

An Innovative Hybrid Technique for Fabrication of Custom Made Ocular Prosthesis: A Case Report

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Abstract

Prosthetic rehabilitation of ocular prosthesis can be done by stock eye or a customized eye. Although option of stock eye is easy and time saving, still most of the patients complain of discomfort even after appropriate adjustment because of insufficient adaptation to underlying soft tissues. In such cases customized ocular prosthesis is always preferred. The purpose of this technical procedure is to provide a well fitting prosthesis to the patient, reducing the number of laboratory steps and appointments for fabrication of ocular prosthesis. This article describes a hybrid technique using stock iris and customized sclera blank.

Keywords: Ocular prosthesis, Iris positioning, Maxillofacial prosthesis.

Introduction

Eyes are one of the most important part of human body, as it enhances the beauty of a person and reflect our personality. Most patients experiencesignificant stress, primarily to adjusting with functional disability caused by the loss of eye, and to societal reactions to the facial impairment.^[1] It may be due tocongenital defect, tumour etc.^[2] Prosthetic rehabilitation should fulfil aesthetic and psychological demands of the patients.^[3] A correctly placed prosthesis should restore the normal function n esthetic.^[4] Cosmetic rehabilitationwith custom made prosthetic devices is a one of the treatment option for such

individuals. This article aims to describe a simple and time saving technique of ocular rehabilitation.

Case Report

A 52 year male patient was referred to the Department of Prosthodontics VSPM Dental College, Nagpur from Dept of Ophthalmology with the chief complaint of poor esthetics due to loss of left eye sight since 1 year and he wanted to replace it. Patient had a history of trauma that was treated by complete enucleation of the eye. On examination the defect area was found asymptomatic and it was decided to fabricate an ocular prosthesis. The treatment plan was explained to the patient and a written informed consent of the patient was taken.

Clinical Procedure

1. Selection of stock eye: A stock eye whose iris and pupil matched with the patient’s contralateral eye was selected and was made to fit the anophthalmic socket by trimming it. Its iris is later to be harvested for use alongwith customised sclera part.
2. Making custom impression tray: The eye shell was then invested in irreversible hydrocolloid (Dentsply India) and a mold was made. After the material was set the eye shell was removed and replaced with self-cure acrylic resin (DENTSPLY, India) to obtain a custom ocular tray. Perforations were made in the tray and a tunnel was made through the center at the approximate position of the pupil,

3. Making ocular impression: Light body elastomeric impression material (Dentsply ,Aquasil LV) was used. Socket and surrounding area was coated with a lubricant to prevent the impression material from sticking to it. Impression material was then injected on to the tissue surface of the tray and inserted in the eye for accurate reproduction. The patient was instructed to make all eye movements to allow the material to flow into all the areas. After the material was set the impression was removed.
4. Making 2 piece putty mould: First, the part of impression which faces the tissue bed of the eye was placed in putty and once it sets, orientation grooves were made and upper part of impression was completely covered with putty, to obtain a 2 piece mold.
5. Obtaining sclera wax pattern: Mold was filled with white wax to obtain a wax pattern of sclera.
6. Wax pattern trial: At the time of trial, wax pattern of sclera was placed in socket, and was adjusted so that patient can do all the movement without any discomfort. As per contralateral eye, iris location was transferred to wax pattern. All the markings of appropriate extension and size of iris were done on the wax pattern.
7. Processing pattern: Flasking and dewaxing was done in conventional manner. Shade for the scleral blank was customized by mixing small amounts of tooth coloured and clear acrylic clear heat cure PMM (DPI, India) in 3:1 proportion and matching with the contralateral eye. Packing was done with to get the scleral blank. Scleral blank was checked in patient.
8. Harvesting prefabricated iris: Shade and size of the iris was selected from the stock eyes. After that sclera was trimmed of selected stock eye to get only the iris part. Then this iris was placed on the customized scleral blank, the scleral blank was trimmed in the center to get space for the iris, to maintain the exact outer contour of the prosthesis place the scleral blank with the iris and close the counter flask without any gap. Scleral blank was trimmed till the counter flask was completely seated on the base flask.
9. Securing iris on sclera blank: sclera alongwith iris position was again evaluated in patient, iris was secured on sclera clear self cure PMM (DPI, India).
10. Characterization of sclera: sclera was trimmed all over by 2 mm except the iris ,this space was utilized for characterization viz., blood vessels and pigments with reference to contralateral eye. After staining with selected acrylic stains, fibers were also added to give it a natural look. clear acrylic resin was then added to protect this characterized surface ,which also imparted the prosthesis shiny, transparent and natural look.
11. Final finishing and polishing was done. Prosthesis was inserted into the socket after being disinfected and was lubricated with an ophthalmic lubricant to maintain a thin film of tears over the prosthesis and to improve eye movements.
12. The prosthesis was delivered and instructions for insertion and removal of prosthesis were given, cleaning and the need for cleaning of the prosthesis and regular recall appointments were emphasized. Follow-up was done after 7 days, 15 days and 1 month and patient was found to be comfortable with the prosthesis.
13. Quality of life was recorded using university of Washington questionnaire before and after prosthesis insertion. It was found to be improved.

Discussion

Since last 5 decades rapid advances have been made in the technique and materials used in making of ocular prosthesis.^[5] Several techniques of fabricating ocular

prosthesis have been described in the literature using stock eye. However multiple steps involved make it a time consuming and long procedure. Amongst various factors required for the success, close adaptation of the custom-made ocular prosthesis to the tissue bed is very important as it provides maximum comfort and restores full physiologic function to the accessory organs of the eye.^[2] the present technique has few modifications in order to reduce treatment time without compromising on quality. Use of two piece putty mould which is quick and easy to fabricate is one such modification. Other one is harvesting iris from stock eye to expediate the procedure. The prosthesis exhibited good tissue adaptation and esthetic reproduction. Leading to improvement in quality of life of the patient.

Conclusion

Different techniques are given in literature but this technique is time saving, with the advantage of wax trial being carried out on the same day. Putty is used to make a 2 piece mold which makes this procedure less technique sensitive. A simplified laboratory procedure for fabrication of ocular prosthesis has also been described, which further reduces the number of appointments and ensures a reduction of the number of visits to the dental office.

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Legends Figure

