



## Orbital Prosthesis - When Life Gets Blurry Adjust Your Focus (A Case Report)

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**ABSTRACT:** The human eye is a sense organ which aids in vision and is an important part of the face. Loss of the eye can be due to congenital abnormality, trauma or malignancy. This loss can be a reason to various problems like physical, psychological and poor quality of life. Hence, rehabilitating this part of the face is a crucial procedure as it involves expertise and precision. This article describes prosthetic rehabilitation of a 45 year old woman who has undergone extirpation of the eye due to lacrimal gland carcinoma. The procedure done is simple, cost effective and is an easy way of fabrication and rehabilitation of orbital prosthesis with the help of mechanical retention with the use of a spectacle frame. The choice of mechanical prosthesis was done keeping in my mind the circumstances under which the extirpation of the eye was done and also hygiene was a major factor. The fabricated prosthesis was esthetic, durable and had mechanical retention.

**KEYWORDS:** orbital prosthesis, mechanical retention, silicone

### I. INTRODUCTION:

Face is the reflection of the mind and soul, it is through this face we express our feelings. Mutilation of a portion of a face can cause a heavy impact on the self image and personality of an individual [1]. This loss is more pronounced when the affected part is the eye and all orbital contents, resulting in gross mutilation [2]. The patient can undergo a lot of psychological and social problems. Lacrimal gland carcinomas are associated with poor local control and significant morbidity and mortality rates. To date, no guidelines on standard treatment for lacrimal gland carcinomas have been developed due to the rarity of these diseases, which are conventionally treated with orbital exenteration followed by radiotherapy (RT)[3]. Restoration of aesthetics and function is the main objective of maxillofacial prosthetic rehabilitation following ablative surgery for malignant tumors. The purpose of maxillofacial prosthesis is to restore facial

structures with artificial substitutes[4]. Prosthesis for orbital defects is made from a variety of materials, such as polymethyl methacrylate, polyurethane elastomer, silicone elastomer, or urethane backed medical grade silicone[4]. They are predominantly retained using mechanical means such as anatomical undercuts, spectacle frames, or by the use of extraoral implants. Silicone prosthesis has been preferred over those prosthesis which are made of acrylic resin, due to their consistency and resilience, which closely resemble the human skin, in addition to the final esthetics and relative comfort of this material[4]. The fabrication of this prosthesis requires precision and expertise. An orbital prosthesis or ocular prosthesis is created to restore a more normal anatomical structure and cosmetic defect. These prosthesis are retained using implants, magnets, eyeglass frames and anatomic mechanical undercuts.

### II. CASE REPORT:

A female patient aged 45 years, reported to the Department of Prosthodontics at Dr.D.Y.Patil Dental College & Hospital, Pimpri, Pune for the replacement of her exenterated right eye. The patient had a history of lacrimal gland carcinoma which was surgically removed en bloc. On examination the patient showed large orbital defect on the right with bony undercut which could aid mechanical retention.[figure 1] The treatment aimed at reconstruction of the orbital prosthesis and the surrounding soft tissue which was lost during the surgery. The prosthesis of choice was mechanically retained orbital prosthesis fabricated using silicone material (2186- F Silicone elastomer)

### III. PROCEDURE:

Impression making

The anophthalmic socket and defect region was evaluated for the procedure of the rehabilitation of the defect[1].

The eyebrows and eyelashes were lubricated with petroleum jelly. An impression was



made of the defect area along with the adjacent eye region. An impression was made with the help of irreversible hydrocolloid impression material (tropicalgin, zhermack) and the impression was supported by type II dental plaster (kalabhai).[figure 2] Subsequently, a cast was obtained using type III dental stone (kalabhai).

#### Fabrication of heat cure acrylic base

Since, the anophthalmic socket had a large defect, fabrication of heat cure acrylic base was needed in order to hold the silicone material. Before fabricating the heat cure acrylic (DPI) base necessary block out was done and the baseplate was fabricated. The fit of the base was checked on the cast and later transferred to the patient's face to check for its stability by asking the patient to do functional movements such as smiling, opening and closing the eye, and raising the eye brow.[figure 3] This base plate was then tried for stabilizing the eye shell.

Locating the position of eye shell over the wax trial

The orientation of the pupil was a crucial step. The patient was asked to look at one stable point and the midline of the face was marked. The distance between the facial midline and the centre of the pupil, and the inner canthus of the eye to the nasal bridge was measured. Similarly, it was transferred on the adjacent side [figure 4] and the eye shell was then stabilized with the help of the heat cure acrylic base plate and modelling wax (MAARC). [figure 5] The eye was secured in position with the help of modeling wax based on measurements which were obtained, and the anteroposterior position was adjusted and verified on the patient when observed from the side profile. Once the position was confirmed, the eyelids and the remaining portion was sculpted in wax and tried in the patient's orbital defect.[figure6]

#### Processing of the prosthesis

The sculpted wax prosthesis with the cast was flasked and the eye shell was stabilised with the help of a plastic tube in order to prevent it from moving after dewaxing [Figure7]. Room temperature vulcanizing silicone material (2186- F Silicone elastomer) was mixed, a mix of white, brown, and light red pigment stains were blended into the base color of silicon for intrinsic staining based on shade match with the patient's skin color.[figure 8] Silicone was packed and cured at room temperature for 24 h according to manufacturer's instructions. The following

polymerization, the prosthesis was deflasked, retrieved, and finished.

Once the prosthesis was finished and polished, for enhancement of aesthetics eyelashes (MAC) were attached to it. [figure 9]

#### Prosthesis trial

Before the trial of the prosthesis, the fabricated orbital prosthesis needed to be adhered to the spectacle frame in order to achieve mechanical retention. The acrylic portion of the base plate is exposed and the nose bed portion of the spectacle frame is serrated so that with the help of clear cold cure acrylic it can be adhered. [figure 10] Then the trial insertion was done on the patient.[figure11]

### IV. DISCUSSION:

The objective of this case was to reconstruct a prosthesis which was close to natural. The challenges faced during constructing an orbital prosthesis are; obtaining a satisfactory working model without tissue compression, orientation of the orbital portion in harmony with the remaining eye, reproducing the contour and anatomy of the periorbital tissues and obtaining a satisfactory colour match.[1] In this case, there was extensive loss the eye structure due to exentration. The history of surgery and radiotherapy compromised the quality of the tissue. Since the patient was reluctant to co operate with the use of adhesives, mechanical retention with help of spectacle frame was a reliable option. The presence of bony undercut helped the prosthesis fabricated with silicone to stay stable and enhanced the retention and stability of the prosthesis. The difficulty in orienting the eye shell was solved using facial measurements. The heat cure acrylic base plate with the help of modelling wax was used to stabilize the eye shell. Overall, the prosthesis was desirable and was well accepted by the patient.

### V. CONCLUSION:

This article presents the procedure in fabricating an orbital prosthesis. Major considerations such as selection of the type of retentive aid used, the artificial eye shell, the orientation of eye, and fabrication of the mold are emphasized to ensure an esthetic and an acceptable prosthesis. It is a simple and cost effective technique for fabrication of silicone orbital prosthesis.



PICTURES



FIGURE 1



FIGURE 2



FIGURE 3



FIGURE 4



FIGURE 5



FIGURE 6

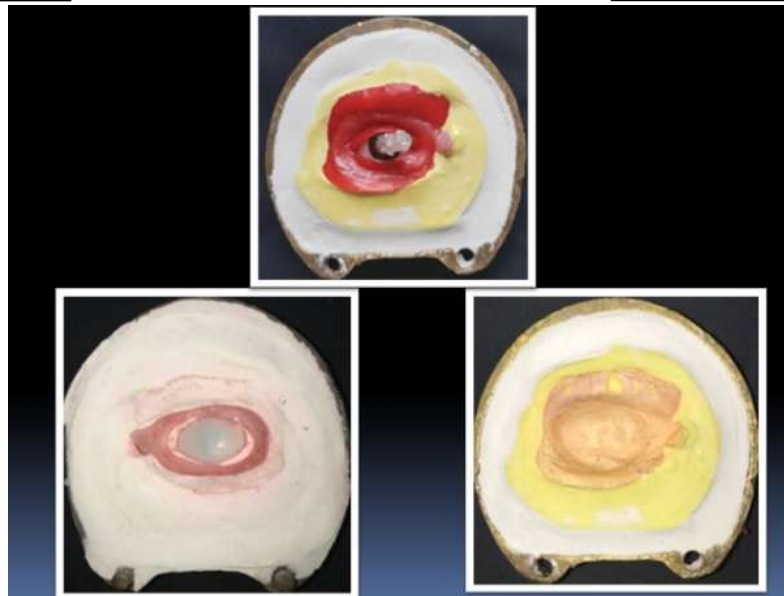


FIGURE 7



FIGURE 8



FIGURE 9



FIGURE 10



FIGURE 11

#### REFERENCES:

- [1]. Bindhoo Y, Aruna U. Prosthetic Rehabilitation of an Orbital Defect: A Case Report. *The Journal of Indian Prosthodontic Society*. 2011;11(4):258-264.
- [2]. Muddugangadhar B. Rehabilitation of an Orbital Defect: A Simplified Technique. *Journal of International Oral Health*. 2015;7(7):121-123.
- [3]. Lin Y, Huang S, Yap W, Yang J, Yeung L, Tsan D et al. Outcomes in patients with lacrimal gland carcinoma treated with definitive radiotherapy or eye-sparing surgery followed by adjuvant radiotherapy. *Radiation Oncology*. 2020;15(1).
- [4]. Mohammad F, Shetty S, Shetty R, Shenoy K. Prosthetic rehabilitation of an orbital defect for a patient with hemifacial atrophy. *The Journal of Indian Prosthodontic Society*. 2016;16(1):91.