AN OCULAR PROSTHESIS- A CASE REPORT

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Abstract

Ocular prostheses play a vital role in restoring the appearance and functionality of the eye for individuals who have suffered from eye loss due to trauma, surgery, tumors, or congenital eye defects. This case report presents the successful fabrication and fitting of a custom-made ocular prosthesis for a patient with an eye defect. The process involved careful examination and digital imaging for the fabrication of prostheses. The custom prosthesis provided an excellent aesthetic match, improved comfort, and enhanced the patient's self-confidence, ultimately leading to an improved quality of life.

Keywords: *maxillofacial prosthesis, iris shell, custom*

INTRODUCTION

A missing organ can result in severe effects on one's psychology, especially when it is a vital part of one's appearance. **'Face is the index of the mind'** and it is through face we express our feelings; be it sorrow or joy. Any damage or disfigurement to the face can lead to psychological and social problems. A missing eye invariably leads to physical, social, and psychological changes in a patient's way of thinking and self-confidence. Loss of a human eye can be a result of surgical procedures such as enucleation, evisceration, or exenteration which are aimed at treating malignancies, congenital defects, sympathetic ophthalmia, irreparable trauma, underlying infections, phthisical eye, etc.Enucleation refers to a complete removal of the globe along with a part of optic nerve and may or may not involve musculature. Evisceration, on the other hand, is a more conservative procedure that involves the removal of the intraocular contents of the globe, sometimes the cornea.[1] The enucleation procedure is commonly done under general anesthesia, but can be performed under local anesthesia with a retrobulbar block.[2,3]To reduce the risk of some remaining cancerous tissue, a large portion of the optic nerve is also removed in some cases.[4] However, there can be a significant risk of ptosis and extraocular muscle damage accompanied with this procedure because the optic nerve is transected near the orbital apex. In evisceration, the internal aspect of the sclera is cauterized and treated with absolute alcohol to denature any residual proteins, decreasing the risk of sympathetic ophthalmia.[5]Orbital exenteration is a more radical procedure, and it implies the removal of the orbital contents including the periorbita and eyelids. However, sometimes, orbital tissue can be conserved, and eyelid skin and orbicularis muscle are spared. Exenteration surgery is necessary in cases of orbital and periorbital tumors, and occasionally other conditions, that are potentially fatal malignancies.

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CASE REPORT

A 51-year-old female patient named Santosh kumari reported to the Department of Prosthodontics, Crown and Bridge, Indira Gandhi govt dental college ,Jammu with a complaint of a missing eye since 35 years that was a result of enucleation to treat ocular melanoma[Figure 1]. On further history taking, the patient revealed that she had been wearing a stock scleral shell for 10 years, but she was not satisfied in terms of the fitting. On examination of the socket, no signs of infection or inflammation were seen, and there was a healthy conjunctiva. The movements were satisfactory sideways and downward, but were not as satisfactory in the upward direction.

A semicustomized ocular prosthesis was planned using a stock iris shell and a custom made sclera and a custom-made ocular tray. The patient was thoroughly educated about the whole procedure.

Procedure

1. An impression of stock scleral shell was made using putty and pink coloured acrylic autopolymerizing resin (DPI RR Cold Cure, Dental Products of India)was added to this impression mold serving as customized ocular tray for making final impression
2. a syringe was attached to the custom ocular tray to facilitate the injecting of light-body consistency of polyvinyl siloxane (PVS) material (Aquasil, Dentsply) during impression making.
3. The custom ocular tray was tried in the patient's ocular cavity [Figure 3], and any irregularities and interferences in movements were trimmed.
4. The eyelids were applied with petroleum jelly before making the impression.
5. Impression was made by placing the PVS light-body impression material (Aquasil, Dentsply) into a disposable syringe (Dispovan) and injecting it into the already-placed ocular tray in the orbit [Figure 4]. The patient was asked to make movements during the procedure that led to a functional impression.
6. After this material was set, an irreversible hydrocolloid was added on to create the border and after it got set it was taken out and examined [Figure 5] for any air bubbles or irregularities, after which it was poured into dental stone [Figure 6] (Kalabhai Kalstone, Kalabhai Karson Pvt. Ltd.).
7. The light body impression was carefully retrieved out of the cast and A putty mould was made over the impression to which molten modelling wax (DPI Ltd.) was poured into the sprue which was formed by the syringe cap, and this led to the fabrication of wax pattern [Figure 7]
8. Size, shape, and color of a stock iris were selected according to the contralateral eye.
9. This was sealed on to the wax pattern using a heated instrument after trimming the necessary portions and the patient's ocular cavity. Position of the iris was finalized according to the contralateral eye using a measurement scale. Any changes in fullness were done [Figure 8] and (Figure 9)
10. The shade of the sclera was selected in accordance with the natural contralateral eye.
11. The patient was asked to perform upward, downward, and lateral movements and any overextensions were removed [Figure 8] and (Figure 9).
12. Flasking and dewaxing were done and packing was done into the prepared mold using selected shade of heat cured acrylic resin (DPI-heat cure, DPI Ltd.) and a long curing cycle was followed [Figure 10].

13. The final prosthesis obtained after deflasking was trimmed with an acrylic trimmer followed by finishing and polishing of the prosthesis. The prosthesis was inserted into the patient's ocular cavity. Stability, contour, and positioning of the iris were examined once again, and characterization of the prosthesis was done by trimming acrylic resin of sclera to a depth of 1 mm and the prosthesis was delivered. Red-colored nylon fibers were placed to the outer periphery to simulate blood vessels and yellow coloured nylon fibres were placed to mimic the contralateral eye pinguecula condition. These were stabilized with the help of cyanoacrylate adhesive.
14. Trimmed sclera was replaced with a clear heat-cured polymerizing acrylic resin, and curing, deflasking, finishing, and polishing were done. The final ocular prosthesis was delivered and postinsertion instructions were given regarding the usage and maintenance.

The final ocular prosthesis was delivered and postinsertion instructions were given regarding the usage and maintenance [Figure 11].

FIGURES

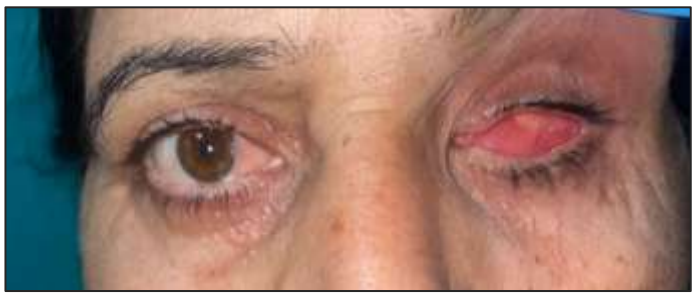

Figure 1

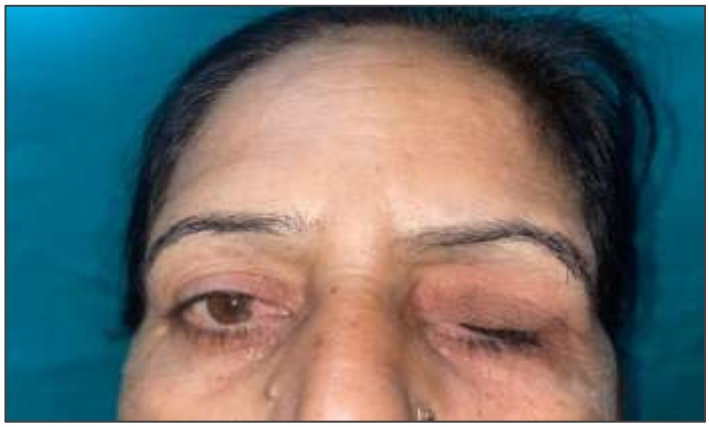

Figure 2

Figure 3

Figure 4

Figure 5

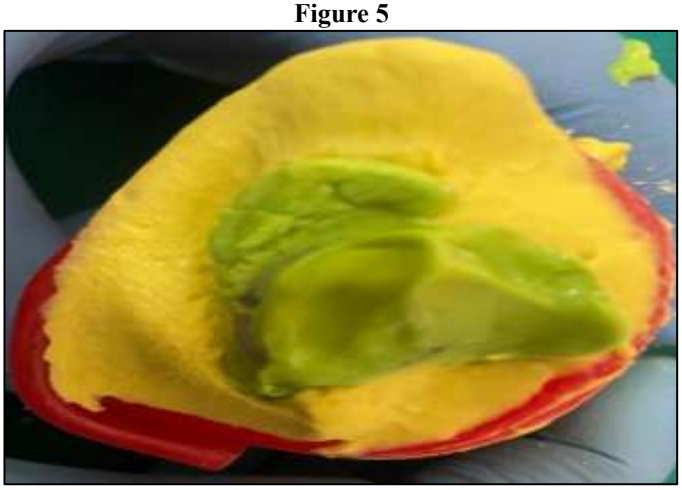

Figure 6

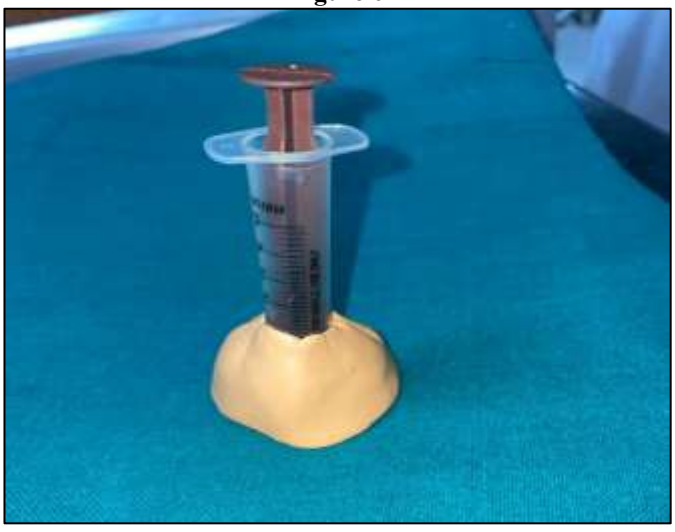

Figure 7

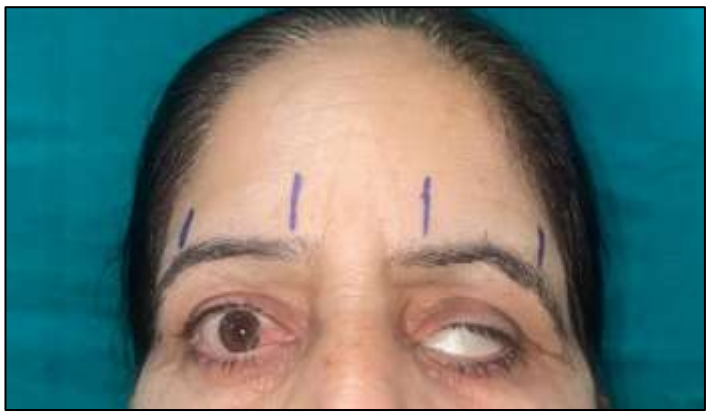

Figure 8

Figure 9

Figure 10

Figure 11

DISCUSSION

Customized ocular prosthesis has the advantages over stock eyes such as better contouring, color matching, and coordinated movements with the contralateral eye.[1] Customizing the iris demands extra skill and time from the operator.[6]This can be avoided if stock iris matching with the contralateral natural eye is available. Semicustomizing the prosthesis using the stock iris and customized sclera will have advantages of both stock and custom prosthesis. This technique is not advised when the color, contour, and configuration of the stock iris are not satisfactorily matching with the contralateral natural eye of the patient.

CONCLUSION

A semicustomized ocular prosthesis has been described that reduces the fabrication time by selecting a matching stock iris while a custom-made sclera maintains the esthetics properly. This prosthesis enhances the patient's comfort and confidence by increased adaptiveness and natural appearance and also maintains its orientation when the patient performs various eye movements**.**

Declaration of patient consent-The authors certify that they have obtained all appropriate patient consent forms. In the form the patient(s) has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The patients understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest-There are no conflicts of interest

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