

Oral & Maxillofacial Prosthetics III - Ocular Prosthesis : A Case Report

Dr. Khaidem Deba

Assistant Professor
Prosthetic Department of Dentistry
JNIMS - Porompat, Imphal Manipur

Dr. Amit Kumar Tamrakar

Assistant Professor
Dept. of Prosthetics & Crown & Bridge, Faculty of Dentistry
Jamia Millia Islamia (A Central University by an Act of the Parliament) New Delhi-110025

Dr. Nadeem Yunus

Associate Professor

Dr. Murali G.

Assistant Professor

Abstract

Maxillofacial prosthetics is a branch of dentistry that deals with congenital and acquired defects of the head and neck. Maxillofacial prosthetics integrates parts of multiple disciplines including head and neck oncology, congenital malformation, plastic surgery, speech, and other related disciplines. A person's personality can be affected to a great extent due to facial disfigurement. Maxillofacial prosthesis helps in rehabilitating such cases and makes them socially acceptable. In the previous articles of this series we discussed about the objectives and historical aspects of oral and maxillofacial prosthetics and materials used to fabricate them. In the present article a case report of eye prosthesis is presented here.

Key words: Evisceration, Enucleation, Exenteration, Custom made Ocular prosthesis.

Introduction

The removal of an eye and management of the anophthalmic socket requires the combined efforts of the ophthalmologist and the maxillofacial prosthodontist. The goal of any ocular prosthetic procedure is to return the patient to society with a normal appearance and reasonable motility of the prosthetic eye. The disfigurement resulting from loss of an eye can cause significant psychological as well as social consequences. However, with the advancement in ophthalmic surgery and ocular prosthetics the anophthalmic patient can be rehabilitated very effectively. Because patient populations and life expectancy have increased, the need for maxillofacial prosthetic services has also grown. Having undergone some evolutionary change, the principles, concepts, and practices applicable to prosthodontic treatment still constitute the fundamental basis for sound maxillofacial prosthetic therapy.

Surgical Considerations in Ocular Rehabilitation

Following are the indications for removal of an eye: Irreparable trauma; Tumor; A blind, painful eye; the need for histologic confirmation of a suspected diagnosis; the possible prevention of sympathetic ophthalmia. The surgical procedures in the removal of an eye are classified into 3 general categories: Evisceration; Enucleation and Exenteration.

Evisceration involves the removal of the contents of the globe leaving in place the sclera and sometimes the cornea. The prosthesis best suited for the evisceration

defect is the **custom cosmetic cover shell** or the scleral cover shell prosthesis. The evisceration defect presents a situation where excellent cosmetics can be realized because the final anatomy is so close to normal.

Enucleation is the removal of the entire globe after the extraocular muscles and the optic nerve have been transected. The enucleation patient may present with numerous postsurgical complications which can be corrected either surgically or prosthetically.

Exenteration is the removal of the entire contents of the orbit, including the extraocular muscle. The periosteum may or may not be maintained. This procedure is usually performed due to some form of malignant disease but may also be due to trauma, infection, or less aggressive disease processes. Careful preparation and counseling of the patient is necessary. Orbital prostheses, while appearing natural, will not move; eyelids will not blink. Unrealistic expectations by the patient or his family must be evaluated and corrected to prevent psychological reactions which may lead to rejection of the restoration.

Case Report

A thirty eight year old man reported to the department of Prosthetics with a history of missing right eye, wearing an ocular prosthesis. He was not at all satisfied with the appearance and color of the artificial eye which he was wearing and also he complained of the position and gaze of the artificial eye (Fig.1). History revealed surgical removal of the eye ball after a traumatic injury. The eye prosthesis was removed from the socket and thorough examination was done. Examination revealed enucleated right eye socket with mildly inflamed conjunctival lining due to ill-fitting overextended old prosthesis. Treatment plan included fabrication of new custom made ocular prosthesis.

Before making the impression the patient was instructed not to wear the old prosthesis for 72 hours. Patient was recalled after 3 days and it was found to have healthy conjunctival lining and absence of inflammation. Primary impression was made using irreversible hydrocolloid (Plastalgin, Septodont) (Fig.2) and a primary cast was poured with dental stone (Kalstone, Kalabhai) (Fig.3). A custom made acrylic tray was fabricated with modified insulin syringe and final impression was made using light body polyvinyl siloxane impression material (Reprosil, Dentsply Internationals). It was injected into the right eye socket through the modified syringe, and

then the patient was directed to move his eyes up and down to facilitate the flow of the impression material to all aspects of the socket. Patient was asked to look at a distant spot at eye level with his gaze maintained in a forward direction. Thus, the final impression was completed. After the material was set, cheek, nose and eyebrow regions were massaged to break the seal. While the patient gazed upwards, the cheek was pulled down and the inferior portion of the impression rotated out of the socket. Impression was inspected for accuracy and excess material was trimmed (Fig.4). Then, it was invested in irreversible hydrocolloid (Plastalgin, Septodont) in a small flexible rubber bowl. Irreversible hydrocolloid mould was partially split after setting, and impression of the socket removed. The space left in the mold was filled with molten modeling wax to fabricate a scleral wax pattern. After finishing and polishing, the wax pattern was tried in the socket. For the selection and position of the iris, contralateral eye was used as a guide. Prefabricated eye shell matching the patient's natural iris in color and size was selected. Iris portion of this shell was separated and positioned on the wax pattern blending with the rest of the scleral wax pattern. After the placement of iris disc, the wax pattern was highly polished and finally tried in the right eye socket for position, gaze and esthetics. Then, the wax pattern was flaked and dewaxed. After dewaxing, separating medium was applied and the iris disc was replaced in its position in the mould and was packed using tooth colored heat cure acrylic of appropriate shade. Processing was done using short curing cycle. After curing, prosthesis was recovered, preserving the split mold. Then, 0.51mm of the surface layer of scleral portion was trimmed. Red nylon fibrils separated from denture acrylic resin polymer were used to mimic blood vessels. This was covered with heat cured clear acrylic resin and was processed in the same mold which was preserved after acrylization. This helps to give life like appearance and depth for the characterization. After processing, prosthesis was recovered. It was finished and polished to a high shine, disinfected and stored in water for 24 hrs before insertion. Prosthesis was inserted into the socket, and checked for any areas requiring adjustment (Fig.5). Esthetics and comfort of the patient were evaluated. Ophthalmic lubricant was advised for lubrication.

Discussion

The problems of earlier prefabricated

prosthesis like poor appearance, color, position and gaze of the artificial eye was rectified with remarkable improvement in esthetics, comfort and satisfaction of patient by using a systematic and methodical approach in terms of techniques and materials..

Conclusion

The maxillofacial prosthetic specialist desires to provide prosthetic treatment to the best of his ability. The ocular prosthesis placed in an ideal socket can be both esthetic and comfortable. Presurgical conferences between the involved specialists will help to resolve many rehabilitative problems leading

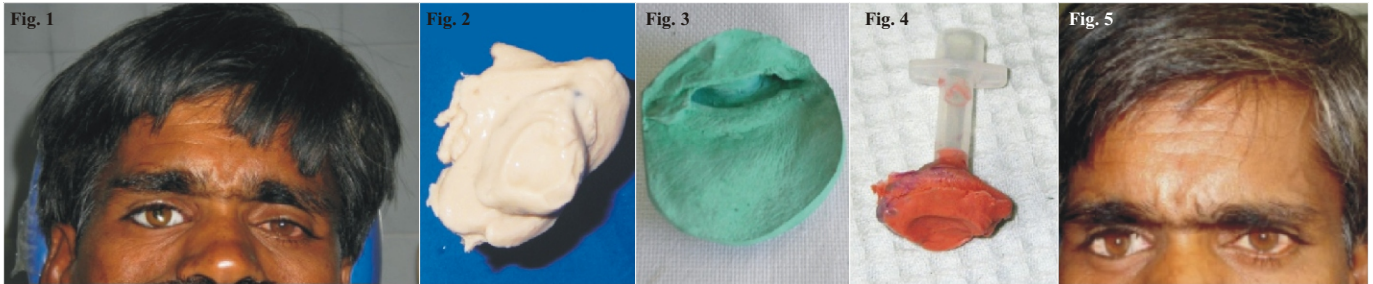
to more ideal restorative treatment. Although the prosthesis cannot restore the vision but it reduces the psychological trauma of being without an eye.

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