

A SIMPLIFIED APPROACH FOR FABRICATION OF AN OCULAR PROSTHESIS: A CASE REPORT

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Abstract

Eye being a sense organ is very vital for an individual. Hence any ocular defect affects the individual functionally, esthetically and psychologically. Rehabilitation of the defect using prosthesis has a major role in boosting the self confidence of the individual by improving the esthetics. Different techniques of fabrication of the eye prosthesis is available but this case report presents a simplified approach for the fabrication of an ocular prosthesis by combination of prefabricated and custom made techniques.

Key Words: Eye Shell, Ocular Prosthesis, Ocular Defect, Semi-Customized.

Introduction

In many instances a physical defect or deformity is unavoidable and may be the result of any trauma, pathology or congenital. A defect affects the esthetic, functional and psychological well being of any individual. Not every defect can be treated successfully surgically. In such cases their rehabilitation is a major concern as it does not comprises of rehabilitation only but also uplifting the patient's lost confidence. Ocular defects can be a result of surgical procedures and can be classified into 3 broad categories by Peyman et al., Evisceration (where the contents of the globe are removed leaving the sclera intact), Enucleation (most common, where the entire eyeball is removed after severing the muscles and the optic nerve) and Exenteration (where the entire contents of the orbit including the eyelids and the surrounding tissues are removed).¹ Treatment of these cases requires fabrication of silicone based or acrylic based ocular prosthesis. Ocular prosthesis should be fabricated via a Multi-disciplinarily approach including the ophthalmologist, surgeon and prosthodontists.² This article presents a case report of prosthetic rehabilitation of evisceration type ocular defect.

Case report:

A 62 year old male patient reported to the Department of Prosthodontics Crown and Bridge of Teerthanker

Mahaveer Dental College and Research Centre, Moradabad with a defect in the left eye. The defect was caused due to incorrect treatment of the eye by a quack which was later operated. Evisceration was done which resulted in the ocular defect. On Inspection, the socket with the eyelid and intact sclera was present with no signs of inflammation. The muscle function of both the upper and lower eyelid seemed normal. Written consent for the procedure was taken from the patient. Eye prosthesis can be prefabricated or custom made but the combination of both was planned as it results in better fit and esthetics.

Fabrication of the ocular prosthesis:

Firstly a diagnostic Moulage (Fig. 1) of the upper third of the face was prepared. This moulage helps in the proper diagnosis and fabrication of the custom tray of auto-polymerizing acrylic resin. On the custom tray a syringe was attached (Fig. 2) which was loaded with a thin mix of ophthalmic alginate (Ophthalmicmoldite, Milton Roy Co. Sarasota Fla.). The tray was placed into the position. To allow the material to flow and record all the areas of the socket and on the outer surface of the eyelid the patient was asked to move his normal eye in all the directions. Once the material was set the impression was retrieved and was examined for accuracy. (Fig. 3) The cast was poured in two parts (Fig. 4).



Figure 1: Diagnostic Moulage



Figure 2: Custom tray attached with a syringe



Figure 3: Impression of the defect

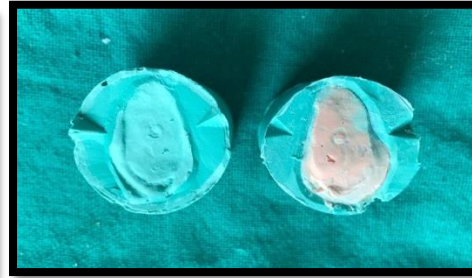


Figure 4: Cast was poured

Once the first part was poured and it was half set orientation grooves were made onto it and after applying the lubricant the second part of the cast was poured. Next the wax pattern was fabricated for which the cast was coated with a layer of separating medium and melted modeling wax was poured into the cast. By carefully separating the two halves of the cast the wax pattern of the prosthesis was obtained. The wax pattern was made free of any irregularities or sharp edges and polishing was done. During try in the fit of the pattern was checked by carefully observing the extension of the wax pattern in the fornices. The overextended areas of the wax pattern were trimmed. Apart from extension the contour and support of the eyelid was checked in open and in closed positions (Fig 5). Next the position of the iris was marked on the wax pattern for which a custom made guide was used. In the custom made guide the position of

the iris of the correct eye was marked while the patient was asked to look straight in the forward direction and this position was transferred onto the wax pattern (Fig 6). For making the iris a prefabricated iris shell was used which was adjusted to the size of the iris of the contra lateral eye using the custom made guide and was placed in the wax pattern. Next flasking was done (Fig.7) for acrylicization. A layer of clear acrylic resin was used on the superficial surface to simulate corneal translucency. Once the prosthesis was obtained it was finished and polished and made free of any irregularities and sharp edges (Fig.8). Once the prosthesis was finished it was disinfected with 70 % isopropyl alcohol and 0.5% chlorhexidine solution. Prior to insertion it was thoroughly cleaned with saline solution to prevent chemical irritation. At the time of insertion it was checked for fit, contour and movements (Fig.9).



Figure 5: wax try-in



Figure 6: custom guide to trace iris location.



Fig. 7: Flasking



Discus Figure 8: Ocular prosthesis.

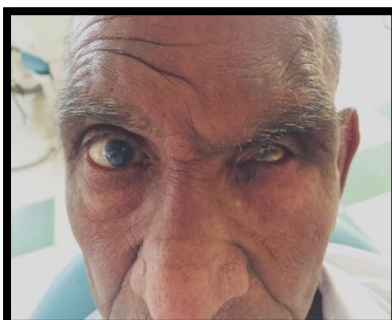


Figure 9: Insertion of ocular prosthesis.



Using a prefabricated eye for fabrication of ocular prosthesis is a simpler technique and does not depend on the artistic ability of the dentist.¹ But according to Beumer et al. intimate contact should be present between the prosthesis and the tissue bed in order to distribute even pressure, therefore a prefabricated prosthesis should be avoided.³ Also the voids in the prefabricated prosthesis are a potential source of infection due to collection of mucous or debris which can irritate the mucosa.^{4,5,6} Thus a custom made ocular prosthesis proves to be more comfortable and beneficial for the patient. This case report thus put forward a technique in which the tissue surface of the prosthesis is custom made for the benefit of the patient along with the use of a prefabricated iris shell making this technique simpler for the dentist. The limitation of this is the availability of the properly matching iris shell, and the long term color stability of the acrylic resin.

Conclusion

A properly fitting ocular prosthesis has a major impact on the patient satisfaction level. But multiple steps in the fabrication process proved to be tedious for the dentist. A combination of custom made and prefabricated technique has been described. Thus providing a less cumbersome method to achieve suitable esthetic replacement and restoring the patient's self confidence.

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