ISSN: 2581-5989
PubMed - National Library of Medicine - ID: 101738774

International Journal of Dental Science and Innovative Research (IJDSIR)
IJDSIR : Dental Publication Service
Available Online at: www.ijdsir.com
Volume – 3, Issue – 6, December - 2020, Page No. : 425 - 432

Customized Ocular Prosthesis - A Case Report

[1]Sumit Deshpande, Professor, Department of Maxillofacial Prosthodontics, Al Badar Rural Dental College & Hospital, Kalaburagi, Karnataka, India.

[2]Nagaprasad M Naik, Maxillofacial Prosthodontist and Implantologist, Karwar, Karnataka, India.

[3]Syed Abdul Qayum, MDS, Students, Department of Maxillofacial Prosthodontics, Al Badar Rural Dental College & Hospital, Kalaburagi, Karnataka, India.

[4]Siddhant Dandawate, MDS, Students, Department of Maxillofacial Prosthodontics, Al Badar Rural Dental College & Hospital, Kalaburagi, Karnataka, India.

Corresponding Author: Sumit Deshpande, Professor, Department of Maxillofacial Prosthodontics, Al Badar Rural Dental College & Hospital, Kalaburagi, Karnataka, India.

Citation of this Article: Sumit Deshpande, Nagaprasad M Naik, Syed Abdul Qayum, Siddhant Dandawate, "Customized Ocular Prosthesis - A Case Report", IJDSIR- December - 2020, Vol. – 3, Issue - 6, P. No. 425 – 432.

Type of Publication: Case Report

Conflicts of Interest: Nil

Abstract

Defect of the maxillofacial region can have traumatic impact on the psychology and emotions of an individual. A crucial role in facial expression is performed by the eyes and surrounding tissues. A missing eye can be restored prosthetically. The main aim of maxillofacial prosthodontist is to achieve adequate esthetic and function via rehabilitation to improve lifestyle and social acceptance. The ocular prosthesis can be a stock eye shell or custom-made eye. Exact matching of the contralateral eye is of utmost importance. Thus, this case report presents a schematic technique for the fabrication of a customized unilateral ocular prosthesis.

Keywords: Maxillofacial prosthesis, Eye prosthesis, custom-made eye prosthesis, Ocular defect, light-body impression, Maxillofacial Rehabilitation.

Introduction

A multidisciplinary approach is essential in offering meticulous and effective rehabilitation of ocular defect. The combined efforts of the maxillofacial prosthodontist, the ophthalmologist, and the plastic surgeon are necessary to restore the patient's quality of life [1].

Of all senses, vision is the most delightful, and eyes are the first elements to be cited [2]. Loss of an eye as a result of congenital defects, irreparable trauma, or tumors will have a physical, social, and psychological [3,4].

Case Report

A 12 years old male patient reported to the Department of Maxillofacial Prosthodontics, Al-Badar Rural Dental College & Hospital, Kalaburagi via referral of an ophthalmologist with a chief complaint of missing left eye due to traumatic injury eight months back, which had led

to the surgical removal of the complete eye (Enucleation) followed by rehabilitation of stock eye prosthesis. On Clinical examination of the stock eye prosthesis, it was observed that the iris position and sclera coloration failed to match with the contralateral eye (Figure 1).

Figure 1

On intraocular examination, the left ocular tissue bed was healthy with sufficient depth between the upper and lower palpebra for retention of the prosthesis (Figure 2). The right eye was having hyperopia (farsightedness) and the patient was using spectacles for that.

The patient expressed his sadness and concern with the stock eye prosthesis and needs it to be replaced with a new prosthesis with enhanced esthetics.

Figure 2

Treatment Plan

Based on the clinical findings and existing scenario, the treatment was planned to fabricate a customized ocular prosthesis to meet the esthetic needs of the patient. The complete treatment plan was explained along with the limitation of the technique, and consent was obtained from the patient's guardian.

Procedure

The debris and secretions were cleaned from the ocular bed by irrigating saline. Vaseline was applied to the eyelid and surrounding tissues.

Primary impression was made by injecting Cold soothing light body impression material on the ocular bed. while material was in the setting stage, the mixed heavy body impression was placed on it(addition silicon GC FLEXCEED IMPRESSION KIT) (Figure 3).

Beading, boxing was done and plaster (type 2 gypsum) was poured (Figure 4). The cast was obtained excess plaster was removed and undercuts were blocked using base plate wax (Figure 5). A 1 inch extension of the suction tip end was cut. Separating media was applied and cold cure special tray was fabricated with the suction tip.

For the light body mixing tip to easily fit in (Dpi Rr Cold Cure Laboratory Pack - Pink)[Figure 6].

Figure 3

Figure 4

Figure 5

Figure 6

The special tray was adjusted accordingly, polished, and checked (Figure 7). Secondary impression was made by injecting light body thought the attached tube, eye movements were asked to perform and impression was obtained (Figure 8 and 9).

Figure 7

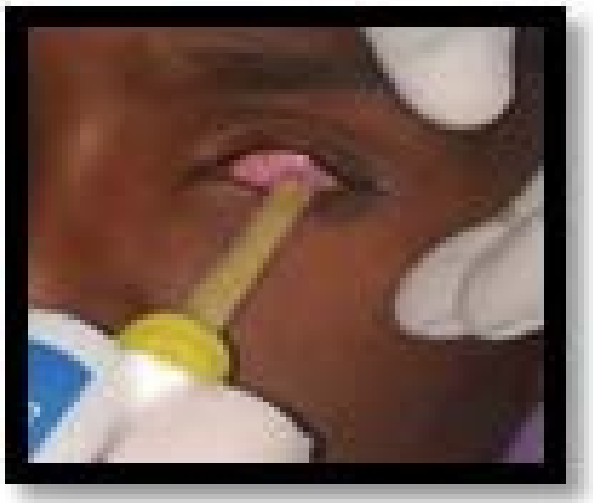

Figure 8

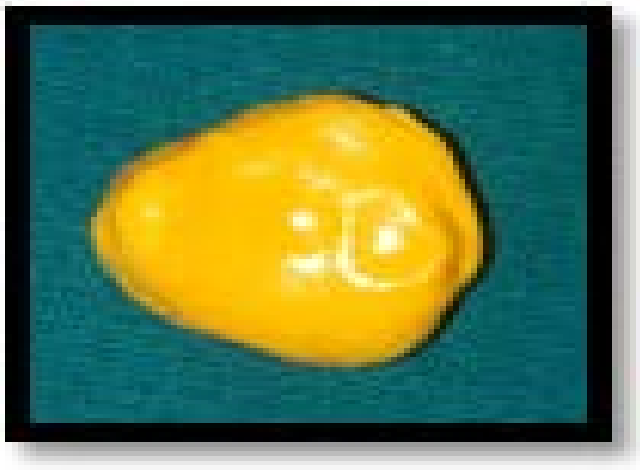

Figure 9

Figure 10

Figure 11

Figure 12

The suction tip end embedded was evenly covered with modelling wax (Hindustan Modeling Wax; The Hindustan Dental Products, Hyderabad, India) and the half impression was placed in a two-part flask at the bottom half part till the edge of impression gets soaked in the die stone (type 4) (Figure 10).

Removed the excess gypsum, let material loose its shine and then apply separating media (Figure 11 and 12).

The same should be done for the top half part, to obtain the mould. The impression was removed from the mould and the tube negative replica (Figure 11) surface was sealed using die stone(Figure 15).

Molten modelling wax was poured into the die stone mould to create a wax conformer (wax pattern) of the prosthesis (Figure 13). The try-in was done, adjusted accordingly and again flasking was done (Figure 14).

Figure 13

Figure 14

Figure 15

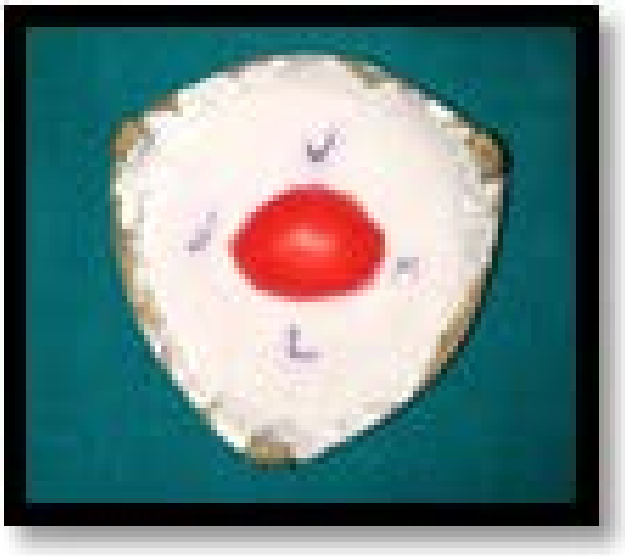

Figure 16

The sclera was made using white color heat polymerizing acrylic resin (DPI Tooth Moulding Powder; Dental Products of India LTD, Wallace Road, Mumbai) (Figure 16 &17).

Figure 17

Figure 18

Figure 19

Figure 20

The polished conformer (Figure 17) is tried in without discomfort and the center of the pupil was marked while the patient gazes directly at the clinician [5]. The dimension of the iris was measured using a millimeter measurement gauge. The outline of the iris is then marked on the conformer using a pencil (Figure 18). The sclera conformer is tried once more to verify the position and dimension of the iris.

The basic requirement in matching sclera with the contralateral eye which can be accomplished by careful production of sclera vascular patterns close to medial, lateral canthi, corneal area and region of pigments in the

prosthesis. Iris painting was done using acrylic paints followed by a satisfactory try-in.

Apply a layer of heat cure clear acrylic resin on the conformer then flask and keep under processing with long curing cycle to completely cure and remove all the residual monomer before it is deflasked (Figure 19 & 20). This enhances the depth of underlying scleral, corneal contents and reduces unwanted irritation form residual monomer.

The processed prosthesis was finished, polished, and inserted into the patient's ocular socket (Figure 21). Post Insertion instructions were given for removal by using a suction holder or two index fingers by keeping a towel underneath, For cleaning practice mild soap or detergents with fingertips, Wearing the prosthesis during day and night does not harm but maintain tissue contours and use of lubricant for keeping the eye moist as per ophthalmologist. Advice not to do stretched eye movements when gazing at something rather move neck along with gaze to make a camouflage effect. if callus formed, should be removed using fingernails. Loss of prosthesis gloss should be reported for polishing and finishing to the maxillofacial prosthodontist [6].

Discussion

The need for early consultation with the maxillofacial prosthodontist has been emphasized in the rehabilitation of defect as growth might hamper if the tissue is unsupported or supported with an ill-fitting prosthesis for a long duration of time.

The construction of a custom made ocular prosthesis for a child is equally important as for an adult; however, a periodic enlargement of the prosthesis is crucial for a developing child to aid in the normal development of the lids and the soft tissue lining the orbital bone [7]. The socket is completely developed at about 12 years of age; therefore teenage patients should be treated as adults [8].

Figure 21

Conclusion

The ocular prosthesis can also be prefabricated or custom made. The prefabricated (Figure 1) prosthesis consists of possible disadvantages of ill-fit, un-esthetic, and poor eye movements [7]. A custom-made ocular prosthesis (Figure 21) is desired for patients as it has the advantage of close adaptation to the tissue bed, offers better comfort, and restores the physiological function of the eye. Customized ocular prosthesis fabricated with detailed work flow is presented in this case report.

References

1. Mishra SK, Chowdhary R. Reproduction of custom made eye prosthesis maneuver – A case report. J Dent Oral Hyg 2009;1:59-63.
2. Doshi P, Aruna B. Prosthetic management of patient with ocular defect. J Indian Prosthodont Soc 2005;5:37-8.
3. Newton JT, Fiske J, Foote O, Frances C, Loh IM, Radford DR. Preliminary study of the impact of loss

of part of the face and its prosthetic restoration. J Prosthet Dent 1999;82:585-90.

4. Damico FM, Kiss S, Young LH. Sympathetic ophthalmia. Semin Ophthalmol. 2005;20(3):191-7.
5. Perman KI, Baylis HI. Evisceration, enucleation, and exenteration. Otolaryngol Clin North Am 1988;21:171-82.
6. Parr, G. R., Goldman, B. M., & Rahn, A. O. (1983). *Postinsertion care of the ocular prosthesis. The Journal of Prosthetic Dentistry, 49(2), 220–224.* doi:10.1016/0022-3913(83)90506-1
7. Cain JR. Custom ocular prosthesis. J Prosthet Dent 1982;48:690-4.
8. Bartlett SO, Moore DJ. Ocular Prosthesis: A Physiologic System. J Prosthet Dent 1973;29:450-9.
9. Benson P. The fitting and fabrication of a custom resin artificial eye. J Prosthet Dent 1977;38:532-8.