



Research Paper

Enhancing esthetics of the patient with two piece magnet retained orbital prosthesis: A case report

Dr. Kishor M. Mahale

Government dental college and hospital, Aurangabad

Dr. Aasmita K. Kabade

Government dental college and hospital, Aurangabad

Dr. Shankar P. Dange

Government dental college and hospital, Aurangabad

Dr. Smita A. Khalikar

Government dental college and hospital, Aurangabad

Abstract:

The rehabilitation of facial defects is a complex procedure requiring different design and techniques to be used in different patient. The disfigurement associated with the loss of an eye can cause significant physical and emotional problems. Various treatment modalities and mode of retention are available for various maxillofacial defects. This case report describes fabrication of a two piece magnet retained orbital prosthesis.

Key Words: orbital prosthesis, exenteration, maxillofacial prosthesis.

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I. Introduction:

In the second wave of COVID-19, there was a steep rise in patients infected by the opportunistic fungal infection of mucormycosis. The rhino-orbital type of mucormycosis, if not treated at an early stage, leads to the surgical removal of the eye by enucleation, evisceration, or exenteration¹. Exenterated cases are the most challenging to rehabilitate as a successful rehabilitation requires replacement or repositioning of the orbital walls and/or construction of a complex orbital prosthesis^{2,3}.

Orbital prosthesis presents an attractive and viable alternative when esthetic and functional demands are beyond the capacity of local reconstructive efforts. Prosthesis for orbital defects can be made from a variety of materials such as poly-methyl methacrylate, polyurethane elastomer, silicone elastomer, or urethane backed medical grade silicone⁴.

This article describes the rehabilitation of an orbital defect using a two piece silicone and acrylic prosthesis, wherein retention has been achieved by a combination of anatomic undercuts and magnets.

II. Case Report:

A 52 year old female patient, reported to the Department of Prosthodontics, Government Dental College and hospital, Aurangabad for the replacement of her exenterated left eye. Patient's left eye was surgically removed en bloc because of mucormycosis. On examination revealed a large orbital defect on the left side with a mild upper undercut and a severe lower undercut (Figure 1). Since the retentive lower undercut cannot be engaged with the help of single piece prosthesis, so a treatment plan was formulated which consisted of fabrication of a two piece sectional orbital prosthesis consisting of a lower acrylic portion with an outer portion of silicone attached with magnets.

Procedure:

1. facial impression with alginate and fabrication of facial moulage with dental stone.
2. Final impression of the orbital defect with addition silicon putty and light body on the custom tray.
3. Facial measurements were transferred on to facial moulage.
4. Counter of opposite eye were recorded on transparent sheet.

5. Acrylic stent fabrication and trial.
6. Selection of stock acrylic eye shell.
7. Wax pattern fabrication.
8. Shade matching and silicon packing.
9. Attachment of magnets .
10. Delivery of prosthesis.
11. Postoperative instructions and maintenace.



Fig .1 orbital defect



Fig .2 facial impression



Fig.3 final impression



Fig.4 transfer of facial measurements

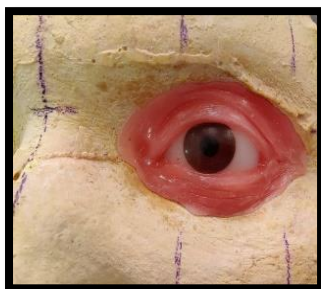
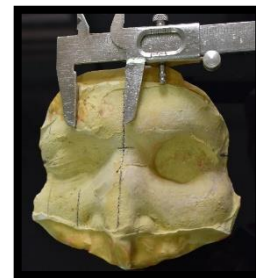


Fig. 5 waxup



Fig.6 stent trial



Fig.7 final prosthesis

III. Discussion :

In the second wave of coronavirus, the cases of mucormycosis increased markedly in India. The infection enters the nose and paranasal sinuses through inhalation of fungal spores and spread to the orbit and intracranial structures either by direct invasion or through blood vessels. It causes necrosis of tissues due to thrombus obliteration and, if not treated in early stages, leads to surgical removal of orbital content. The loss of vision along with facial deformity imposes a deep psychological impact on a person, for the correction of defect cost of surgical procedure and fear of surgery creates a financial and psychological burden on the patient⁵.

A two-piece prosthesis was planned in order to engage existing undercut from depth of defect and to reduce weight of the prosthesis and it also allow easy insertion and removal of prosthesis. In this prosthesis , the inner conformer was fabricated with heat-cured clear acrylic resin which engages the undercuts and provides a sturdy scaffold for silicone prosthesis. The outer prosthesis was fabricated in room temperature vulcanizing silicone material which gives a more lifelike appearance and has better marginal adaptation.

For orbital prosthesis, suggested retentive aids are implants, eyeglasses, magnets, adhesives, and natural undercuts^{6,7,8}. In this patient, natural undercuts and magnets are used for retention. Other options such as implants were excluded as implants may show a high failure rate because of poor bone remodeling leading to less stabilized bone volume^{9,10}.

IV. Conclusion:

A well-retained removable maxillofacial prosthesis is the key for successful rehabilitation of patients with maxillofacial deformity. A simple procedure of fabricating a silicone orbital prosthesis retained with the help of magnet to the acrylic stent engaged in the undercut has been presented. In this case, a cost-effective, skillful lifelike prosthesis with good retentive abilities satisfied the patient's demand. A cost-effective, esthetic, and retentive prosthesis brought a smile on the patient's face which was priceless.

References :

- [1]. Singh AK, Singh R, Joshi SR, Misra A. Mucormycosis in COVID-19: A systematic review of cases reported worldwide and in India. *Diabetes MetabSyndr* 2021;15:102146.
- [2]. Perman KI, Baylis HI. Evisceration, enucleation, and exenteration. *OtolaryngolClin North Am* 1988;21:171-82.
- [3]. Stanley RB Jr., Beumer J 3rd. Orbital rehabilitation: Surgical and prosthetic. *OtolaryngolClin North Am* 1988;21:189-98
- [4]. Stanley RB Jr, Beumer J 3rd (1988) Orbital rehabilitation: Surgical and prosthetic. *OtolaryngolClin North Am* 21: 189-198.
- [5]. Kapadia A, Wate SR, Wankhade S, Khalikar A, Deogade S. Prosthetic rehabilitation of a post-COVID mucormycosis exenterated orbital defect with a two-piece hollow orbital prosthesis. *J DattaMegheInst Med SciUniv* 2022;17:S67-72.
- [6]. Taylor TD. *Clinical Maxillofacial Prosthetics*. Quintessence Publishing Illinois; 2000. p. 233-76.
- [7]. Beumer J, Curtis TA, Marunick MT. *Maxillofacial Rehabilitation: Prosthodontic and Surgical Considerations*. St. Louis: Ishiyaku Euro America; 1996. p. 377-453.
- [8]. Dumbrigue HB, Fyler A. Minimizing prosthesis movement in a midfacial defect: A clinical report. *J Prosthet Dent* 1997;8:341-5.
- [9]. Roumanas ED, Freymiller EG, Chang TL, Aghaloo T, Beumer J 3rd. Implant-retained prostheses for facial defects: An up to 14-year follow-up report on the survival rates at UCLA. *Int J Prosthodont* 2002;15:325-32.
- [10]. Toljanic JA, Eckert SE, Roumanas E, BeumerJ, Hury JM, Zlotolow IM, et al. Osseointegrated craniofacial implants in the rehabilitation of orbital defects: An update of a retrospective experience in the United States. *J Prosthet Dent* 2005;94:177-82