International Journal Dental and Medical Sciences Research
Volume 3, Issue 4, July-Aug 2021 pp 590-593 www.ijdmsrjournal.com ISSN: 2582-6018

Custom Made Ocular Prosthesis: A Case Report

Dr Radhi R K,Dr Juraise M C

Submitted: 01-08-2021 Revised: 08-08-2021 Accepted: 11-08-2021

ABSTRACT
Human faces are unique and contribute to an individual's identity. Any defect in the face may affect a patient psychologically. Prosthetic rehabilitation of an ocular defect can be successfully achieved with stock eye by using well fitting ocular tray and a proper impression technique. The tissue adaptation of stock prostheses can be improved by making an accurate impression of an ophthalmic socket using custom ocular tray. This article presents a technique for the fabrication of custom ocular tray and procedure for making impression of eye socket using the same.

I. INTRODUCTION

Ocular prosthesis is an artificial replacement of bulb of the eye. A well-fitting ocular prosthesis enhances esthetics, improves facial contours and helps the patient overcome psychological trauma. Ocular prostheses are either ready made (stock) or custom made.[1]Stock prostheses are usually advocated when time is limited and cost is a consideration. No special skills or material are required for its fabrication.[2]The use of stock ocular prosthesis of appropriate contour, size and color can provide an acceptable aesthetic result. The tissue adaptation of stock prostheses can be improved by making an accurate impression of anophthalmic socket using custom ocular tray.

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.[3-7] The advantages of custom-made ocular is 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 disadvantage is that,the appliance has to be removed daily and there can be an occasional need of constructing a new prosthesis. [4-5] The indications are severe trauma, congenital abnormality, tumor, diseases, infection, untreatable painful glaucoma, and any malignancies.

II. CASE REPORT

A 24-year-old male patient reported to the Department of Prosthodontics,Bangalore Institute of Dental Sciences, Bangalore, Karnataka, with a chief complaint of missing his right eye(fig.1). History revealed surgical removal of the eyeball due to malignancy.

(fig.1)

(fig.2)

Examination of the socket revealed healthy conjunctival lining and absence of infection (fig.2). Treatment was planned after careful examination of the area of the defect. It was

International Journal Dental and Medical Sciences Research
Volume 3, Issue 4, July-Aug 2021 pp 590-593 www.ijdmsrjournal.com ISSN: 2582-6018

decided to fabricate a customized ocular prosthesis. Patient was explained about the procedure and its limitations 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.

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 was made with irreversible hydrocolloid impression material loaded in a 2.5-ml syringe which has watery consistency, making sure that no air bubbles were entrapped. The patient is made to sit in an upright position and asked to look straight (fig.3).

(fig.3).

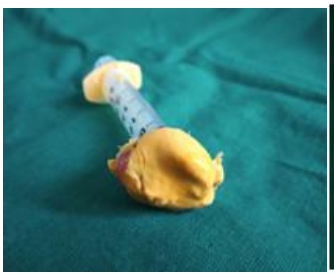
The preliminary impression obtained by alginate was poured in dental plaster with a 2 pour technique. A custom tray with a spacer was fabricated and the custom tray was perforated using a bur size of 1 mm in diameter so as to get mechanical interlocking for final impression material (fig.4).

(fig.4).

Final impression was made injecting light body elastomeric impression material with a 2.5-ml syringe stabilized with custom tray instructing the patient to make all the functional movements(fig.4 and 5).The final impression thus obtained was poured using dental stone by two-piece mold technique with orientation grooves(fig. 6)..

International Journal Dental and Medical Sciences Research
Volume 3, Issue 4, July-Aug 2021 pp 590-593 www.ijdmsrjournal.com ISSN: 2582-6018


(fig.4)


(fig. 5).


(fig. 6).

Wax pattern was made by pouring modeling wax into the master cast mold. Wax pattern was finished and polished and was evaluated for the fit. Wax was added or trimmed from the basic sclera pattern until satisfactory contours of the eyelids were achieved both in open and closed positions. The position of the contra lateral eye's iris was used as a guide, to mark the expected position of the iris on a wax pattern. A stock eye was selected with the correct iris size and color. The peripheral and posterior surfaces of the stock eye were reduced leaving only iris portion of the stock eye and attached to the superior surface of the wax pattern keeping in mind the level and position of the iris of natural eye.

Technique of Iris Disc Placement[8]

1 Transparent graph grid was used to attach iris disc.

2 Certain guidelines were marked on patients face.

3 The facial markings were transferred to grid by placing it on patient's face (fig. 7).

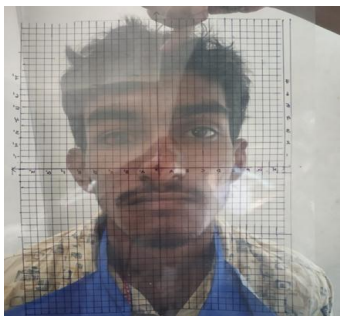
Markings were made on grid template on X-axis from A to H starting from midline and on left side from A' to H'. Similarly from 1 to 7 on Y-axis and 1' to 7' on left side. The distance between each marking was 1cm on both X and Y axes.

Guidelines on patients face

A vertical midline was marked passing through the forehead crease, glabella, tip of the nose and chin. The distance from the right eye medial canthus to the midline and left eye medial canthus to the midline was measured. This distance standardized the midline marking and was used to reposition the grid template each time during the try-in visit.

Evaluation with grid placed

The patient was asked to gaze straight at an object kept 4 feet away .The operator then marked the vertical lines coinciding with the with the medial and distal extremities of the iris of the natural eye. Similarly the horizontal lines referring to the centre, inferior and superior limits of the iris were marked. The facial markings were transferred to the grid template by placing it on the patients face .These markings were transported to the side of the defect. These markings were transferred to the sculptured wax pattern and the iris button attached to it.


(fig. 7).

International Journal Dental and Medical Sciences Research
Volume 3, Issue 4, July-Aug 2021 pp 590-593 www.ijdmsrjournal.com ISSN: 2582-6018

After trial was done, satisfactory prosthesis was invested and acrylized using tooth-colored heat-cured acrylic. Final prosthesis was trimmed, sequentially polished, and inserted (fig. 8 and 9).

(fig. 8).

(fig. 9).

III. DISCUSSION

The custom ocular tray is based on the patient's existing anatomy, and therefore conforms accurately to the socket and helps in obtaining accurate impression of the eye socket[6]. This results in intimate adaptation of the stock eye prostheses to internal tissue surface of the socket.Beumer et al. state that a prefabricated resin eye should not be used in eviscerated sockets because intimate contact between the ocular prosthesis and tissue bed is needed to distribute pressure equally. This is true if a prefabricated eye is selected and ground to close fit. In addition, intimate adaptation of the modified prosthesis to the tissue surface of the defect increases the movement of the prosthesis and enhances its natural appearance [3].

IV. CONCLUSION

A properly fabricated custom-made 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. The optimum cosmetic and functional results of a custom-made ocular prosthesis enhances the patient's rehabilitation to a normal lifestyle.

REFERENCES

[1]. Cain JR. Custom ocular prosthetics. J Prosthet Dent 1982;48:690.
[2]. Mathews MF, Smith RM, Sutton AJ, Hudson R. Th e Ocular Impression: A Review of the Literature and Presentation of an Alternate Technique. J Prosthodont 2000;9:210-6.
[3]. Taicher S, Steinberg HM, Tubiana I, Sela M. Modified stock-eye ocular prosthesis. J Prosthet Dent 1985;54:95-8.
[4]. Breo D. Surgical and prosthetic considerations in the management of orbital tumors. J Prosthet Dent 1992;67:106-12.
[5]. Ow RK, Amrith S. Ocular prosthetics: Use of a tissue conditioner material to modify a stock ocular prosthesis. J Prosthet Dent 1997;78:218-22.
[6]. Mathews MF, Smith RM, Sutton AJ, Hudson R. The ocular impression: A review of the literature and presentation of an alternate technique. J Prosthodont 2000;9:210-6.
[7]. Taylor TD, editor. Clinical Maxillofacial Prosthesis. London: Quintenssense publication; 1998. p. 265-77.
[8]. Sinha ND, Bhandari AJ,Gangadhar SA. Fabrication of custom ocular prosthesis using a graph grid.Pravara Med Rev ,4(1),pp.21-24.