation, natural color, contour, and size of the pupil and iris, providing realism and symmetry to the patient's face. The custom-made acrylic resin ocular prosthesis achieves intimate contact with the tissue bed. The close adaptation of the custom-made ocular prosthesis tends to distribute pressure more equally, rather a prefabricated ocular prosthesis.⁸ Many clinicians have concluded that iris color of prosthetic eye is most important consideration for the esthetic acceptance

of the prosthesis. The main disadvantage of prefabricated eyes is the inability to match iris color. Customization of iris either can be performed by paint on technique or photographic method. However, painting the iris disk involves both artistic skills and the knowledge of color science.⁹

To achieve esthetic in an ocular prosthesis, the precise positioning of the iris is cardinal.¹⁰ Roberts AC¹¹ in 1969 introduced an instrument pupillometer for iris positing in the prosthetic eye, with the pupil as a fixation point that worked by resting two plastic rotatable discs having scale markings, on the bridge of the nose. McArthur DR¹² used the ocular locator for iris centering. He positioned an Ocular locator on the face of the patient so that the marked midline and horizontal lines are superimposed over the markings made on the patient's face to trace the anatomy of the eye. Guttal SS and his colleagues⁸ utilized a grid template to place the iris accurately. The use of a transparent graph grid is a simple and reliable method for iris positioning compared to visual assessment. Pai UY and his coworkers¹³ in 2010 used eyewear with a graph grid attached to its glass lens. He outlined the normal eye and related it with markings of anatomical structures. An ocular prosthesis goes a long way in completing psychological rehabilitation for patients where loss of vision is permanent.

CONCLUSION:

A custom-made Ocular Prosthesis might not be a permanent solution to acheive the lost vision but helps in esthetical and psychological rehabilitation.

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