

CASE REPORT

Custom-made Ocular Prosthesis: A Case Report

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ABSTRACT

An ocular defect may affect a patient psychologically. An ocular prosthesis is given to uplift the patient psychologically and improve the confidence. Ocular prosthesis can be custom made or a stock shell. To improve the comfort and matching of the prosthesis with that of the adjacent natural eye, a custom-made ocular prosthesis is preferred.

Keywords: Custom made, Ocular impression, Ocular prosthesis.

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INTRODUCTION

As eyes are generally the first features to be noticed, its loss has physical, social, and psychological impact on patient. Artificial eyes, ears, and noses have been found in Egyptian mummies.^[1-3] Kingsley (1880) used various artificial appliances for restoration of congenital as well as acquired defects of the palate, nose, and orbit. In the early 20th century, prosthetic restorations were carried out through the collaboration of dentists and plastic surgeons. In 1944, Murphy and Nirronen fabricated physiologic ocular prosthesis. In 1953, a group of dentists founded the American Academy of Maxillofacial Prosthetics. Until the World War II, the glass eye was most popular prosthetic eye manufactured.^[4] The objectives of ocular rehabilitation are (1) restoration of esthetics or cosmetic appearance of patient, (2) restoration of function, (3) protection of tissues, (4) therapeutic or healing effect, and (5) psychological therapy.^[5-9] The advantages of custom-made ocular are that the prosthesis requires little or no surgery. Patient spends less time away from home and job, and the reconstruction often

has a more natural appearance. The disadvantages are the necessity of fastening the appliance to skin daily.^[6,7] There has to be removing of the appliance daily and there can be an occasional need of constructing a new prosthesis. The indications are severe trauma, congenital abnormality, tumor, diseases, infection, untreatable painful glaucoma, and any malignancies.

CASE REPORT

A 65-year-old male patient was referred to the Department of Prosthodontics, PMNMDCH, Bagalkot, Karnataka [Figure 1]. History revealed that the patient underwent enucleation of the left socket as he had a severe traumatic injury as commonly found in rural India because of family Freud. Fabrication of custom-made ocular prosthesis to rehabilitate the patients left eye was made. This not only improves social and psychological well-being of the patient but also it enhances esthetics, comfort, fit, and retention on functional movements as well rather than a stock ocular prosthesis. Treatment was planned after careful examination area of defect. The patient was explained about the procedure and its limitations. First, the patient's eye was flushed using 0.9% of normal saline solution so as to remove any secretions if present. Petroleum jelly was applied to the eyebrows for the easy removal of the impression material when it sets. Preliminary impression [Figure 2] was made with irreversible hydrocolloid impression material loaded in a 5-ml syringe which has watery consistency, making sure that no air bubbles are entrapped. The patient is made to sit in an upright position and asked to look straight. The preliminary impression obtained by alginate was poured in dental plaster with a 2 pour technique. A custom tray with a spacer was fabricated and the custom tray was perforated using a bur size of 1 mm in diameter so as to get mechanical interlocking for final impression material. Final impression [Figure 3] was made injecting light body elastomeric impression material with a 5-ml syringe stabilized with custom tray instructing the patient to make all the functional movements. Stabilizing the syringe in place, boxing wax was placed around the external surface forming borders so that impression flow is restricted. Alginate was poured the external surface into the boxed area which ensures recording not only internal anatomy of socket but also external surface. To reinforce alginate, staple pins were

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Figure 1: Pre-operative



Figure 4: Try-in



Figure 2: (a and b) Primary impression



Figure 5: Insertion



Figure 3: (a and b) Final impression

placed before setting of alginate, and dental plaster was poured over it. Once the plaster was set, the patient was instructed to wriggle the face so that the impression could be easily removed and inspected for any deficiency. As no deficiencies were found, the final impression thus obtained was poured using dental stone by two-piece mold technique with orientation grooves.

Wax pattern was made by pouring modeling wax into the master cast mold. The surface of the wax pattern was polished so as to avoid any irritation to socket. A stock ocular shell was selected by matching with the natural eye. The stock eye was trimmed and attached to the superior surface of the wax pattern keeping in mind the level and position of the iris of natural eye. Wax trial was done and adjustments were made by comparing with the natural counterpart. Movement of the prosthesis on moving the natural eye was noted. After trial [Figure 4] was deemed, satisfactory prosthesis was invested and acrylized using a combination of pink- and tooth-colored heat-cured acrylic. Pink was used in inner canthus regions so that the prosthesis closely stimulates the natural eye. Final prosthesis was trimmed, sequentially polished, and inserted [Figure 5].

DISCUSSION

The rehabilitation of the patient who has suffered the psychological trauma of ocular loss requires a prosthesis that will provide the optimum psychological comfort, confidence, and social well-being along with good functional

result. Refinement in details of custom ocular construction has produced a superior restoration delivered more readily. Impression techniques using custom or stock trays and prefabricated acrylic shells to carry impression materials into the defect interfere with complete closure of eyelids and functional molding of the material by various ocular movements. Conditions such as evisceration and atrophic ocular sockets may demand for usage of some types of tray to hold the sufficient bulk of material where intradelect space is limited. Stock or prefabricated prostheses are ill-fitting because of their over or undersize. Overextended borders result in lid incompetence, irritation, and increased chances of secondary infections. Custom-made ocular prostheses are more economical, esthetical, and comfortable.^[10] Custom staining and characterization improve esthetics and recording of defect tissues in a functional state, and prosthesis moves according to ocular movements and permits competency of eyelids in closure.

CONCLUSION

A well-made properly planned and functionally molded custom-made ocular prosthesis maintains its orientation when the patient performs various eye movements. It restores and rehabilitates the psychological well-being along with improving cosmetic appearance. Most important of all custom-made ocular prostheses has advantages of being cost-effective, requires no special

equipments, simple to fabricate, and less time consuming when compared to stock ocular prosthesis.

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