



## A Complete Procedure of Ocular Prosthesis for eviscerated eye : A Case Report

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### Abstract:

The eyes are often the first part of the face to be noticed and they play an important role in our daily life. The removal of a portion or the entire orbit can result in eye defect. As a result, the patient becomes visually, aesthetically and psychologically handicapped. To improve the psychological status of such individuals, artificial substitutes must be provided to restore their form and functionality. The patient had a defect with a reduced orbit and an undamaged tissue bed which was discovered during a thorough clinical examination. Because the patient was finically weak, a custom-made ocular prosthesis was recommended. All artificial prosthesis that restore missing sections of the face owing to trauma, congenital deformities or surgical removal, the reason being either malignant, benign, neoplasia or trauma are classified as maxillofacial prosthetics. Maxillofacial prosthesis improves the patient quality of life and encourage them to regain their self-confidence so that they can resume social activities.

**Keywords:** Nil

### Introduction:

Defects of the attention might embody as a group removal of the orbit – excenteration, eviserasation or enucelation of solely the eyeball - scleral defect.<sup>[1]</sup>

In the Indian landmass, trauma, tumors and non-heritable absence of orbit square measure the most causes of such defects. Besides suffering a loss of vision, these patients become aesthetically and psychologically incapacitated. They feel tons of embarrassment and aren't well accepted in society.<sup>[2]</sup>

A multidisciplinary approach together with a prosthodontist, ophthalmologist, surgeon and maxillofacial prosthetist ought to be thought of for an esthetic and stable outcome.<sup>[3]</sup>

Techniques for creating these ocular prosthesis vary from easy to sophisticated. These eyes may be prefabricated or customized, the latter giving higher match and esthetics or better fit.<sup>[4]</sup>

Thus a custom ocular prosthesis could be a smart various. A case of a custom ocular acrylic prosthetic device is conferred here, that had acceptable match, retention and esthetics.<sup>[5]</sup>

### Case Report:

A 45 year old patient was referred to Department of Prosthodontics from the Ophthalmology Department (RKDF medical college, Bhopal) with the chief complaint of facial disfigurement due to loss of the right eye. There was a history of right-eye trauma

followed by evisceration. Surgery was done and the eye was eviscerated 3 month back.

On inspection no inflammation was present and muscle function of both the upper and lower eyelid was normal. The depth of the sulcus was sufficient to keep the restoration. As the patient was finically weak. A custom-made acrylic resin ocular prosthesis was planned and the treatment procedure was explained to the patient and consent was obtained.

### **Preliminary Preparations:**

To make the treatment more comfortable, a topical anaesthetic was used to anaesthetize the ophthalmic socket followed by gentle lubrication of the same side eyebrow and eyelashes.

### **Impression Making:**

An impression tray was made by immersing the impression compound in hot water and moulding it to the contour of the area around the opposing eye. (FIG-1) .Smoothing the corners of the tray head to match the dimensions of the anophthalmic socket on the defect side, and then fabricating the injector by joining a 10 ml syringe hub in the approximate pupil location on the custom tray.

Following the inspection of the tray extensions, the irreversible hydrocolloid material (Algitex, Dental Products of India, Mumbai, India) was manipulated with a water-powder ratio of 16 gm powder to 45 ml water to obtain a slightly fluid flowable mix that could be easily syringed into the defect to make an impression.

After instructing the patient to close his eye so that the excess material could flow while the material set, the patient was instructed to perform various eye movements in the following order: moving the eye laterally, then up and down, and finally in a circular motion. This will make it easier for the impression material to flow to all areas of the socket. The patient was instructed to maintain his gaze in a forward direction while looking at a distant spot at eye level.(FIG-2)

### **Mould Making:**

The impression material was carefully removed from the anophthalmic socket after it had set.. The impression was checked to ensure that all the surfaces were recorded and there is no porosity present. A two-piece, type IV dental stone cast was

poured to immerse the lower part of the impression (Figure-3,4). Separating media was applied to the surface after the stone had set. Then a second layer was poured. Marking was made on all four sides of the cast for proper re-orientation of the cast.

### **Wax-Up:**

After that, the molten wax was poured into the impression to create the wax design (fig-5). The wax was carefully shaped and carved to resemble the missing eye. By executing functional movements, the wax design was tried in the patient's socket and checked for size, comfort, support, fullness and retention.

### **Selection And Positioning Of Iris:**

Prefabricated stock eye shell, whose iris shade matched with the contra-lateral eye was selected. The position of iris was determined with the help of grid method. During the iris positioning, an indelible pencil was used to write certain guidelines on the patient's face including a vertical midline based on reliable anatomical landmarks and conspicuous spots on the face.

The midline was drawn via the crease of the forehead, the glabella, tip of the nose and chin. The distance between the middle canthus of the right eye and the middle canthus of the left eye was measured. The midline marking was standardised by this distance, which was used to reposition the grid template each time.

The patient was instructed to maintain a straight look. The vertical lines that corresponded to the natural eye's medial and distal iris extremities were drawn. The horizontal lines denoting the iris's centre, inferior and superior limits were also delineated. The translucent grid template was used to transfer markings.

The iris was affixed to the wax pattern after the marks were transferred to the sculpted scleralwax pattern. With the grid template, the custom-made iris was assessed. This confirmed the positioning of the iris in the wax pattern in comparison to the iris of the contra-lateral eye. (FIG-6)

### **Acrylization Of Prepared Mold:**

The wax pattern was acrylized using heat cure clear acylic. Artificial veins were attached to simulate the natural eye's veins for further characterization.

Internal staining was also done. (FIG-7) Finally, the eye was removed from the flask, polished, and inserted into the eye socket.

### Insertion:

The prosthesis was placed into the socket and any locations that needed to be adjusted were evaluated. The patient's appearance and comfort were scrutinised.

The patient was taught how to put on and take off the prosthesis. Ophthalmic lubricant was advised for lubrication. To make the prosthesis more inconspicuous, a pair of plain glasses was recommended. (FIG-8)

### Discussion:

The ocular prosthesis is a device that replaces the eye's bulb with an artificial one. After the surgeon has eviscerate the eye, a prosthodontist is called upon to provide the patient with an artificial eye to help them cope with the pain of losing an eye. When the patient makes varied movements, a well-crafted and properly fabricated ocular prosthesis retains its orientation.<sup>[5]</sup>

The ocular prosthesis are either ready-made or custom-made and are produced from either glass or methyl methacrylate resin. Glass is not the preferred material because it is susceptible to damage and surface deterioration when exposed to orbital fluids, with a usable life expectancy of only 18-24 months.<sup>[6]</sup>

In terms of tissue compatibility, aesthetic compatibilities, colors durability and permanence, adaptability of form, affordability and availability, methyl methacrylate resin outperforms other ocular prosthetic materials.<sup>[7]</sup>

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A custom sclera shell is a very thin cover that protects the injured eye's sensitivity while also shielding it from debris. It also keeps the opposing eye's natural opening in check. Acrylic eyes are easy to fit and adjust, indestructible, inert to ocular fluids, aesthetically pleasing, long lasting and less difficult to construct.<sup>[8]</sup>

Nowadays, employing silicon instead of acrylic resin has several advantages including a faster treatment time, a lighter prosthesis and more simplicity, making this technology a feasible alternative for ocular prosthesis production.<sup>[9]</sup>

From the standpoints of patient aesthetics, acceptability and contentment, the procedure outlined here has yielded positive outcomes. The procedure presented here is simple to implement and may be done in a modest clinical setting.<sup>[10]</sup>

### Conclusion:

The most important factors to consider for a successful outcome are surgical modifications to improve prosthetic rehabilitation, an accurate impression of the defect as well as selection of appropriate material and technique for prosthesis fabrication.

Although the patient cannot see with the ocular prosthesis, it definitely restores patient's self-esteem and allows him to confidently face the world. The use of ocular prosthesis changes the patient's social life to a significant level and improves his confidence too.

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**Figure Legends :**



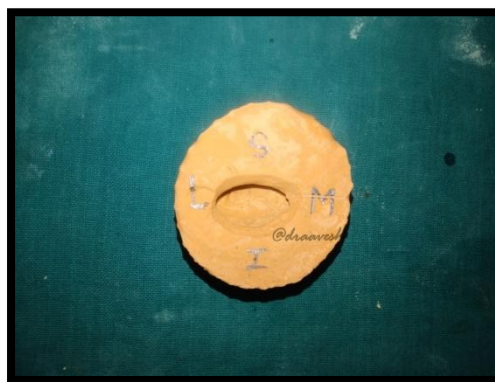
(Fig-1)



(Fig-2)



(Fig-3,4)





(Fig-5,6)



(Fig-7)



(Fig-8) Before And After Insertion Of Ocular Prosthesis

Composite analysis (table 1)

Pre-Treatment:

VARIABLE	PRE TREATMENT	POST TREATMENT	NORMAL
SNA	85°	85°	82° ± 3
SNB	84°	84°	79° ±3
ANB	1°	1°	3° ± 1
Wits appraisal	AO ahead of BO by 2mm	Coinciding	0 mm
N ⊥ Pt A	0	+2mm	0±2 mm
N ⊥ Pog	0	-2mm	0 to -4mm
Angle of inclination	83°	90	85

<b>Go-Gn to SN</b>	18°	28°	32
<b>Y- Axis</b>	50°	59°	66
<b>Facial axis</b>	86°	84°	0
<b>Upper incisor – NA(mm)</b>	6mm	4mm	4mm
<b>Upper incisor – NA(degrees)</b>	30°	23°	22°
<b>Upper incisor – SN</b>	120°	115°	102± 2
<b>Lower incisor to MP angle</b>	107°	98°	92± 5
<b>Lower incisor to NB</b>	5mm	4mm	4mm
<b>Lower incisor to NB</b>	30°	26°	25°
<b>Interincisal angle</b>	115°	130°	130°-150°
<b>Lower lip to Ricketts E Plane</b>	1mm	0mm	-2mm