PROSTHETIC REHABILITATION OF A PATIENT WITH ACQUIRED ORBITAL DEFECT USING SPECTACLE RETAINED ORBITAL PROSTHESIS – A CASE REPORT

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Abstract:

Rehabilitation of facial defects is a complex task, which requires an individualized design of prosthesis for each patient. Fabrication of orofacial prosthesis is highly technique sensitive procedure thus visual assessment alone may not always be accurate. Various treatment modalities are available, one of which is the use of implants. Although implant-supported orbital prosthesis has a superior outcome, it may not be acceptable to all the patients due to its higher cost. Prosthetic rehabilitation is the treatment of choice when surgical reconstructive procedure does not show satisfactory results. Multidisciplinary management and team approach are essential in delivering an accurate and effective rehabilitation for the patient. The present article describes a simplified technique for the fabrication of an acrylic orbital prosthesis to achieve ideal fit and aesthetics.

Keywords: *Eye, Orbital, Prosthesis, Rehabilitation*

INTRODUCTION

Sympathetic ophthalmia, congenital defects, irreversible damage, severe blindness, and the requirement for histologic confirmation of a suspected disease can all lead to the loss or absence of an eye.[1,2] Integrated or nonintegrated orbital implants can be used to replace the orbital volume lost when the globe is removed.[3,4]Conjunctival fornices are kept in their natural shape, changes in socket size are reduced, and scar contractures are avoided as tissue heals thanks to the conformer implantation.[5,6] After recovering from an eye enucleation treatment, the patient must have the lost eye replaced as quickly as possible to increase social acceptance and encourage both physical and psychological rehabilitation. Therefore, immediately after tissue healing is complete, the conformer is replaced by a permanent ocular prosthesis. **Since it's a god given right for every human to appear human** and it takes a multidisciplinary team approach and management to give the patient precise and efficient follow-up treatment and rehabilitation.[7] This article outlines a streamlined process for creating an orbital prosthesis made of silicone.

Case report

A 42-year-old male patient, a resident of Jammu referred to the Department of Prosthodontics, Indira Gandhi govt. dental college, Jammu came for the rehabilitation of his left eye which had been resected en bloc due to trauma and subsequent persistent infection 2 years ago. Examination showed a completely healed ocular socket. There was no pain or discomfort in the defect region. Definite bony undercuts were found on the superior and inferior borders of the socket which ultimately aided in retention of the prosthesis [Figure 1].

Step-by-step Procedure

1) After thorough inspection of the anophthalmic socket, the iris and pupil diameters on the unimpaired side were measured using a measurement scale, and the defect was measured to be around 13*9 cm in cross-section(Figure 1 and Figure 2)
2) The facial moulage was made once the patient was relaxed and sitting comfortably in an upright position with the help of hydrocolloid material , gauze piece soaked in saline placed over the material and the plaster was added over it to stabilize the impression. After the set, the impression was carefully retrieved and poured with type III. This will serve as a reference model as seen in (Figure 3).
3) Petroleum jelly was used as a lubricant for the eyebrows and surrounding areas to facilitate removal of the impression. The impression material used was putty and light body and the Dental stone type IV was used to pour the master cast [Figure 4].
4) Wax pattern was fabricated and when satisfied with the contour and fit of the wax pattern, iris positioning was done. For this, the iris was selected by shade matching from a set of stock iris shells. The selected stock iris shell was grounded to just obtain the iris portion. The iris positioning was done taking reference from the left eye subdivisions were done .
5) To verify the proper fit and contouring of wax blank, try in of the wax pattern after iris positioning was done in patient's eye [Figure 5]. The wax pattern sealed with the master cast is then invested(Figure 6). Dewaxing is done and wax residues removed using hot water. The mold was dried completely to prevent tacky texture of silicon prosthesis. Room

temperature vulcanization silicone (A2186, Factor II incorporated) with intrinsic stains was used and shade was matched in accordance with same and contralateral side [Figure 8].

6) Bench curing was done for 24 h different intrinsic and extrinsic stains were used to match the shade with natural eye of patient and obtain an appropriate result of prosthesis [Figure 9].
7) The fit of the prosthesis was verified on the patient; chair side extrinsic staining was carried out to achieve optimum esthetics. A bold black frame of suitable size was selected for the patient; the prosthesis was attached to the frame with the help of adhesive tape on the lateral side and soldered loop on the medial side of frame.
8) The final prosthesis was then delivered to the patient [Figure 10,11,12]

Figures

Figure 1

Figure 2

Figure 3

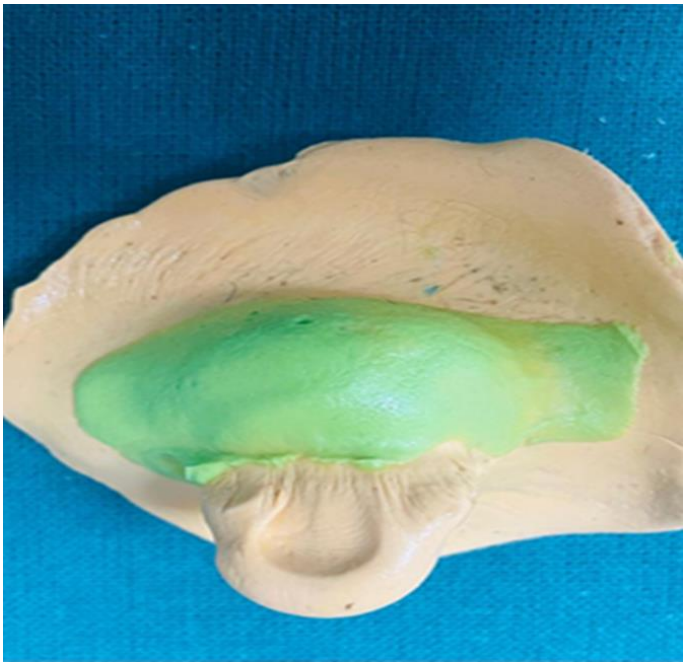

Figure 4

Figure 5

Figure 6

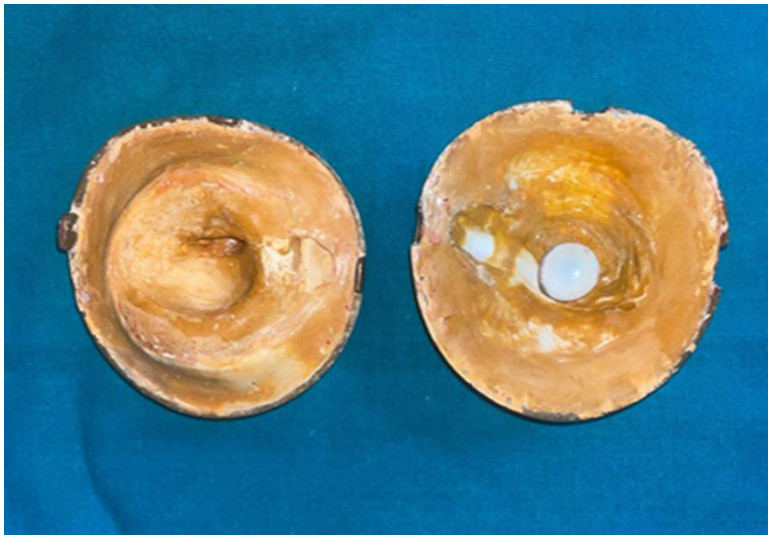

Figure 7

Figure 8

Figure 9

Figure 10


Figure 11


Figure 12

Patient and guardian was taught how to insert and remove the prosthesis and it's home care protocol which includes (Ahmad et al., 2009; Deshmukh et al., 2016):

• Prosthesis should be handled with care and with clean hands

DISCUSSION The aesthetics of creating an orbital prosthesis are crucial since even a small alteration to the prosthesis's color and position can have a profound effect on the patient's psychological state and social functioning. A maxillofacial prosthesis should look natural since poorly made prostheses, especially in those with orbital defects, might cause the patient to experience further psychological stress. Therefore, when esthetic and functional profiles are high, orbital prosthesis creation is a viable option to other local reconstructive treatments.[8] A precise impression that replicates the

specifics of the impairment is the primary requirement for a successful prosthesis. The dimensional stability of irreversible hydrocolloid imprint material may be impacted by delayed pouring, but it offers good detail replication for replication.[9] Furthermore, silicones have superior dimensional stability and surface repeatability. Baseplate wax was chosen due to its affordability, reusability, and availability. Enough cooling time should be allowed for the material to release its inherent stresses to prevent distortion. Before packing silicone, it is advised to scientifically try the wax pattern to confirm the form and make any necessary adjustments. Many maxillofacial materials have been used to create prostheses, but medical-grade silicone is still preferred over other maxillofacial prosthetic materials due to its advantageous material qualities, which include ease of molding, flexibility, biocompatibility, and the capacity to accept both intrinsic and extrinsic colorants. The patient's quality of life is greatly enhanced by the creation of silicone prostheses.[10,11] Thorough knowledge of the materials and laboratory skills are required to obtain the ideal results. It is necessary to use a retention technique to keep an orbital prosthesis in its correct location while preventing tissue irritation and discomfort.[10] An osseointegrated implant, mechanical devices, chemical adhesives, and the anatomical undercut of the defect can all be used to keep the orbital prosthesis in place. The overall result and long-term success rates for orbital prostheses have improved with the introduction of osseointegrated implants.[9] Nonetheless, there are a few things to think about when using implant retained orbital prostheses. These variables include the implant's load-bearing capacity in bone and the thickness of the bone, while implant-retained prostheses provide better retention and overall satisfaction with therapy.[12] An affordable and non-invasive therapy option is an adhesive retained prosthesis. However, one of the biggest issues with silicone prosthesis is the need for prosthesis maintenance and aftercare. With adhesive-retained prostheses, discoloration and rupture of the margins after usage are frequently seen.[11] This may require the prosthesis to be refabricated to maintain its overall retention and aesthetic appeal. However, the simple adhesives can be utilized to successfully hold an orbital prosthesis if the prosthesis is manufactured correctly and the patient is motivated to take care of the underlying and supporting tissue through cleanliness.

CONCLUSION

Each individual would experience psychological pain from having their face disfigured or losing a sense organ. It is laborious and time-consuming to rehabilitate these individuals on an emotional,prosthetic, and cosmetic level. To recreate a fair outcome, much care must be taken to pay attention to every last detail. The modest and straightforward design of the prosthesis in this case report can be seen as a step toward increasing the social acceptability of patients with orbital defects and ensuring that they have a satisfactory quality of life economically, quickly, and predictably after rehabilitation.

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