

## CASE REPORT

### Prosthetic rehabilitation of a post evisceration patient with Non-Fabricated ocular prosthesis: A case report

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#### ABSTRACT

**Keywords:** Eye prosthesis, Ocular rehabilitation, Phthisis bulbi

The disability associated with the loss of eye can cause significant physical and emotional problems in sufferers. Rehabilitation of patients with eyeball loss requires an eye prosthesis that can restore optimal cosmetic and psychological function. Eye prostheses can be made from non-fabricated acrylic resin. In this case report, a 23-year-old female patient came to the RSGM Prof. Soedomo, Faculty of Dentistry, Gadjah Mada University with complaints of missing left eye since 8 years ago with a diagnosis of phthisis bulbi. The results of the clinical examination showed that the conjunctiva was in good health and there was no infection. The treatment in this case was the manufacture of non-fabricated ocular prostheses made of acrylic resin. Custom-made ocular prostheses provide satisfactory results thereby improving psychology and emotional as well the social aspect. (IJP 2024;5(2):132-134)

#### Introduction

The loss of an eye impairs visual function and also results in noticeable physical deformity.<sup>1</sup> It may be caused by a congenital defect, trauma, and necrotizing tumor known as phthisis bulbi. It is characterized by small, shrunken, non-functional eye, leading to esthetic disfigurement of the face, which significantly affects the individual physical, psychological, emotional, and social well-being in severe.<sup>2</sup> The surgical procedure is evisceration, enucleation, or exenteration. When surgical site is fully healed and dimensionally stable, fabrication of an ocular prosthesis may be undertaken. Patient with evisceration defects can be treated with non-fabricated ocular prosthesis.<sup>1,3</sup>

The ocular prosthesis is an artificial eye used to improve the appearance of a person who has lost an eye due to injury or disease.<sup>4</sup> The ocular prosthesis can be classified as stock shell and custom-made prosthesis or non-fabricated ocular prosthesis. The materials are lightweight, durable and resistant to moisture and bacteria.<sup>5</sup> In this case report, a custom-made eye prosthesis was chosen over the prefabricated one as it has better fit, adaptation, and patient comfort.

#### Case Report

A 23-years-old female reported to the Department of Prosthodontics, RSGM Prof. Soedomo FKG UGM with the chief complaint of the appearance of the old prosthesis. She presented with evisceration performed eight years

which was diagnosed phthisis bulbi.

On objective examination, the eye socket was normal; there was no irritation; and there was no infection [figure 1](#). The eyelid muscles were still in good condition, the patient could open and close the eyelid. The eye socket was deep enough to allow good retention of the eye prosthesis.

The informed consent was provided by the Prosthodontics Specialist Universitas Gadjah Mada, RSGM, and given to the patient. The patient agreed to select a custom ocular prosthesis made of acrylic resin.

The patient's eye socket applied a thin layer of Vaseline, prior to making an impression using hydrocolloid irreversible for making a custom tray extraoral [figure 2](#). The cast was filled with dental stone as a working model. A custom tray was fabricated with polymethyl methacrylate using the contours of an eye model. The custom tray was finished, polished, and tried in the patient's socket, and minor adjustments were made [figure 3](#).

An impression of the socket was made using light body consistency addition silicone elastomeric impression material. The patient was instructed to look in front at the level of the eyes during the impression was made. The impression was invested with die stone to obtain the final cast [figure 4](#).

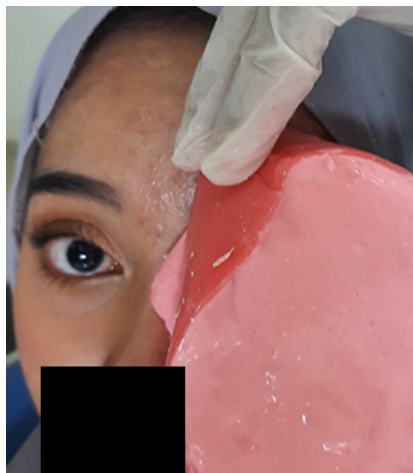
The baseplate wax was melted into the mold to fabricate a sclera wax pattern. A sclera wax pattern was fitted and adjusted in the

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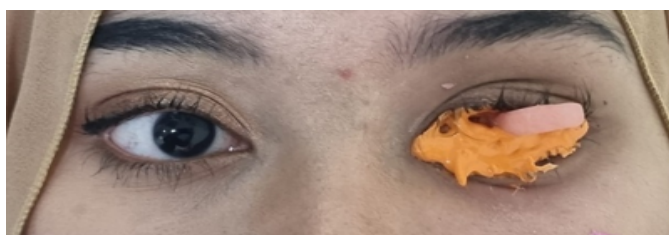
**Figure 1. Pre-treatment**



**Figure 2. Impression for custom-made tray extraoral**



**Figure 3. Try in a custom-made tray**



**Figure 4. Final impression**



**Figure 5. Sclera wax pattern try in**

socket area until contour of the eyelid was achieved [figure 5](#). The patient was asked to perform all movements of the sclera wax pattern. Then shade of the sclera portion was selected using the Vita classical shade guide. The scleral portion of the natural contra lateral eye was matched to obtain the shade of the scleral portion of the prosthesis.

The final sclera wax pattern was invested in a flask using die stone. The flask was put in boiling water for 5 minutes. After the dewaxing procedure, packing and curing were done with the selected shade of heat cure tooth-colored acrylic resin, incorporated with red nylon fiber to simulate the blood vessels of the contralateral natural eye. Then, acrylic sclera was tried in the socket area [figure 6](#).

The size of the iris was determined and marked on the prosthesis using the natural eye as a guide. The patient was instructed to sit up straight, with the prosthesis in the patient's socket eye, apply a caliper. The iris diameters usually range from 10 mm, 10.5 mm, 11 mm, 11.5 mm, and 12 mm. After the position of the iris and pupil were achieved, acrylic sclera was sent to the laboratory for iris coloring, polishing and finishing [figure 7](#).

The final step was the insertion of the eye prosthesis. The result was ascertained from the satisfied look on the face of the patient. The patient was given instructions of prosthesis wearing and home care protocol [figure 8](#).

## Discussion

The disfigurement caused by the loss of an eye has a physical and emotional problem. Most patients experience significant stress caused by the loss of eye and societal reactions to the facial impairment. Replacement of the lost eye as soon as possible after healing from eye removal is necessary to promote physical and psychological healing for the patient and to improve social acceptance.<sup>7</sup>

Ocular prostheses may be prefabricated or custom-made.<sup>8</sup> Differences between prefabricated and custom-made ocular prostheses are quite significant. The prefabricated prosthesis has several disadvantages, for example, poor fit, constant tissue irritations due to bacterial growth in the accumulated fluid in tissue prosthesis interface and compromised esthetic outcome.<sup>9</sup> Custom-made ocular prostheses is preferred to increase stability and aid in movement as the contour of the socket defect is taken into consideration. Ocular prosthesis using acrylic resin has various advantages such as—non-brittle, better adaptation, more comfortable, better esthetics, longer serviceability, and easy to repair or polish.<sup>10,11</sup>

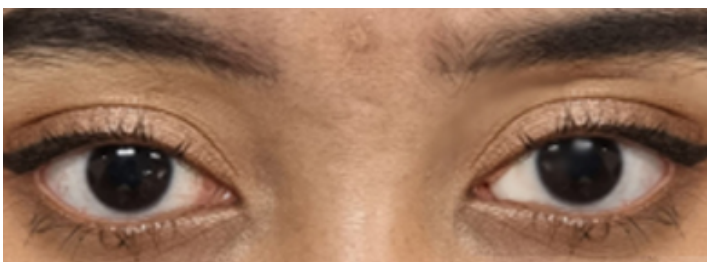
Impression techniques using custom or stock trays to carry impression materials into the defect interferes with complete closure of eyelids and functional molding of the material by various ocular movements. Defect socket can be recorded in full detail using the dimensionally stable light body consistency of polyvinyl siloxane impression material.<sup>12</sup> The retention of the ocular prosthesis must be considered in addition to aesthetics so that the patient feels comfortable and calm when wearing the prosthesis. In the present case, retention of the ocular prosthesis was obtained by anatomical



**Figure 6.** Acrylic sclera try in



**Figure 7.** Positioning of iris disc



**Figure 8.** Insertion of ocular prosthesis

undercuts.<sup>13</sup> When used daily, the prosthesis must be removed regularly to maintain tissue health and hygiene. The prosthesis may be cleaned with a mild soap or baby shampoo, and with wet hands, gently wash the prosthesis between fingers. All soap must be rinsed from the prosthesis and hands before using the prosthesis.<sup>14</sup>

## Conclusion

Custom-made prosthesis allows infinite better fit and satisfaction. The procedure used in this case is cheaper, affordable, and can be carried out in a small clinical set-up. The prosthodontist has an important role by fabricating a well-crafted ocular prosthesis and also rehabilitating the patient on the emotional as well as the social aspect.

## References

1. Parekh AA, Bhalerao S. Rehabilitation of ocular defects: Custom made and modified stock eye prostheses. *SRM Journal of Research in Dental Sciences*. 2016 Jan 1;7(1):41.
2. Aggarwal H, Singh RD, Kumar P, Gupta SK, Alvi HA. Prosthetic guidelines for ocular rehabilitation in patients with phthisis bulbi: A treatment-based classification system. *The Journal of Prosthetic Dentistry*. 2014 Jun 1;111(6):525-8.
3. Jamayet NB, Srithavaj T, Alam MK. A complete procedure of ocular prosthesis: A case report. *International Medical Journal*. 2013 Dec 1;20(6):729-30.
4. Pun SN, Shakya R, Adhikari G, Parajuli PK, Singh RK, Suwal P. Custom ocular prosthesis for enucleated eye: a case report. *JCMS Nepal*. 2016 Nov 23;12(2):78-80.
5. Colvenkar S, et al. Custom Ocular Prosthesis: A Case Report. *Cureus*. 2023 Jun 30;15(6).
6. Gupta RK, Padmanabhan TV. Prosthetic rehabilitation of a post evisceration patient with custom made ocular prosthesis: A case report. *The Journal of Indian Prosthodontic Society*. 2012 Jun;12:108-12.
7. Artopoulou I, Montgomery PC, Wesley PJ, Lemon JC. Digital imaging in the fabrication of ocular prostheses. *The Journal of prosthetic dentistry*. 2006 Apr 1;95(4):327-30.
8. Shah V, Yadav L, Singh M, Kharbanda S. Custom ocular prosthesis in rehabilitation of a child operated for retinoblastoma. *National Journal of Maxillofacial Surgery*. 2015 Jul;6(2):232.
9. Somkuwar K, Mathai R, Jose P. Ocular prosthesis: patient rehabilitation: a case report. *People's Journal of Scientific Research*. 2009 Jul;2(2):21-6.
10. Lanzara R, Thakur A, Viswambaran M, Khattak A. Fabrication of ocular prosthesis with a digital customization technique—A case report. *Journal of family medicine and primary care*. 2019 Mar;8(3):1239.
11. Cafiero-Chin M, Marques C, Danz HJ. Ocular prosthesis: indications to management. *Canadian Journal of Optometry*. 2015 Jul 6;77(2):24-.
12. Tripuraneni SC, Vadapalli SB, Ravikiran P, Nirupama N. An innovative impression technique for fabrication of a custom made ocular prosthesis. *Indian Journal of ophthalmology*. 2015 Jun;63(6):545.
13. Azhar IS, Megantara RW, Dahlan A. Custom-made ocular prosthesis for rehabilitation of missing parts of the face: a case report. *Acta Medica Philippina*. 2021 Nov 24;55(8).
14. Raizada K, Rani D. Ocular prosthesis. *Contact Lens and Anterior Eye*. 2007 Jul 1;30(3):152-62.