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CASE REPORT

PROSTHODONTIC REHABILITATION OF OCULAR DEFECT WITH HEAT CURE ACRYLIC RESIN OCULAR PROSTHESIS: A CASE REPORT

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ABSTRACT

Large oro-facial defects causes serious functional as well as cosmetic deformities. Acceptable cosmetic results usually can be obtained with a facial prosthesis. This article describes prosthetic rehabilitation of a 41 year-old male having a left orbital defect with heat cure acrylic resin material. The resultant facial prosthesis was structurally durable and aesthetically acceptable with satisfactory retention.

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INTRODUCTION

Loss of tissue, whether congenital or traumatic or resulting from malignancy or Radical surgery is accompanied by aesthetic and psychological effects. This loss is more pronounced when the affected part is the eye and all orbital contents, resulting in gross mutilation. 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. Fabrication of an extra oral facial prosthesis challenges the artistic ability of the prosthodontist. A multidisciplinary management and team approach are essential in providing accurate and effective rehabilitation and follow up care for the patient. This article describes a simplified method for fabrication of a heat cure acrylic resin orbital prosthesis.

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Case Report

A 41 year old man reported to the Department of Prosthodontics, Government Dental College, Bangalore. With the chief complaint of facial disfigurement after surgical removal of eye and surrounding structure. The patient gave history of enucleation of the eye one year back due to fungal infection (mucormycosis). Examination revealed a large, visible, healed surgical defect following surgery. Also, the patient did not report of any pain or discomfort of the peri-orbital tissue. Due to extensive size of the defect and patient's history of fungal infection, a treatment plan was formulated which consisted of fabrication of a custom acrylic orbital prosthesis.

Technique:

Making of a facial moulage: Impression of the defect was made from irreversible hydrocolloid (Tropicalgin, Zhermack Inc. products).

Vaseline was applied to eyebrows and on the forehead for easy separation of impression. A thin mix of alginate was applied to the skin with a round-ended mixing spatula layer by layer. A layer of gauze was placed on setting alginate and the impression was reinforced with fast setting plaster which is around 0.25 inch in thickness to provide adequate support to alginate impression and to avoid tearing and distortion on removal of the impression. On setting, impression was carefully removed and poured with type III dental stone to obtain a facial moulage (Picture -1)



Picture 1. Facial moulage and cast

Selection of stock acrylic eye shell: A commercially available stock acrylic eye shell was selected for the patient that closely approximates the colour, size and shape of the iris and sclera of unaffected natural eye. It was modified by trimming and staining to match and resemble natural eye.

Orientation of eye shell and fabrication of wax pattern: The stock ocular prosthesis was placed on the cast and the periphery was arbitrarily trimmed to match socket border extensions on the cast. Next, the ocular prosthesis was positioned to simulate the positioning of the right eye, with the patient focusing on the distant point directly ahead. A reference mark was placed at the midline and a boley's gauge was used to verify the medio-lateral placement. The pupils were used as reference points for evaluation. Correct medio-lateral, antero-posterior and inferio-superior positioning and central axis of the prosthesis were confirmed on patient's face. After complete verification some amount of modelling wax was added on the tissueside of the prosthesis and final wax carving and contouring was done to simulate the patient's unaffected eye and surrounding tissues (Picture -2)

Trial of wax pattern

De-waxing and investing: After finalizing the pattern, flasking and de-waxing were done in conventional manner, the prosthesis was packed with heat cure acrylic resin powder and liquid (Trevalon heat cure, Densply India) with required water powder ratio and intrinsic colour stains selected according to patient's skin colour was added to the mix. After packing, the flask was left to bench cure for an hour and then heat cured in boiling water in a temperature controlled water bath for 1 hour. And then de-flasked, trimmed and cleaned (Picture 3)



Picture 2. Eye shell orientation and wax trial



Picture 3. Shade matching



Picture 4. Attachment to spectacles and insertion

Trial of The prosthesis and extrinsic staining: The prosthesis was trial fitted and extrinsically coloured with oil pigments thus completing the fabrication of extra oral section. The gypsum-mould was preserved for future re-packing in case of discoloration or damage of the acrylic prosthesis. Finally the prosthesis is finished with the application of eyelash with the help of adhesive.

The retention was achieved with the help of a skin adhesive. Additional retention was provided by means of eyeglass frame attached to the prosthesis (Picture-4)

DISCUSSION

The importance of an orbital prosthesis with acceptable esthetics and reasonable motility in restoring the normal appearance in patients with anophthalmia has been recognized since long. The need for an artificial eye can sometimes be satisfied by stock ocular prosthesis that come in standard sizes, shapes and colours. These are relatively inexpensive and can be delivered quickly. Often, however, a custom-made ocular prosthesis is indicated. Advantages include improved adaptation to the underlying tissues, increased mobility of the prosthesis, improved facial contours and enhanced aesthetics gained from the control over the size of the iris and pupil and colour of the iris and sclera. Nevertheless, a custom-made prosthesis is more expensive than a stock prosthesis and several steps are required for its fabrication. Therefore, a modified stock ocular prosthesis is an excellent alternative, which is relatively inexpensive and easy to fabricate. An accurate alignment of the artificial eye is one of the major prerequisites for aesthetic success of the orbital prosthesis. Facial measurements and various devices have been proposed for orienting the ocular portion of the orbital prosthesis. The rehabilitation of the orbital defect is a complex task and if reconstruction by plastic surgery is not possible or not desired by the patient, the defect can be rehabilitated by an orbital prosthesis. The retention of the orbital prosthesis can be achieved using adhesives, attachments to eyeglasses or engaging hard or soft tissue undercuts. The use of osseointegrated implants is a popular approach since it offers an improved retention compared to the existing alternatives. Various factors, including systemic conditions and financial constraints, limit the use of osseointegrated implants in few patients. This article describes the rehabilitation of an orbital defect using a heat cure acrylic resin prosthesis, wherein retention has been achieved by a combination of anatomic undercuts, adhesives and eyeglasses.

Summary

The rehabilitation of orbital defect not only resulted in improved aesthetic, function and comfort to the patient but also contributed to physical and mental well being of the patient.

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