

PROSTHETIC EYE REHABILITATION OF A PATIENT WITH STURGE WEBER SYNDROME

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ABSTRACT

Eye loss is a devastating psychological event as the patient loses his sight and part of his face as well; a physical and emotional trauma. Many treatment modalities are available for prosthetic rehabilitation of an enucleated socket that will help the patient to restore his confidence and facial acceptance. This report describes the rehabilitation of an enucleated eye socket with a custom made prosthetic eye. In this case, the eye loss was due to glaucoma associated with Sturge-Weber Syndrome.

Key Words: Ocular Prosthesis; Sturge Weber Syndrome, Custom made maxillofacial prosthesis, Esthetic.

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INTRODUCTION

Eye is a vital organ in terms of vision and facial expression. Removal of this organ may be indicated in cases of severe trauma, tumors, or untreatable painful glaucoma. Surgical eye removal can be done by enucleation, evisceration or exenteration.¹ Prosthetic rehabilitation may probably be the only alternative in some cases to help restore their confidence and self esteem.² A prosthetic eye can be either readymade (stock) or custom made.³ Custom made prosthetic eye increases the adaptiveness of the ophthalmic socket, has better movement of the eye ball, and exactly matches the iris position as that of the adjacent natural eye.⁴

When the surgical site is dimensionally stable and healed properly, fabrication of a prosthetic eye can begin.⁵

A 19 years old male was referred to the maxillofacial prosthodontic clinic King Hussein Medical Center to fabricate a prosthetic eye.

The patient complained facial disfigurement as a consequence to the loss of his left eye. Figure 1.

The medical history revealed glaucoma caused by choroidal haemangioma of the eye as part of sturge – weber syndrome, subsequent enucleation was done 4 months ago with plastic conformer in place. Figure 2.

On examination, a completely healed- up socket was found with adequate depth of upper and lower

fornices of the left eye. So, it was decided to replace his missing eye with a custom – made prosthesis.

The treatment was explained to the patient and his consent was taken for the suggested treatment plan.

METHODOLOGY

The first clinical step was impression making. Socket was inspected. After that, measurement of the iris and pupil of the intact side was taken.

An ophthalmic topical anesthesia was given to the patient before the impression taking and after that eyelashes and eyebrows were lightly lubricated with petroleum jelly for easy removal of the impression. A prefabricated eye tray with a hollow tube was selected taking consideration that it comfortably fits the socket.

In this case a direct or external impression technique was used. After the patient was seated in upright position with head supported, irreversible hydrocolloid impression material was loaded in a syringe and injected to fill the concavity of the tray.

A sufficient material was injected to elevate the eyelid contour to become similar to the intact side. Before the material was set the patient was asked to perform all eye movement so that the impression was recorded in a functional form. After the material set, impression was removed from the socket and examined for extension, defects or voids. Figure 3.

In the dental laboratory an index using elastomeric putty impression material was made then red ocular wax was poured in the index to fabricate the positive replica of the impression.

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Then the wax pattern was retrieved from the index, cooled, and smoothed to get ready for the second clinical step which is wax try-in of the eye socket. Figure 4.

In this step the fit of the pattern was checked by observing its extension into the fornices, the contour and support of the eyelids were checked while the eye was in closed and open position making it similar to the normal eye, and finally the position of the iris pupil assembly on the wax sclera pattern was done by the use of millimeter grid placed on the patient face.

After the patient was instructed to fix his gaze, the position of the pupil in relation to the outer + inner canthus, and upper + lower eyelids of the intact eye was marked on the grid and transferred to the defective socket. Figure 5.

The next step in the dental laboratory was iris painting. The black iris disk technique was used in this case.

First, appropriate size of the black disk was selected similar to the size of the normal iris. Then, iris painting using acrylic colors was done. There are five basic parts of an iris painting: the background color which is applied to the disk first using brush strokes from the center to the periphery, the limbus color which is matched around the periphery of the disk, the stroma color which is an area of radiation and striation in nature, the collarette color which represents a collar around the pupil, and finally, the individual markings or striations.

Clear corneal buttons are available in the same sizes as the black disks. These buttons have pupil of various sizes already in place.

After iris coloring corneal button was placed over the iris disk with water interface to check the color in comparison to the normal eye. The black iris disk technique with corneal button produces three dimensional and more natural effect. Figure 6

The position of this iris assembly on the wax pattern is essential in prosthesis fabrication. For this reason a third clinical step was done which is iris try-in. In this phase the position and gaze of the artificial eye was checked and observed again. Figure 7.

Then flasking of the iris corneal button wax pattern was done in the dental laboratory using mini flasks. De-waxing was performed making a mold space for heat cure ocular acrylic resin packing. Long cure 4-6 hours acrylic cycle was used to prevent the presence of residual monomer in the final prosthesis. Figure 8.

After deflasking the prosthesis was trimmed, polished, and verified in the patient eye socket to observe the iris position had not changed during packing. Figure 9.

The next laboratory step was sclera painting and application of a sort of characterization similar to that



Fig 1: Loss of left eye



Fig 2:

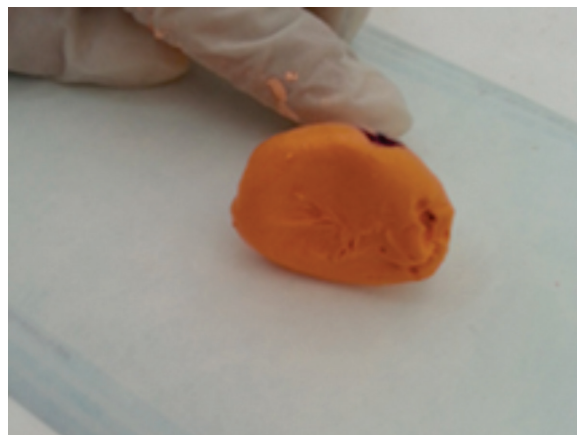


Fig 3:

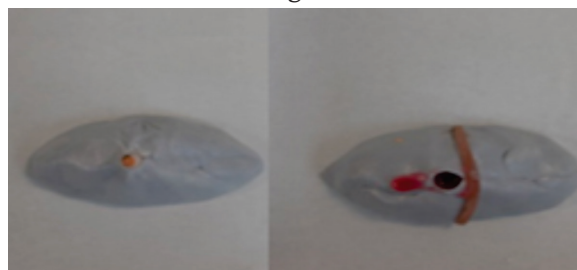


Fig 4:

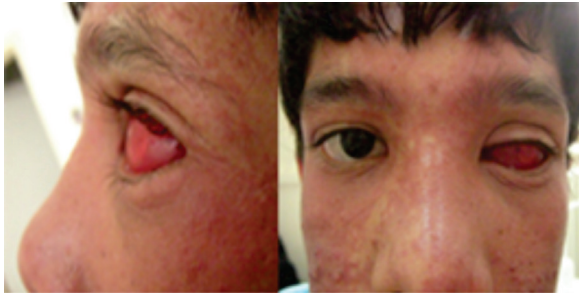


Fig 5:

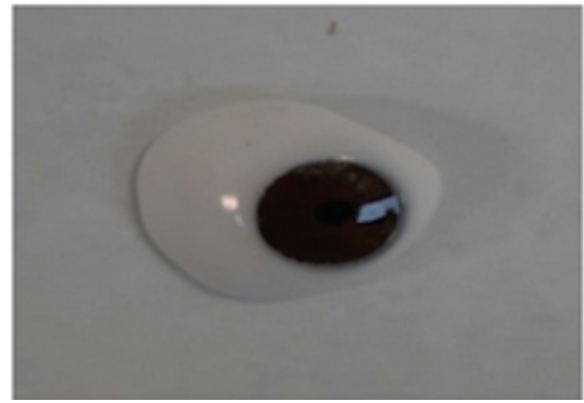


Fig 9:



Fig 6:



Fig 10:

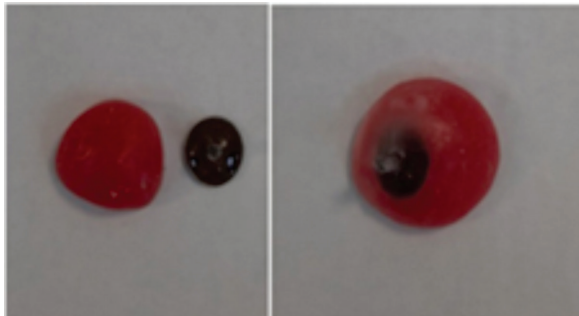


Fig 7:

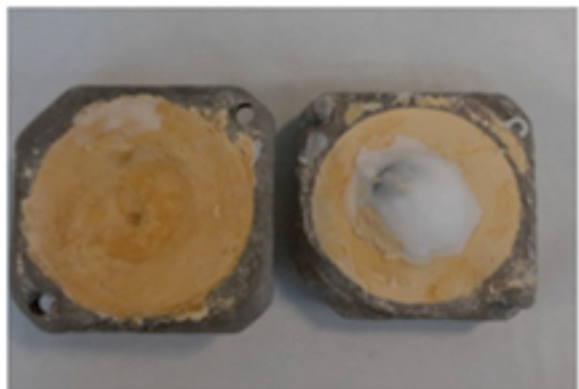


Fig 8:

of the normal eye. The colors of the sclera are usually yellow and blue or combination of both. Characterization can be done by application of rayon thread fibrils using monomer polymer syrup producing the shape of the eye vessels (straight, branched, and tortuous) like the opposite eye.

After, sclera coloring the prosthesis was flaked again to pack a thin clear layer of acrylic to give a more natural and life- like appearance.

The finished prosthesis was cleaned by antibacterial solution to make it ready for the forth clinical step which was eye insertion.

The prosthesis was inserted and checked for fitness, contour, and movement. The method of insertion, removal, and its care was demonstrated to the patient.

Ideally, recall should be done 3 days after to eliminate irritation or pressure points then, follow up a week after.

Take home protocol and patient instructions should be given as under:

1. Prosthesis should be removed once a day depending in the socket secretion and cleaned with mild detergent to avoid pitting or clouding of the prosthesis.
2. Avoid prosthesis contact with alcohol or solvents that may cause crazing.
3. Prosthesis should be polished every 6 months to eliminate sharpness from possible scratches.
4. Hand washing before prosthesis handling.

5. Eye lubricant can be used to ease the lid opening and closure.
6. Protective eye glasses help to reduce irritation and dust in the socket.

DISCUSSION

Custom made prosthetic eye is prosthesis visible externally within normal animated eyelids. This type of prosthetic eye is specific to the patient with accurate replication of the iris, pupil, and sclera.⁶

Following eye enucleation, prosthetic eye rehabilitation is essential to provide optimum cosmetic and functional results.⁷

Team approach and combined effort of the ophthalmologist and maxillofacial prosthodontist is needed for successful rehabilitation. In this case it was achieved to the patient satisfaction who lost his eye due to glaucoma as a complication of sturge weber syndrome. This syndrome is characterized by cutaneous angiomas affect mainly the facial region. Its main Clinical features include seizures, facial naevus flammeus (port-wine stain), mental retardation, glaucoma and visual impairment. Immediate coordination of the specialties was set in order to have the best results.

Readymade (stock) prosthetic eye can be used as other treatment option, but it has inferior characteristics when compared to the custom made prosthetic eye.

According to Beumer et al intimate contact between the prosthesis and the tissue bed should be present to gain even pressure distribution. This contact can't always be achieved in stock prosthesis.

More over voids in the prefabricated prosthesis collect mucus and debris which can irritate mucosa and act as a potential source of infection.

Other treatment modalities are available such as implants (integrated or non integrated) but not always possible or financially feasible.⁴

A properly fabricated custom made prosthesis is affordable and has the following characteristic.¹

- Retains the shape of the defect socket.
- Prevents collapse or loss of the shape of the lids.
- Prevents accumulation of fluids in the cavity.
- Maintains palpebral opening similar to natural eye.

- Mimics coloration and properties of the natural eye.
- Has gaze similar to natural eye.

CONCLUSION

Restoration of esthetic, function and tissue protection is the main objective of maxillofacial prosthesis. Although, ocular prosthesis doesn't restore the sight but restores much of esthetics, boosts self-esteem and improves confidence with an affordable price as well.

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