Case Report

JRAD Journal of Research and Advancement in Dentistry

J Res Adv Dent 2021;11:3:118-121.

A Spectacle Retained Acrylic Orbital Prosthesis for Rehabilitation of An Exenterated Eye

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ABSTRACT

Background: Exenteration of an eye causes massive disfigurement and psychologic as well as social embarrassment as facial appearance is severely crippled. Prosthetic rehabilitation of such patients, if done meticulously, will improve the appearance as well as their self confidence. This case report describes an orbital prosthesis fabricated to rehabilitate a patient with exenteration of right eye, with the most economical material and easily available technique.

Keywords: Exenteration, orbital prosthesis.

INTRODUCTION

Fabrication of an orbital prosthesis is most challenging due to the fact that the orbital prosthesis contains within a separate ocular prosthesis, which must be correctly matched to the remaining natural eye in size, contour and position exactly in three-dimensional space to simulate the correct gaze as well as correct inter-lid opening [1-4]. There are various techniques and materials for fabrication of the orbital prostheses and various means of retaining them[5-10]. Acrylic resin can be used as it is durable, colour stable and easily coloured extrinsically or intrinsically but its disadvantages include rigidity and water sorption property. Medical grade silicone is another material frequently used for extraoral prostheses as it is biologically inert and colour stable but their disadvantages include the need of sophisticated equipments, poor edge strength as well as colour deterioration on exposure to sunlight[7]. Retention of orbital prosthesis can be achieved by tissue undercuts, attaching it to different parts of a spectacle, use of magnets, use of adhesives or use of osseointegrated implants[8-10]. Considering the complexities of prosthesis fabrication and increased cost, retention of orbital prosthesis by attaching it to different parts of spectacle can be chosen for majority of cases.

This clinical report describes the management of a patient with an orbital defect using easily available most economic material and technique.

CASE REPORT

A 58 year old man who underwent a right orbital exenteration due to sebaceous cell carcinoma presented to the Department of Prosthodontics and Maxillofacial Prosthetics, Karnavati School Of Dentistry for assessment and rehabilitation of the orbital defect (Fig 1).

Various treatment options for rehabilitation of the defect including implant retained orbital prosthesis; magnet retained orbital prosthesis as well as spectacle retained acrylic orbital prosthesis was discussed with the patient. Considering the economic status of the patient and the expertise and the materials available in the department, it was planned to fabricate a hollow spectacle retained orbital prosthesis.

Received: Jan. 21, 2021: **Accepted**: Mar. 18, 2021
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pISSN 2278-0076
eISSN 2321-9270

Fig 1: Pre operative photograph.

Fig 2: Impression taken.

Fig 3:

Fig 4:

Fig 5:

Fig 6: Post operative photograph.

Procedure:

Procedure was started with impression making with the impression compound of the defect portion

of the face, placing a wet gauge piece underneath the impression compound. After the impression was made (Fig 2, Fig3), cast was made with the help of dental stone (Fig 4).

Measurements were made from patient's facial midline to the center of the pupil to the facial midline and from the inner canthus of the eye to the nasal bridge.Both the measurements were made when patient was asked to look and fix the contralateral eyeat distant gaze. Those measurements were transferred on the cast to help in the position of occular portion of the orbital prosthesis.

A suitable stock occularprosthesis was selected that closely matched the colour, size and shape of the iris and sclera of the other eye.The ocular portion needed minor alterations to make it fit into the socket as the defect was relatively large. The eye was then secured in position on a bed of a modelling wax according to the position gained using the measurements of the other eye(Fig 5). The antero-posterior position was adjusted and verified on the patient when observed from profile and from top of the head.Once the position was confirmed, the eyelids and the remaining portion was sculpted and tried in patients orbital defect. Consent of the patient regarding the appearance of the prosthesis was obtained.

Once satisfied, it was processed with heat polymerized acrylic resin using water colours to match with the patient's skin colour. The processed prosthesis was finished and polished using acrylic trimming bur, emery papers and pumice rag wheel in sequence.

Artificial eyelashes were attached to the finished prosthesis to give it a life-like appearance. The prosthesis was finally tried in the patient's defect for its final appearance and adaptation. After the operator and patient's satisfaction, it was then attached to the nose pad of the eye glass frame that the patient was using for his daily use, using autopolymerized acrylic resin (Fig 6).

The prosthesis was inserted into the defect and the patient was instructed for its home care and maintenance. To sanitize the wound, the patient was instructed to gently remove the exudates with wet cotton soaked in 5% Betadine solution and clean the tissue contacting surface of the prosthesis once a day.

The patient was scheduled for the first post-insertion adjustment one week after the insertion to ensure the health of the tissue bed, to relieve the prosthesis for pressure spots on the tissues and to emphasize hygiene and home care. Further follow up was scheduled for evaluation of any recurrence of the pathology.

DISCUSSION

Eye defects can be ocular or orbital. Ocular defects involve only the eyeball whereas orbital defects include periorbital tissue also. Orbital exenteration is classified as total when all orbital contents including the globe and periorbita are removed. Cases that include excision of adjacent bone are defined as extended exenteration. Total or extended exenterations are performed in cases when complete excision of the tumor with free margins is possible in an attempt to achieve cure. Subtotal exenteration is defined as a partial removal of orbital tissue with sacrifice of the eye. An eyelid-sparing procedure is preferred, with the exception of cases where eyelid was needed for tumor-free surgical margins.

During rehabilitation it is necessary to copy the exact position of the adjacent eye. Slightest discrepancy can be appreciated by a layman. Also, careful attention is to be given to the colour of the iris, vascularity in sclera, eyelashes, colour of the eyelids and the adjacent skin. All these factors when managed can give a lifelike appearance to the prosthesis. Though it is also desirable to have movements with the prosthetic eye, it is not yet possible in orbital exenteration defects. Ocular prosthesis can be managed to have motility.

The defect managed here is a total exenteration. It was necessary to close the communication with external environment and mask the anterior position of the eye. Accurate impression is essential to reproduce the defect for the construction of well adapted prosthesis. Various materials, including impression compound and plaster of paris, have been used in making impressions. Here, only the impression of the defect was made as opposed to facial moulage employed popularly. Entire facial moulage requires clinical expertise.

The prosthetic material decided was acrylic as this was a temporary restoration till the patient closes his communication surgically. Also acrylic prosthesis suited the economy of the patient. A silicone prosthesis can be fabricated after surgery, if required

Paramount importance has to be given to the retention of the prosthesis. Spectacles are the most common modes of providing retention to the orbital prosthesis. Alternatively adhesives, implants, magnets can be used for retention. Adhesives are easy to use, but may cause irritation to the skin over long term use. Also the patient always has a fear of adhesive losing its effect on forceful movements like sneezing. Implants provide reliable retention, but not without added expenditure and a need for a surgery. Also it is not always possible to place an implant at the site of defect, owing to the removal of bone or its poor quality.

CONCLUSION

The associated psychological effect of the orbital defect requires immediate management and rehabilitation. Out of the several techniques and materials available, the technique used here describes the fabrication of the orbital prosthesis in an anophthalmic patient using the most economical heat polymerized acrylic resin with spectacle retention, thus restoring patient's symmetry and satisfaction with acceptable aesthetics in minimal cost.

CONFLICTS OF INTEREST

The authors declare they have no potential conflict of interests regarding this article.

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