

IRIS DESIGNING FOR AN EYE PROSTHESIS - IMPARTING NATURAL LOOK TO AN ARTIFICIAL EYE – A CASE REPORT

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Abstract

Fabrication of an ocular prosthesis is a colossal challenge for a prosthodontist as eye is the most important part of the face. Losing an eye and eyesight is always a painful experience for the affected that is associated with a great psychological trauma due to loss of vision and disfigurement of face. This requires immediate management and rehabilitation intervention. The role of a maxillofacial prosthodontist in fabricating an ocular prosthesis with acceptable esthetics is a challenge which needs skill and knowledge, taking care of the facial symmetry and executing the normal appearance to the patient. This article presents a technique for fabricating ocular prostheses with special efforts on 'Iris Designing'. This technique is operator-friendly & most economical for the patient.

Keywords: Artificial eye, iris designing, maxillofacial rehabilitation, ocular prosthesis

Introduction

Loss of an eye as a result of congenital defects, irreparable trauma or tumors will have a physical, social and psychological impact on the affected.¹ For a prosthodontist, fabrication of a prosthetic eye is always a challenge in terms of its esthetic values, particularly for a young patient who is trying to 'look normal' like people around him while hiding the fact of having only one eye. Such patient gets psychologically compromised due to lack of confidence, and hence, immense care has to be taken to reconstruct a 'normal' facial appearance.²

It's a well-known fact that, people with artificial substitute are not accepted easily by the society, which brings a feeling of insecurity in the patient. It is a right of every human to look normal, hence, it is a great responsibility for the prosthodontist to help him look normal and feel normal. Ocular prosthesis should be esthetically natural looking to both the patient and the observer, also it needs to be amply stable and durable.⁴ Prosthodontist has to prepare a comprehensive treatment plan which must be economical and esthetically acceptable even though conventional.

Eye is an important part of our body which imparts vision and facial expression⁵. Research has shown that global self-esteem in children and adolescents is highly determined and assessed by one's own capability of physical presentation, as well as comparisons with the attractiveness, ability, intellectual skills, and social acceptance.

It is necessary to fabricate any prosthesis in a meticulous way, to provide it with an exact shape and form, stability and retention. In this way, we can help the patient get his self-esteem restored.

Maxillofacial Prosthodontics can provide the highest esthetic and functional level of reconstructive dentistry in rehabilitating such patients.

Materials and Methods

A 23 years old patient, who lost his left eye in an accident reported for artificial replacement of the lost eye. He wanted the treatment to be economical as he belonged to the lower socioeconomic strata of the society. He had a strong desire to look good and be acceptable in the society. Also it was his professional need as he was a hotel worker & had to look presentable (fig. 1).



Figure 1. Before treatment appearance of patient

Keeping his professional, economical and esthetic requirements in mind we made a treatment plan for the prosthetic management.

After examination of an eye cavity (fig. 2), treatment plan was discussed with the patient & consent was obtained.



Figure 2. An eye cavity

An artificial eye shell was selected to match the normal right eye. It was used for recording the impression, which is required to assure proper fit for maximum comfort and

motility. Sticky wax was attached to the outer surface of the shell to be used as a handle. After proper lubrication, an irreversible hydrocolloid impression material loaded in a syringe was injected in the eye cavity. The tissue surface of the shell was also loaded with the impression material & it was placed inside the eye cavity (fig.3 & 4).



Figure 3. Impression material loaded in a syringe was injected in the eye cavity.



Figure 4. Impression of an eye socket

After receiving the impression, it was directly flaked to get an index. All other laboratory procedures were carried out conventionally. Heat cure acrylic resin was used for the body of the prosthesis, which occupied the space within the extremities of the eye socket. Selected eye shell was trimmed according to the base to fit onto it and kept aside. After iris was made ready to fix on it the whole thing was to be cured in heat cure clear acrylic resin.

Selection of eye shell

It was planned to fit the prefabricated eye shell over the acrylic body of the prosthesis. The shade matching which demands the artistic replication of the color of the natural eye, and size of iris was becoming very critical for this

particular patient, size of his iris was bigger and was not available. So, it was planned to prepare an iris for him.

Preparation of an Iris

Iris was prepared in a clear acrylic and painted with oil based acrylic paints. This requires good sense of color and shade matching by the prosthodontist and active patient participation in this process. It is important for an ocular prosthesis to match exactly with the patient's other side eye in terms of iris size, color and scleral shade. Care was taken to fulfil these primary requirements in the present case. First the eyelid surface of eye shell was hollowed in the iris region and the painted iris was fixed with the help of heat cure clear acrylic resin. The clear acrylic polymer was mixed with the acrylic colors and painted carefully at the corners of the eye and wherever required duplicating the color of the natural eye. After it set, a thin layer of heat cure clear acrylic was painted on the whole prosthesis and cured (fig. 5).

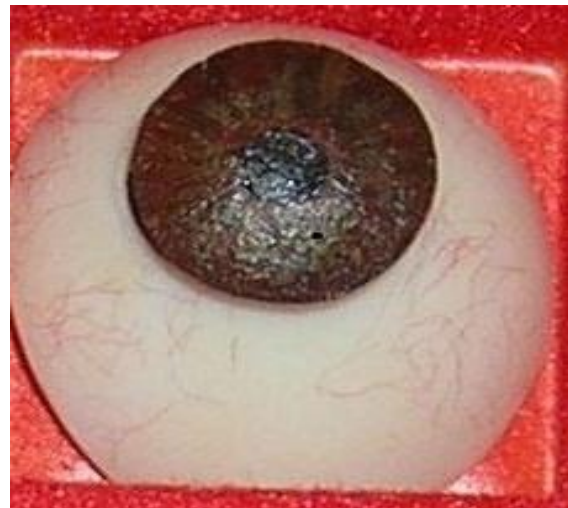


Figure 5. Iris fixed over the shell

Finishing and polishing was carried out carefully to avoid distortion of the outermost layer of acrylic which was covering the painted inner surface. This gives the most desirable esthetic effect as the prosthetic eye will adapt to shape, contour and form of the tissues and eyelids & help obtain their best possible anatomical position. This will produce the most natural appearance and natural eye motion. After proper finishing and polishing the desirable glaze was acquired and the prosthesis was inserted into the eye cavity and was checked for the comfort. Patient wore the spectacles to hide the minor imperfections (fig. 6).

Discussion

Today, the technology has opened new doors for the maxillofacial rehabilitation through use of implants. Implants are used commonly to rehabilitate the intraoral as well as extraoral maxillofacial defects. In spite of its

successful and more desirable results, majority cannot opt for



Figure 6. Post treatment appearance

it due to various reasons mainly the cost involved in it. Replacement of an eye by artificial substitute that provides an optimum cosmetic and functional results. Implants impart direct motion to the ocular prosthesis in coordination to the natural eye.⁶ It is the basic need of any rehabilitative procedure to have a proper treatment plan. The prosthodontist must have the expertise in the field with good esthetic sense. Loss of an eye or any part of the face will cause extreme discouragement to the patient. However, with the help of advanced maxillofacial materials and techniques, it has become easier for such people to live their life without any apprehension. Thus, any maxillofacial prosthesis is made to fulfill esthetic and psychological demands of the patient. An extra-oral prosthesis is given mainly to fulfill the demands of the patients to make him look & feel 'normal'² Newer techniques for the fabrication of eye prosthesis have been introduced by many, with the modified and simplified approaches. Modified methods of making impressions and iris positioning have been introduced and applied in dentistry⁷. Digital photography and imaging is extensively used in the current rehabilitative protocol which is proved to be effective for more predictable and esthetic results.^{8,9,10}

However, one cannot wear only the shell inside the eye cavity as it lacks the 'body', and it cannot provide fullness and the bulk to the eye. It also lacks the fit which may give feel of 'floating eye' to the patient.

Conclusion

The unfortunate loss of an eye is like a catastrophe to the person. In the present case, the patient is provided with an

artificial acrylic eye which could not give him his eye sight back, but could give him the confidence "to look normal and feel natural" which is enough for the person to stay tuned with the life. Prosthodontist can help getting the smile back, not only on face but also in person's eyes.

The Dentist must always be concerned with the patient's expectations, personality, characteristics and ability to accept the prosthesis. The prosthodontist's understanding of psychological consideration can result in increased effectiveness in treatment and rehabilitation of maxillofacial patients.

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