RESTORING OCULAR ESTHETICS USING CUSTOM OCULAR PROSTHESIS: A CASE REPORT

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Received: 15 June 2014; Revised: 18 Jul 2014; Accepted: 28 Aug. 2014; Available online: 5 Sep 2014

ABSTRACT
Eyes are generally the first features of the face to be noticed. Loss of an eye or a disfigured eye has a far-reaching impact on an individual's psyche. Additionally, it affects one's social and professional life. Cosmetic rehabilitation with custom-made prosthetic devices gives such individuals professional and social acceptance and alleviates problems. Numerous ocular impressions and fitting techniques have been described in the literature. They can be placed into different categories as Direct impression/external impression, impression with a stock ocular tray, impression with custom ocular tray, impression using a stock ocular prosthesis, and the wax scleral blank technique. An attempt can also be made to mimic the shade and color of the sclera in the wax pattern itself; using white paraffin wax. This gives an accurate registration of the position and alignment of the iris disc assembly, giving a natural look. The iris can be painted, a photograph of the iris of the contra lateral eye can be pasted or a corneal button can be used to make a custom ocular prosthesis. In this article, a case with the iris painting method is presented.

Key Words: Impression Technique, Scleral Blank, Stock Ocular prosthesis, Painting method.

INTRODUCTION
It is the god given right of every human being to appear human. Anophthalmos is a condition in which no eyeball can be found in the orbit. Injury to the eye is a very common cause for removal of an eye. A seemingly minor trauma can be serious if the eye penetration goes unnoticed or if secondary infection develops. The other common causes for anophthalmos are glaucoma, malignancy, a painful blind eye and congenital abnormalities. Depending on the severity of the situation, the surgical management may include one of 3 approaches: Evisceration, Enucleation, or Exenteration.

Evisceration is the surgical procedure wherein the intraocular contents of the globe are removed, leaving the sclera, tenon’s capsule, conjunctiva, extra ocular muscles, and Optic nerve undisturbed; the cornea may be retained or excised.

Enucleation is the surgical removal of the globe and a portion of the optic nerve from the orbit.

Orbital Exenteration is the en bloc removal of the entire orbit, usually involving partial or total removal of the eyelids, and is performed primarily for eradication of malignant orbital tumor.

Ocular prosthesis can be either readymade (stock) or custom made. Stock eyes have some advantages including better mobility, even distribution of pressure, improved fit, comfort and adaptation, improved facial contours.
and esthetics. This enhances tissue health by reducing potential stagnation spaces at the prosthesis-tissue interface.

A "custom" ocular prosthesis, on the other hand, is custom made to fit a particular patient and have better retention than stock ocular prostheses. A properly planned and well-made ocular prosthesis maintains its orientation, when patient performs various movements. Exact color match of the iris and sclera with the adjacent eye can be achieved.

Methyl methacrylate prosthesis became popular since they offered superior strength and the shape and the size can be modified. Recently flexible materials such as silicone became advantageous when the defect extend beyond the orbital area and encounters movable tissue beds.

**Case Report:** A 18 year old female patient reported to the Department of Prosthodontics, Buddha Institute of dental Sciences & Hospital, Patna with the chief complaint of lost right eye 2 years back. She presented with her eviscerated right eye which is asymptomatic but blind. Keeping her paying capacity and other esthetic requirements in mind she was elected for fabrication of a custom ocular prosthesis.

**Evaluation of the patient ocular defect:** In case of evisceration the extra ocular muscles are left intact and hence good mobility of the prosthesis is possible. So it becomes mandatory to do the defect evaluation. According to the standard procedure; the palpebral fissures was observed both in open and closed position to rule out any abnormality. Evaluation of the muscular control of the palpebrae and the internal anatomy of the socket in the resting position and full excursive movement was performed. Mobility of the posterior wall of the defect was assessed. Condition of the conjunctiva, depth of fornices and presence of cul de sac was noted. (fig 1)

**Materials and Techniques:** Impression of the external surface of the defect was made with polyvinyl siloxane putty consistency (Reprosil, Dentsply, USA) and the impression was poured after beading and boxing procedure in type II Dental plaster (Kalabhai, INDIA). A special tray was fabricated on the primary cast. Escape vents were made in the special tray. Before making the impression, a thin layer of petroleum jelly was applied on the eyelashes and around the eye socket to prevent the impression material from sticking to the eyelashes. Regular viscosity addition silicone (Reprosil, Dentsply, USA) was loaded into the syringe attached to the special tray. (fig 2) Inject the impression material down the syringe into the eye socket through the hollow stem of the tray. The patient was instructed to make muscular movements so as to get functional impression of the socket. (fig 3) Remove the impression and pour a cast mold. (fig 4) Molten white paraffin wax (Hindustan, Hyderabad, INDIA) was poured in to the mold to form a wax conformer. After lubricating the socket to avoid tissue irritation, wax conformer was tried on the patient in order to evaluate the size, comfort, the eyelid support and the simulation of eye movement. (fig 5)
The flasking and dewaxing of the wax conformer was done and packing of the mold was done with tooth colored heat cured acrylic which was selected after matching with the contra lateral eye sclera. Curing and polishing is done to obtained acrylic scleral shell. (Fig 7) The fabricated acrylic scleral shell was placed in the socket to check for the color and contour. The dimension and color of the iris was matched and marked with the contralateral eye. (Fig 6)

In this technique according to the size of iris, the fabrication of the corneal button with stud for easy handling and cost effective was fabricated with clear acrylic. Black acetate disk of the size of patient iris was taken and painted with acrylic paints (Camalin, Mumbai, INDIA). The painted iris disk was checked for color accuracy against the contralateral eye. Allow the iris disc to dry. A drop of glue was placed on the iris disk and the corneal button was gently slid on top of the iris disk to avoid air entrapment and kept it for drying. The iris disk attached with corneal button was placed in the centered position of the prepared scleral shell, as per the markings and sealed with the glue. The stud attached to corneal button was removed. Thin layer of wax was placed over the surface of scleral shell to create space for clear acrylic to give conjunctival effect. Flasking and dewaxing of the scleral shell was done. Red color silk thread, which simulates the capillaries, was glued to the sclera portion of the shell. Packing of the mold containing scleral shell was done with clear acrylic (DENTSPLY, USA) to give the conjunctival effect. After curing, the prosthesis was finished and polished. Finished prosthesis was placed in socket to evaluate. Required modifications were done to get the proper fit of the prosthesis and then the final polishing was done and then finally cleaned in the disinfectant before placing in the eye socket. (Fig 8&9)
Discussion:

The retention is the main concern for the success of ocular prostheses. Various impression techniques have been discussed by many authors. Allen and Webster (1969) recommended a perforated stock ocular tray for alginate impression. They recommended using ophthalmic alginate. When no custom tray was fabricated; there was no proper support for the impression obtained. The technique described in this paper utilizes iris button fabricated as per the size of contra lateral eye, and also the conjunctival effect was provided over sclera with clear acrylic to simulate the natural eye. The technique described here utilizes medium viscosity addition silicone, which records greater detail of the socket surface and which can be easily removed from undercuts without distortion. Thus recorded undercuts will help for better retention of the prosthesis. Stock conformers often require elaborate, time consuming adjustments. The presence of the custom made conformer and its close adaptation to the tissue in the socket, simulate the eye muscles to move, thus exercising them and preventing disuse atrophy. Stock conformers lack a close fit and therefore cannot stimulate eyelid movement.

Conclusion:

The technique discussed in this paper has its own advantage. Custom tray is fabricated, so there is proper fit of the tray and a syringe is attached to the tray through which impression material flows easily and record the details of the socket which aid in the proper adaptation of the ocular prostheses and improved retention than stock eye shell.

REFERENCES:

