Rehabilitation of a case of enucleated retinoblastoma

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Received: 08/01/2016

Accepted: 05/03/2016

ABSTRACT

Retinoblastoma is one of the commonest malignant intraocular tumors in pediatric population, resulting in evisceration, enucleation or exenteration of orbital contents. An ocular prosthesis can boost the psychological wellbeing of a patient with an anophthalmic socket. Though the stock prosthesis for ocular defects can be used as an interim prosthesis but customized prosthesis is required for better fit, function, esthetics and tissue health of anophthalmic socket. The present case report describes the prosthetic rehabilitation of a surgically treated case of retinoblastoma.

Key Words: Anophthalmic, Custom Ocular Prosthesis, Ocular, Retinoblastoma.

INTRODUCTION

Retinoblastoma is one of the most common intraocular malignancies in childhood. The treatment includes evisceration, enucleation or exenteration of orbital contents.[1] With an enucleation defect a conformer is placed to maintain the fornices followed by placement of stock ocular prosthesis.[2] These come in standard sizes, shapes and colors and can be used for interim purposes. However a custom ocular prosthesis is the prosthesis of choice as it offers numerous advantages. It allows improved adaptation to underlying tissues, increased mobility of the prosthesis, improved facial contours and enhanced esthetics.[3,4] Nevertheless, it is more expensive and numerous steps are required for its fabrication.

The following clinical report demonstrates a technique for customization of stock prefabricated ocular prosthesis to create an esthetically pleasing result.

CASE PRESENTATION

A 6 year old girl reported to the Department of Prosthodontics, Maulana Azad Institute of Dental Sciences, New Delhi, India with unilateral anophthalmic socket (Fig. 1). The patient had a history of retinoblastoma which was enucleated at the age of 5 following which a stock ocular prosthesis was given to her. The patient complained of persistent watering of the eyes with the use of stock prosthesis.

Moreover the anophthalmic socket appeared stretched with placement of stock prosthesis. On thorough examination it was found that the anophthalmic socket had superior sulcus deformity and inferior fornical shortening. A custom made acrylic prosthesis was planned and the entire treatment procedure was explained to the patient.

Fig. 1: Ocular defect

Access this article online	
Quick Response Code:	Website: www.innovativepublication.com
	DOI: 10.5958/2393-9834.2016.00017.6

PROCEDURE

Impression Procedure:[4,5]

An impression of internal orbital socket was made using irreversible hydrocolloid impression material. Irreversible hydrocolloid impression material was mixed and placed in a 10ml syringe. The upper and lower lids were retracted one by one and irreversible hydrocolloid material was injected into all regions of the ocular defect. An eight shaped wire loop was

quickly inserted into the material for ease of removal of the impression. Natural movements of eyelids and ocular muscles were encouraged for functional molding. Patient was instructed to close the eye to allow excess material to extrude. Lastly the patient was made to open eyes and stare straight ahead. After setting of the material, eyelids were retracted and the impression removed (Fig. 2).

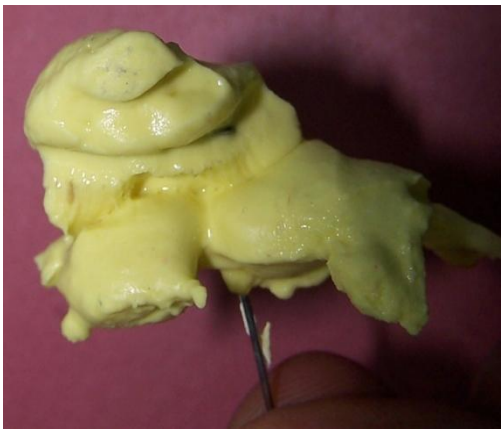

Fig. 2: Irreversible hydrocolloid ocular impression reinforced with wire loop

Mold Fabrication:[1]
The impression was then invested with dental stone into a two-piece mold (Fig. 3). This mold was utilized to make a wax pattern which was placed into the socket for evaluation of soft tissue contours.

Fig. 3: Two-piece mold

Wax Try-in:
A stock ocular prosthesis was selected after matching the color of iris and pupil as closely as possible. The sclera was trimmed away and a stock iris was obtained. Using the normal eye for comparison iris position was located on the wax pattern with an indelible marking pen. A circle was scribed on the wax pattern with compass according to the iris diameter on the normal eye. Wax was removed from the circle to create a depression. The stock iris was positioned on the wax pattern (Fig. 4). The pattern was tried for gaze, eye contour and lid configuration. For this a small acrylic rod was attached to the centre of the pupil. Wax pattern was inserted. When patient was looking straight ahead, acrylic rod was also pointing in the same spot as the normal eye. This was visually verified.

Fig. 4: Custom made wax pattern with stock iris

Processing:
The wax pattern was invested in dental stone. De-waxing was done. The acrylic rod secured to iris at the time of try-in got engaged in plaster to ensure that the position of iris is not changed at the time of de-waxing and acrylic packing. The molds were coated with cold mold seal. Shaded heat cured acrylic material was selected. Acrylic colors/stains were added to match the color of sclera of normal eye. Veins from veined heat cured acrylic were added to imitate the veined pattern of the sclera. Acrylic was packed in the mold and curing was done.

Prosthesis Delivery:
The prosthesis was retrieved, finished, polished and delivered to the patient. Good esthetics and some eye movement were achieved (Fig. 5). The anophthalmic socket was not stretched out any more. Watering of the eyes was also relieved. Patient was instructed to wear the prosthesis day and night. Washing with mild soap was recommended. Periodic re-polishing and follow up examinations were advised.

Fig. 5: Completed custom ocular prosthesis

Two Year Follow Up:

Patient reported with looseness of prosthesis, though there was no watering. Medium body elastomeric impression material was applied on the ocular prosthesis to take the re-impression. The prosthesis was laboratory relined and delivered to the patient (Fig. 6). Adequate retention was again achieved.

Fig. 6: Relined custom prosthesis at 2 year follow up

DISCUSSION

A custom made ocular prosthesis replicates the orientation, color, contour, size of iris and pupil and provides realism and symmetry to the patient's face. It also provides intimate tissue adaptation, hence, better fit and equal distribution of pressure throughout the defect. It is therefore quite advantageous to the patient as compared to stock eye prosthesis although they require increased fabrication time and added cost (Fig. 7). The literature suggests many techniques for custom prosthesis fabrication. The method described in the article is simple, undemanding and can be carried out in a small clinical set up. Though it involves subjective evaluation i.e. a trial and error approach, it has provided satisfactory results and has enhanced the self-esteem of the patient. One limitation of this method could be limited variations in stock iris sizes available. Other techniques from literature can also be incorporated to this method for better iris placement.[6]

The orbital volume increases rapidly until the age of 3 and then expands gradually up to the age of 12. This explains the looseness of the prosthesis with age. [5]

Fig. 7: Stock and customized ocular prosthesis

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How to cite this article: Gill S, Gupta R, Verma M. Rehabilitation of a Case of Enucleated Retinoblastoma. J Dent Specialities 2016;4(1):87-89.

Source of Support: NIL

Conflict of Interest: All authors report no conflict of interest related to this study.