International Journal of
Ophthalmology & Vision Research

Case Report

Demolishing Encumberence-A Facile Approach to Eye Prosthesis Fabrication: Case Report

Barath Panjanan D*, Supriya Nandi, Pavan Kumar KR, Nandeeshwar DB and Dhanyakumar BH

Department of Maxillofacial Prosthodontics, Bapuji Dental College and Hospital, Davangere, Karnataka, India

***Address for Correspondence:** Barath Panjanan D, Department of Maxillofacial Prosthodontics, Bapuji Dental College and Hospital, Davangere, Karnataka, India, E-mail: barath1992p@gmail.com

Submitted: 29 August 2020; **Approved:** 04 September 2020; **Published:** 09 September 2020

Cite this article: Barath Panjanan D, Supriya Nandi, Pavan Kumar KR, Nandeeshwar DB, Dhanyakumar BH. Demolishing Encumberence-A Facile Approach to Eye Prosthesis Fabrication: Case Report. Int J Ophthal Vision Res. 2020;4(1): 009-0012.

ISSN: 2640-5660

ISSN: 2640-5660

ABSTRACT

Loss of eye leads to a disturbing state of mind that is always associated with social stigma which leads to irreparable loss of psychological well-being. The art and science of eye prosthesis has been refined over many decades to provide a cosmetic replacement of the enucleated or eviscerated eye. The goal is to return the patient to the society with a normal appearance and reasonable motility of the prosthetic eye so that the patient returns back to leading a relatively former life.

Keywords: Ocular prosthesis; Ocular defect; Scleral shell with iris

INTRODUCTION

In the recent years there seems to be dramatic increase in the demand for prosthetic rehabilitation by patients with facial defects [1]. Loss of eye could be due to malignancies (retinoblastoma being the most common), trauma, tumors, intraocular infections, coats disease and uveitis [2]. Patients requiring treatment with ocular prosthesis are those who have lost ocular structure through evisceration or enucleation [3].

Surgical procedures adopted for the removal of an eye were classified by Peyman, et al. [4] into three general categories:

- Evisceration (removal of intraocular contents of the globe),
- enucleation (removal of the globe and parts of the optic nerve) and
- exenteration (removal of the entire orbital contents, primarily for eradication of malignant orbital tumors) [4].

Unfortunately, many of the surgical procedures are extensive and thus leaving large defects that compromise not only the function and esthetics but also the psychosocial status of the patient. These problems require prompt rehabilitation with surgery or prosthetics. However surgical reconstruction is often contra indicated in the presence of large defects or in high risk patients. Prosthetics offer the advantage of quick, reversible and medically uncomplicated rehabilitation. In addition, the restoration may be readily removed to allow evaluation of the health of the underlying tissues [5].

CASE REPORT

A 20-year-old male patient, reported to the department with a chief complaint of loss of right eye due to trauma and subsequent evisceration 10 years back. Examination revealed enucleated right eye socket with healthy conjunctival lining and absence of infection. History revealed surgical removal of the eye ball after a traumatic injury at an agricultural site. A thorough examination of adjacent tissue unveiled no signs of inflammation and adequately healed right socket and absence of eyeball (Figure 1).

Palpebral fissures were normal with adequate depth of upper and lower fornices. Movements of eye musculature were restricted especially with the up and down movement. Condition of conjunctiva was non inflamed and there was absence of any scar tissue. A Diagnosis of ocular defect of right eye with restricted movements was put forward with a fair prognosis. The treatment planned was Fabrication of an ocular prosthesis with a pre-fabricated scleral blank containing iris (Figure 2).

Iris symmetry and orientation was done by scribing vertical lines mediolaterally along inner and outer canthus of the eye and one along the midline of the normal eye and face. This helped in achieving the exact dimension of iris from the scleral blanks. Taking this into consideration, the dimension and color of the iris was chosen which closely matched the contralateral eye. This was further tried on to the patient and eye movements were contemplated ensuring the fit of the prosthesis. There was ample amount of gap noted at the upper lateral corner of the eye that demanded need for material.

"Chalian stated that prefabricated resin eye should not be used in eviscerated/ enucleated socket as intimate contact between ocular prosthesis and tissue beds is needed to distribute pressure equally".[5]Hence an impression was made with polyvinylsiloxane light body impression material using the scleral blank as a conformer to record the accurate depth of the socket by asking the patient to gaze upward, downward left and right. Once the impression was set, it was carefully removed and a wax pattern was made which was meticulously added over the scleral blank and tried on to the patient. Necessary carving of the wax pattern was done until the fit was accurate. The eye movements were noted and it was made sure that the artificial eye allowed full closure of the lids without any tension of the skin. Once the try in was verified, the scleral blank along with the wax trial was invested, de waxed and cured with heat cured clear acrylic resin like conventional complete denture lab procedure (Figure 3, 4).

Following curing, the prosthesis was deflasked, trimmed with round, smooth margins, polished and inserted in the enucleated socket (Figure 5).

The contours of the prosthesis were thoroughly evaluated and the comfort and esthetics was verified. The patient was educated about the insertion, removal and cleaning of the prosthesis and application

Figure 1: Pre-operative view.

Figure 2: Iris orientation.

ISSN: 2640-5660

of lubricant to keep the socket moist. A pair of no power glasses were advised to make the prosthesis look camouflaged.

Recall checkups of the patient was done at 1st,3rd,7th and 30th day post insertion and a further 6 months follow up was advised (Figure 6).

Figure 3: Impression making of the defect site.

Figure 4: Final impression.

Figure 5: Flasking and packing.

Figure 6: Final prosthesis insertion.

DISCUSSION

The art of making artificial eyes has been practiced since ancient times. Egyptian priests made the first ocular prosthesis, called Ectblepharons, as early as the 5th century BC. In those days, artificial eyes were made of enameled metal or painted clay and attached to cloth and worn outside the socket [6]. Since then, Several techniques have been used for fitting and fabricating artificial eyes, like empirically fitting a stock eye (ocular shell prosthesis), modifying a stock eye by making an impression of the ocular defect and the custom eye technique. Each technique has its own pros and cons. Custom-made prosthetic eye fabrication involves complex painting procedures in various stages that are quite difficult and based purely on painting skills of the operator [7]. Pre-fabricated prosthesis carries potential disadvantages of poor fit (which endangers the eye to granuloma formation), poor esthetics and poor eye movements [8].

The most commonly used prosthetic eye are glass or methylmethacrylate resin. Glass is not the material of choice as it is subjected to damage and surface deterioration from contact with orbital fluids, leading to a usable life expectancy of only 18-24 months. Methyl methacrylate resin is superior to other ocular prosthetic materials with regard to tissue compatibility, aesthetic compatibilities, durability and permanence of color, adaptability of form, cost and availability [8,9].

Keeping in mind the complexity of case and availability of material, the above discussed case with custom made stock eye offers a relatively easy method for the fabrication of eye prosthesis which not only offers great comfort and esthetics but also is time defending and is relatively inexpensive.

However, the limitations of the technique are the availability of a pre-fabricated stock eye that matches the iris and pupillary part. Also, the long-term color stability of the heat-cured acrylic and the strength of its union with the stock eye will have to be closely evaluated [10].

CONCLUSION

Prefabricated custom made stock eye utilizes the advantages of both pre-fabricated and custom-made methods and is a boon for those patients who cannot afford extensive implant procedures at the cost of comfort and esthetics. The artificial eye is a triumph of resourceful human ingenuity, and a tribute to the unique enduring spirit that persists in the desire to prevail over adversity. The next time you gaze into an unseeing eye, you just might see a happy smile face painted where the iris ought to be.

REFERENCES

1. William R Laney. Maxiilofacial prosthetics.
2. Sengupta S, Krishnakumar S, Biswas J, Gopal L, Khetan V. Fifteen-year trends in indications for enucleation from a tertiary care center in South India. Indian J Ophthalmol. 2012; 60: 179-182. DOI: 10.4103/0301-4738.95867
3. Thomas D Taylor. Clinical maxillo facial prosthetics.
4. Peyman GA, Sanders DR, Goldberg MF. Principles and practice of ophthalmology. 1987.
5. Chalian VA. Treating the patient with facial defects, in Laney WB (ed): Maxillofacial Prosthetics. Littleton, MA. PSG Publishing co, 1979; 286.
6. Somkuwar K, Mathai R, Jose P. Ocular prosthesis: Patient rehabilitation people. Journal of Scientific Research. 2009.

ISSN: 2640-5660

7. Allen I, Webster HE. Modified impression method of artificial eye fitting. Am J Ophthalmol. 1969; 67: 189-218.

8. Cain JR. Custom ocular prosthesis. J Prosthet Dent. 1982; 48: 690-694. DOI: 10.1016/s0022-3913(82)80030-9

9. Erpf SF. Comparative features of plastic and/or glass in artificial-eye construction. Arch ophthalmol. 1953; 50: 737-734. DOI: 10.1001/archopht.1953.00920030748009

10. Kaur A, Pavaiya A, Vikram Singh S, Dayal Singh R, Chand P. A simplified approach to fabrication of an ocular prosthesis: A case series. Indian J Dent Res. 2010; 21: 615-617. https://tinyurl.com/y4vde3ql