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**Dr. Arushi Chopra**  
Post-Graduate Student,  
Department of Prosthodontics  
and Crown & Bridge, Subharti  
Dental College and Hospital,  
Meerut, Uttar Pradesh, India

**Dr. Sumit Aggarwal**  
Professor, Department of  
Prosthodontics and Crown &  
Bridge, Subharti Dental College  
and Hospital, Meerut, Uttar  
Pradesh, India

**Corresponding Author:**  
**Dr. Arushi Chopra**  
Post-Graduate Student,  
Department of Prosthodontics  
and Crown & Bridge, Subharti  
Dental College and Hospital,  
Meerut, Uttar Pradesh, India

## Prosthetic management of an enucleated eye: A case report

**Dr. Arushi Chopra and Dr. Sumit Aggarwal**

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### Abstract

A person becomes disabled on loss of any sense organ of which eye is one of the most sensitive organ. Loss of an eye can occur due to various reasons and can be rehabilitated using various materials and methods. Among the various materials used, resin has proved to be the most accurate material. Rehabilitation of the missing eye can be done using stock eye shell, custom made prosthesis or by customizing the stock eye. Our clinical report aims to show the fabrication of a semi-customized ocular prosthesis using stock iris and customized sclera. The patient was both psychologically and esthetically satisfied.

**Keywords:** Ocular prosthesis, customized stock eye, unucleation, scleral shell

### Introduction

Loss of an eye makes the person socially and psychologically crippled and also severely hampers his/her quality of life. Anophthalmia may be congenital or acquired. The surgical contemplations for removal of an eye include irreparable trauma; tumor; a blind, painful eye; histologic confirmation of a suspected diagnosis; the possible prevention of sympathetic ophthalmia; and cosmetic reasons<sup>[1]</sup>. Three types of surgeries are responsible for acquiring the defect: evisceration; enucleation; and exenteration<sup>[2]</sup>. In evisceration, ample mobility of the prostheses is present owing to the presence of extraocular muscles<sup>[3]</sup>.

In today's time, these patients can be rehabilitated using three types of acrylic resin prosthesis: prefabricated stock eyes, stock eyes modified by various methods, and customized eye prosthesis made from an impression of the socket<sup>[4]</sup>.

The ultimate goal is to provide the patient with a prosthesis which gives him/her a life-like appearance, and also a sense of social, physical and psychological well-being.

The aim of this article is to present the rehabilitation of such patients belonging to different age groups, using various techniques provided in the literature.

### Case report

A 10 years old patient reported to the Department of Prosthodontics with the chief complaint of missing right eye which he had lost while bursting a cracker during Diwali. After thorough check up, it was classified as evisceration because the sclera was intact. The first step was to select custom eye shell of appropriate size, according to which clear acrylic tray was fabricated with perforations in it and a syringe was attached in the center. Vaseline was applied around the eye including the eyelashes, so that the impression material doesn't stick.

Light body impression material was loaded into the tray to make the impression. The patient was made to perform various eye movements to record the impression which was poured in dental stone with orientation grooves. The selected pre-fabricated eye shell was then modified using modelling wax. Once, the bulge of the eye and the level of iris was set with the help of trubyte indicator after staring at a straight distant point, it was flaked using two pour technique. After dewaxing, tooth colored heat cure acrylic resin was packed into it and bench cured for 1 hour after which, it was kept in water bath for 2 hours. It was then finished and polished and final prosthesis was delivered to the patient.



Fig 1: Pre Operative Photograph of the Patient

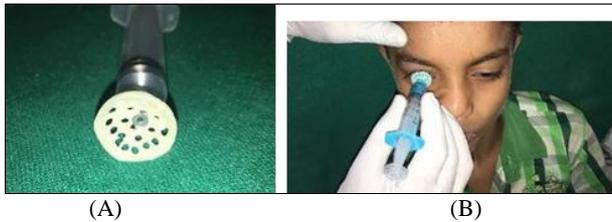


Fig 2: (A) Clear Acrylic Tray with Perforations (B) Tray used to carry Light Body for making the Impression



Fig 3: Cast obtained after pouring Impression and Directions Marked

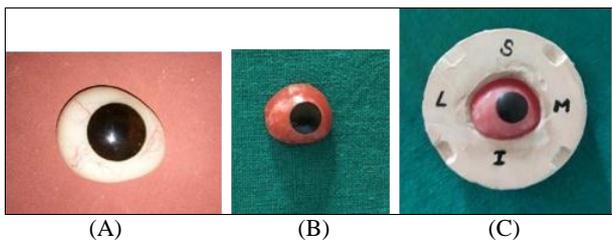


Fig 4: (A) Stock Eye, (B) Modified using Wax, (C) Modified Shell Orientation checked on the Cast

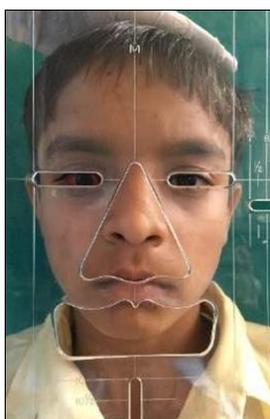


Fig 5: Wax Trial of Shell using Trubyte Indicator

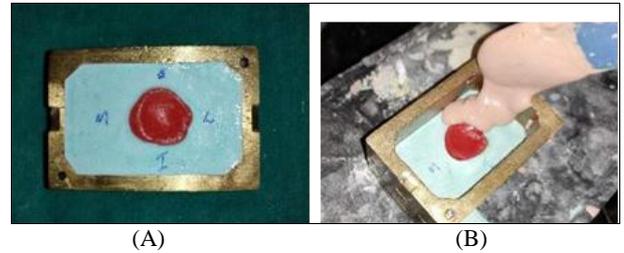


Fig 6: (A) Modified Stock Eye Flasked using Dental Stone, (B) Second Pour using Die Stone

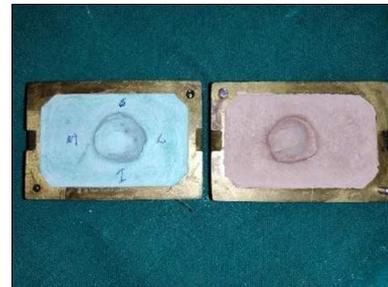


Fig 7: Opened Flask after De-Waxing



Fig 8: Flask Filled with Tooth Colored Heat Cure Acrylic



Fig 9: Post Operative Photograph

**Discussion**

The eyes are the most perceptive organ of the face and the loss of either or both the eyes are agonizing to the patient. According to Ahm, Lee, and Yoon (2010), the removal of eyes can even lead to patients developing anthropobia, which is the fear of meeting new people or new environment [5].

Attempts of aesthetic recovery after ocular loss have happened since ancient times. Ambroi'se Pare was the first to

use glass and porcelain eyes. By 1835, glass eyes were being manufactured by Germany on a large scale. Due to a halt imposed on the supply of the glass eyes to the United States, in 1943 both United States Army and Navy carried out research to find a substitute. By 1945, the U.S. Army had 30 installations and thousands of plastic eyes were being manufactured<sup>[6, 7]</sup>. Nowadays, acrylic ocular prosthesis is commonly used because unlike glass eyes, these acrylic resin eyes are lightweight, easy to fit and adjust, can be colored intrinsically and extrinsically and are inert to the socket secretions<sup>[8]</sup>.

A thorough knowledge of the anatomy of the eye socket is essential and must be before replacement of the eye. The ocular prosthesis can be fabricated either by using a stock eye, the custom eye technique or by modifying a stock eye by making an impression of the ocular defect and then customizing it<sup>[8, 9, 10]</sup>. Due to some shortcomings of stock eyes like poor adaptation, poor esthetics and poor eye movements; custom made prosthesis was considered to be more favourable<sup>[10]</sup>.

These prostheses pose numerous advantages such as rapid and easy fabrication, good esthetics, no requirement of a skilled artist for painting and is comfortable to the patients<sup>[10, 11, 12]</sup>.

This case report describes the rehabilitation of the patient using the customized stock ocular prosthesis. The prosthesis had close adaptation to the mucosa and rehabilitated the patient esthetically, psychologically and socially. The patients were advised on the use of an eye lubricant and were followed up after every 3 months. All the instructions regarding the maintenance of the prosthesis were given to the patients.

### Conclusion

With the advancement taking place in the field of dentistry, newer techniques and technologies have come up which have eased the life of both the patient and the dentist himself. So, it is essential that the dental profession and those practicing maxillofacial prosthetics are updated with these newer advancements.

### Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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