

Prosthetic Management of a patient with Ocular Defect with Ocular Prosthesis - A case report.

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Abstract:

The eye is a vital organ not only in terms of vision but also being an important component of facial expression. Throughout history, human eye has been mentioned as the most precious of gifts. The rehabilitation of a patient who has suffered from an ocular loss, requires a prosthesis that will provide the optimum cosmetic and functional results. A 45 year-old male reported to the Department of Prosthodontics, Darshan dental college, Udaipur, Rajasthan, with a missing left eye. Treatment was initiated with psychological counselling and reassured treatment outcome regularly during treatment. Treatment of such cases includes implants and acrylic eye prosthesis. Although ocular implant eye prosthesis has superior outcome, due to economic factors it may not be advisable in all patients. So a custom-made ocular prosthesis is a good alternative. A case of a custom-made ocular acrylic prosthesis is presented here, which had acceptable fit, retention and esthetics.

Key Words: Custom made ocular prosthesis, ocular implant, ocular defect.

Introduction:

Eyes are generally the first features of face to be noticed. Removal of this organ either due to tumors, trauma or any other condition not only cause unaesthetic look but also there is loss of function and has a psychological effect on the patient. Thus, ocular prosthesis should be provided as soon as possible for the psychological well being of the patient. A congenital anomaly or pathology may necessitate an orbital evisceration or an orbital enucleation. The surgical procedure of evisceration is where the contents of the globe are removed, leaving the sclera intact. A more invasive procedure is enucleation where the entire eyeball is severed from the muscles and optic nerve¹. Exenteration, the most radical, involves removal of the contents of the orbit. An ocular prosthesis is a simulation of human anatomy using prosthetic materials to create an illusion of a perfectly normal healthy eye and surrounding tissue. A person in need of an ocular prosthesis may have lost or damaged his/her natural eye due to trauma, malignancy or a congenital

deficiency. The primary purpose of an ocular prosthesis is to maintain the volume of eye socket and create the illusion of a perfectly normal healthy eye and surrounding tissue².

Case Report:

A 45 year-old male reported to the Department of Prosthodontics, Darshan dental college, Udaipur, Rajasthan with a missing left eye (figure 1). The patient gave a history of enucleation of the left eye due to trauma. Moreover, the patient did not report of any pain or discomfort in the periorbital tissue.



Figure 1-Pretreatment Photographs

Treatment Plan:

This patient was convinced for rehabilitation of ocular defect with ocular prosthesis. Treatment was initiated with psychological counselling and reassured treatment outcome regularly during treatment.

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Impression of ocular defect:

Direct impression or external tray: A low viscosity alginate (Neocolloid Zhermack, Kab Dental supplies) is injected directly into the enucleated socket. The patient is instructed to stare straight ahead as the material sets. Additional material is applied to the external tissue, and an impression is made using a bowl for reinforcement (figure 2). As a result, the anatomy of the anophthalmic socket and overlying tissues is obtained. The impression is removed and invested in dental stone (Kalastone, Kalabhai Dental Private limited) in order to obtain a positive aspect of the eye socket.



Figure 2-Primary Impression

A special tray is constructed over the working cast by using self-cure acrylic (DPI-RR cold cure, Dental Products of India, the Bombay Burmah Trading Corporation limited). The tray was checked in the patient's eye for overextension and necessary modifications are made. The patient is instructed to stare straight ahead and medium body elastomer (Impregnum Penta Medium Body, Pearson Dental Supplies) is introduced into the eye socket via a tube protruding from the anterior surface of the impression tray and projecting out between the lids by means of a syringe connected to the tube. After the impression material is set, the impression is removed and invested in dental stone (Kalastone, Kalabhai Dental Private limited) using the 3-pour technique (Figure 3).

A suitable ocular prosthesis (Doshi ocular prosthesis, Doshi Pvt Ltd.) was selected that closely approximates the colour, size and shape of the iris and sclera of the other eye. The ocular prosthesis was placed in the working cast and the periphery was



Figure 3-Master Cast

selectively trimmed to match the socket border extensions on the working cast.

Next, the ocular prosthesis was positioned to simulate the positioning of the left eye, with the patient focusing on a distant point directly ahead. A reference mark was placed at the midline and a Boley's gauge was used to verify the mediolateral placement. Accurate mediolateral, antero-posterior and infero-superior positioning of the prosthesis was performed to exactly mimic the position of the normal eye.

Some amount of base plate wax was then added on the tissue side of the prosthesis to the desired visual axis.



Figure 4- Ocular Prosthesis During Functional Movements

A thin layer of tissue conditioner (Soft liner; G C Corporation, Tokyo, Japan) was then applied on the tissue side of the prosthesis and placed back into the socket. The prosthesis was left in situ for 20 minutes during which the patient was instructed to perform various functional movements (Figure 4). The modified prosthesis was then invested and packed with tooth

coloured heat cure acrylic resin (Stellon De Trey; Dental Products of India Ltd., Mumbai India). Slow curing was carried out for acrylisation at 74°C For 8 hour. After curing ,the prosthesis was retrieved ,trimmed and the final finishing completed (figure 5). The prosthesis was inserted in the ocular defect and evaluated again for patient comfort and esthetics. Patient was instructed about the use and maintenance of the prosthesis (figure 6).



Figure 5 Unfinished Prosthesis



Figure 6-Post Operative View

Discussion:

The importance of an ocular prosthesis with acceptable esthetics and reasonable motility in restoring the normal appearance in patients with anophthalmia has been recognized since long time. The need for artificial eye can be satisfied by stock ocular prosthesis that comes in standard sizes, shapes and colors. These are relatively inexpensive and can be derived quickly³. Often ,however a custom made ocular prosthesis is indicated . Advantages include improved adaptation, increased mobility of prosthesis, improved facial contours and enhanced esthetics gained from the control of the iris and sclera. Nevertheless a custom made

prosthesis is more expensive and several steps are required for its fabrication.

An accurate alignment of the artificial eye is one of the major prerequisites for esthetic success of the ocular prosthesis. Facial measurements and various devices have been proposed for orienting the ocular portion of the ocular prosthesis⁴.

The rehabilitation of ocular defect is a complex task and if reconstruction by plastic surgery is not possible or not desired by the patient, the defect can be rehabilitated by an ocular prosthesis⁵.

The use of osseointegrated implants is a popular approach since it offers an improved retention compared to the existing alternatives. Various factors, including systemic conditions and financial constraints ,limit the use of osseointegrated implants in few patients⁶.

Summary and Conclusions:

An accurate alignment of the artificial eye is one of the major prerequisites for esthetic success of the ocular prosthesis. The use of custom made ocular prosthesis has been a boon to the average patient who cannot afford the expensive treatment options available. The procedure used here is cheaper ,affordable and can be carried out in a small clinical set-up. This method has provided good results from patient esthetics, acceptance, increased mobility of prosthesis, improved facial contours and satisfaction points of view.

References:

1. Artopolou I, Montgomery P, Lemon J .Digital imaging in the fabrication of ocular prosthesis , J Prosthetic Dent 2006;95:327-30.
2. Mathews M F, Smith R M, Sutton A J, Hudson R. The ocular impression : A review of the literature and presentation of an alternate technique. J Prosthodontic 2000;9(4):210-216
3. Taylor T. Clinical maxillofacial prosthetics. Quintessence publishing co, inc: 2000 p. 233-76.
4. Gibson T. The prosthesis of Ambroise Pare. Br J Plastic Surgery 1955;8:38
5. Chalian V A , Drane JB, Standish SM. Maxillofacial prosthetics: multidisciplinary practice. williams and wilkins:Baltimore:1971, p. :286-294.
6. Manvi Supriya , Bilquis Ghadiali. Prosthetic rehabilitation of a patient with an orbital defect using a simplified approach. Journal of Indian Prosthodontic Society 2008; 8(2):116-118.