PROSTHETIC REHABILITATION OF PATIENT WITH CONGENITAL OCULAR DEFECT BY CUSTOM MADE OCULAR PROSTHESIS: A CASE REPORT


Abstract:
Eyes are first feature of the face to be noticed and the presence of a pair of eyes is quite essential to maintain the balance and the esthetics of the face. Loss of eye has a crippling effect on the psychology of the patient. The aim of all ocular prosthetic procedure is to enable rehabilitation of the patient in the society with a normal appearance and self-esteem. This clinical report demonstrates the use of stock ocular prosthesis to fabricate the custom ocular prosthesis for rehabilitation of patient with congenital ocular defect.

Key words: Prosthetic Rehabilitation, Custom made Ocular Prosthesis,

INTRODUCTION:
Loss of an eye caused by cancer, trauma, or congenital defect creates a deep psychological impact on an individual's life especially social and professional life. An ocular prosthesis or artificial eye is a type of maxillofacial prosthesis that artificially replaces an eye missing as a result of trauma, surgery, or congenital absence. The prosthesis does not replace missing eyelids or adjacent skin, mucosa or muscle. Custom-made prosthesis, compared to stock prosthesis, provides a better fit to the eye socket, better cosmetic results, and less discomfort to the patient in the long term. Custom made ocular prosthesis could be of either glass or methylmethacrylate resin. Glass is not the material of choice as it subject to breakage and surface deterioration from contact with orbital fluids. Methylmethacrylate resin is superior to other ocular prosthetic materials in tissue compatibility, esthetic capabilities, durability, color permanence, adaptability of form, cost and availability.

This clinical report demonstrates the use of stock ocular prosthesis to fabricate the custom ocular prosthesis for rehabilitation of patient with congenital ocular defect.

CASE REPORT:
A 25 year old female patient was referred to Department of Prosthodontics and Implantology, Modern Dental College and Research Centre with a defect in her left eye,[Fig.1] History taking reviled that it was a congenital defect. On inspection, the sclera and iris were seems to be malformed indicative of a malformed eye which left behind in the socket with the eye lids intact. No inflammation was present. The muscle function of both the upper and lower eyelid seemed normal.

PROCEDURE:
1. Patient was explained about the procedure and petroleum jelly was applied to the eyebrows for the easy removal of the impression material after it sets.
2. A primary impression was made of the ocular defect using a disposable syringe; custom ocular tray and irreversible hydrocolloid impression material.[Fig.2]

![Fig 1: Patient without prosthesis](image1)

3. During the procedure, the patient was seated in an upright position with the head supported by the head rest. This position allows the natural positioning of the palpebrae and surrounding tissue relative to the force of gravity.

4. The custom tray was placed into the defect before making the impression to determine the proper orientation and fit without overextension. The tray was oriented to support the lids in a similar position to the lids of the natural eye. The tray was then removed from the defect.

5. Irreversible hydrocolloid material was mixed and loaded in the syringe, and sufficient material was injected to fill the concavity of the tray slowly to avoid incorporation of air bubble. Sufficient material was injected to elevate the lid contour similar to the normal side.

6. After the material had set, the assembly was removed and the impression was examined for defects and voids.

7. After obtaining an acceptable impression, it was poured in dental stone. Obtain cast was used to adjust the shape of prefabricated eye shell.

8. Prefabricated eye shell was selected by matching it with right eye. It was then trim 2mm short of borders of defect area. And was check in patient eye.

9. Functional impression was made with light body elastomeric impression material by using prefabricated eye shell as a stock tray, by asking her to close and open her eye and rotate the eye ball.

10. After this fit of conformer was observed by gently lifting the lids and observing the extensions into the fornices. Areas of under extension were corrected by adding wax.

11. The support and soft tissue contours was compared visually with the patient’s eye open and by bimanual palpation with the eyes closed. Wax was added or impression was trimmed from the conformer until satisfactory contour of the eyelids were achieved both in the open and closed positions.

12. The final impression was then flask in a small two piece brass flask.[Fig.3]

13. After stone has set impression material was separated from eye shell and eye shell was reoriented to its position.[Fig.4]
14. Heat cure clear methyl methacrylate resin material was mix and place in space previously occupied by impression material, curing was done in conventional manner.

15. The polymerized ocular prosthesis was finished and carefully polished to preserve all the important form modifications.

16. Final prosthesis was inserted in ocular defect and patient was asked to relax for at least 10 min to allow orbicular muscles to relax, to permit critical evaluation.

17. Patient was instructed on how to remove and place the prosthesis. She was instructed to wear the prosthesis day and night, and asked to wash the indicated if particularly dusty or dirty conditions were encountered.

18. Patient was examined 1, 3 days and 1 week after prosthesis insertion. Patient was fully adapted to the prosthesis 1 week post insertion and no further modification in prosthesis was done.

19. Final prosthesis was inserted in ocular defect and patient was asked to relax for at least 10 min to allow orbicular muscles to relax, to permit critical evaluation.

DISCUSSION:

The earliest known evidence of the use of ocular prosthesis is that of a woman found in Shahr-I Sokhta, Iran dating back to 2900–2800 BCE. It has a hemispherical form and a diameter of just over 2.5 cm (1 inch). It consists of very light material, probably bitumen paste. The surface of the artificial eye is covered with a thin layer of gold, engraved with a central circle (representing the iris) and gold lines patterned like sun rays.

So many techniques have been used in fitting and fabricating ocular prosthesis. Empirically fitting a stock eye, modification of stock eye by making an impression of the ocular defect, and fabrication of a custom ocular prosthesis are the most commonly used techniques.

Now with advancement of materials ocular prosthesis can be either ready made (stock) or custom made. Custom made eye have some advantages including better mobility, even distribution of pressure due to equal movement thereby reducing incidence of ulceration, improved fit, comfort and adaptation, improved facial contours and esthetics. Also, custom eye enhance tissue
health by reducing potential stagnation space at the prosthetic tissue interface. So, considering all these benefits it was decided that a custom made ocular prosthesis with stock eye would be the best prosthetic option to meet the needs of the patient. Also to get better esthetics and colour matching without following the conventional, cumbersome and technique sensitive method of iris button painting, use of matching stock eye shell was planned for this particular case.

A properly fitted and acceptable custom ocular prosthesis has the following characteristics:

i. Retains the shape of the defect socket.
ii. Prevents collapse or loss of shape of the lids.
iii. Provide proper muscular action of the lids.
iv. Prevents accumulation of fluid in the cavity.
v. Maintains palpebral opening similar to the natural eye.
vi. Mimics the colorations and proportions of the natural eye.
vii. Has a gaze similar to the natural eye.

**CONCLUSION**

Fabrication of the custom ocular prosthesis is described using prefabricated stock eye shell. Using prefabricated eye shell makes procedure less technique sensitive and faster with more predictable results.

Although patients can’t see with such prosthesis but it can definitely help patients to live life with self confidence and respect, without being starred by people

**REFERENCE:**


**Corresponding Author:**

Dr Nivrutti Amle
Dept Of Prostodontics
Modern Dental College & Research Centre, Indore.

Email: nivruttiamle@gmail.com