Contact Lens & Anterior Eye 37 (2014) 230–233

Contents lists available at ScienceDirect

Contact Lens & Anterior Eye

journal homepage: www.elsevier.com/locate/clae

Case report

A unique method of retaining orbital prosthesis with attachment systems – A clinical report

Satyabodh S. Guttal[a,*], N.R. Akash[b], D.R. Prithviraj[c], K. Lekha[d]

[a] Department of Prosthodontics, Sri Dharmastala Manjunatheshwara, College of Dental Sciences and Hospital, Dharwad, Karnataka, India
[b] Private Practice, Pune, India
[c] Govt Dental College and Research Centre, Fort, Bengaluru, India
[d] Department of Prosthodontics, SDM Dental College, Dharwad, India

ARTICLE INFO

Article history:
Received 3 June 2013
Received in revised form 16 October 2013
Accepted 20 November 2013

Keywords:
Orbital exenteration
Orbital prosthesis
Orbital defect

ABSTRACT

Diminution of the orbital contents post-surgical removal of a malignant tumor can have a severe psychological impact on the patient in terms of function and esthetics. Therefore, esthetic remedy should be planned subsequently, since tumor obliteration precedes cosmetic concern.

A convenient option for successful rehabilitation in such patients is a simple, user-friendly, removable orbital prosthesis. Retention of the prosthesis is one of the key factors for the successful rehabilitation. Spectacle frame, conformers, adhesives, osseointegrated implants, magnets or buttons have been used to impart retention to the prosthesis. The use of semi precision attachments in maxillofacial prostheses is limited to the osseointegrated prostheses. This case report describes a conventional spectacle frame technique, to retain the silicone orbital prosthesis using two different types of stud attachments viz., dalla bona and O-ring attachment systems.

1. Introduction

Cancer of the head and neck region with frank invasion of the orbit often requires resection that might result in structural impairment ranging from minor discrepancies to major functional disabilities combined with facial disfigurement. Such defects lead to enormous psychological strain which needs rehabilitation. Facial prostheses are important not only for rehabilitation and esthetics per se, but also in patient re-socialization. Exenteration of the orbital contents including periorbita is an uncompromising surgical procedure. The consequence of the radical surgery results in the disfigurement of the orbit with associated esthetic, psychological and functional ordeal to the patient. This may require expensive and extensive occuloplastic intervention. Orbital prosthesis is indicated when cosmetic and functional demands are beyond local reconstructive efforts.

Retention of maxillofacial prostheses plays a pivotal role in the success of such treatment. This reduces the psychological trauma associated with the patient who considers himself as a social outcast and allows acceptance sans the pity in the society [1,2]. Auxiliary retention methods of using eye patches [3], prosthesis fastened to spectacle frame [4] extensions from the denture [5], magnets [6], adhesives [7–9], and osseointegrated implants have been elaborated in literature [10,11]. The use of semi precision attachments in maxillofacial prostheses is limited to the osseointegrated prostheses. Miscellaneous attachments, like ball attachments or the dalbo attachment have been used. The authors are not aware of any reports in the peer-reviewed literature where a semi precision attachment is used to retain the orbital prosthesis.

This clinical report describes the procedure of rehabilitating a patient using semi precision attachment to retain orbital prosthesis. Dalla bona and O-ring attachment were used to fix the spectacle glass frame to the orbital prosthesis.

2. Outline of the case

A 52-year-old female patient was referred to the Department of Prosthodontics at SDM School of Dental Sciences and Hospital. The patient complained of facial disfigurement due to loss of the right eye. A history of adenoid cystic carcinoma of the lacrimal gland, followed by exenteration of the orbit was recorded. The patient was deeply concerned about her esthetics and indicated a desire for an economical solution to restore her deformity. On clinical examination, the defect included the right orbit and extended laterally along the outer canthus of the eye, toward the temporal region. It was noted that there was very less undercut to utilize for prosthesis

* Corresponding author at: Department of Prosthodontics, SDM School of Dental Sciences and Hospital, Dharwad 580 009, Karnataka, India. Tel.: +91 836 2468142; fax: +91 836 2467612.
E-mail addresses: drsatyabodh@gmail.com, drsatyabodh@yahoo.co.in (S.S. Guttal).

1367-0484/$ – see front matter
http://dx.doi.org/10.1016/j.clae.2013.11.006

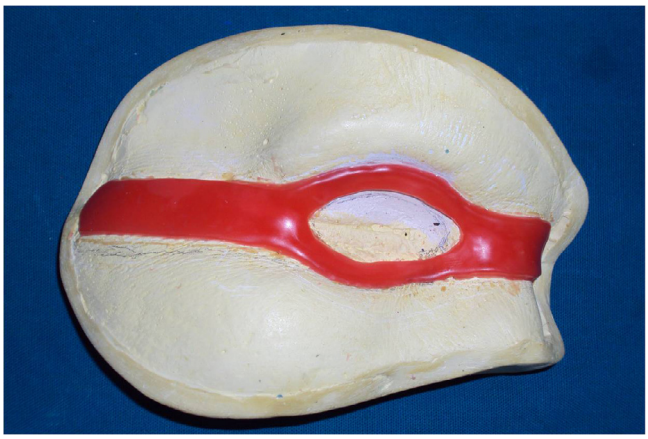

Fig. 1. Wax-up for acrylic resin base fabrication.

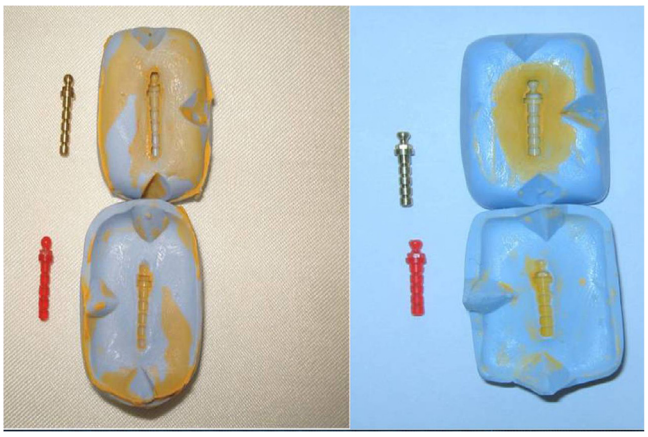

Fig. 3. Duplicated pattern resin analogs of the dalla bona and O-ring attachments laboratory analogs.

retention. Hence a glass spectacle retained silicone orbital prosthesis was planned. An informed consent was taken from the patient with respect to execute the treatment and to use the photographs for academic purpose. The silicone orbital prosthesis was attached to the spectacle frame using a dalla bona attachment medially and O-ring attachment laterally.

The facial moulage impression of the defect was made using irreversible hydrocolloid (Algitex; Dental Products of India, Mumbai, India) reinforced with dental plaster and the cast was poured in dental stone (Kala Stone; Kala Bhai Pvt. Ltd., Mumbai, India).

The defect area on the cast was duplicated with silicone duplicating material and the resultant mold was poured with dental stone (Kala Stone). The cast was used to make the wax pattern for the acrylic resin base in a circumferential design adapting it to the perimeter of the defect (Fig. 1). Wax pattern for the acrylic resin base was also extended onto the bridge of the nose, medially and laterally from the outer canthus of the eye toward the temporal region; for incorporation of the dalla bona and O-ring patrices. The wax pattern was sealed to the cast and invested. Following the wax elimination, heat polymerizing acrylic resin (DPI-Heat cure; Dental Products of India Ltd., Mumbai) was packed. Intrinsic acrylic based (Fevicryl, Pidilite Industries Ltd., Mumbai, India) coloring was incorporated to blend with patient's skin tone. The polymerized acrylic resin base was retrieved, finished and polished. The fit of the base was tried on the patient.

Different aids were used in aligning the artificial eye, which was positioned in the defect. The wax pattern for the orbital prosthesis was prepared, embedding the acrylic resin base (Fig. 2). Try-in of the waxed-up orbital prosthesis was performed. At this stage the eyeglass frame was selected and the close approximation of the eyeglass frame to the acrylic resin base was checked. The wax pattern was sealed to the cast; investing and wax elimination was carried out.

Primer (A-330-Gold, Factor II, Lakeside, AZ) was applied to the resin base for bonding of acrylic resin base to silicone elastomer. Medical grade silicone (Cosmesil M511; Cosmedica Ltd., Cardiff, United Kingdom) was taken and the Part A of the silicone was incorporated with 0.5% of nano-sized zinc oxide as an opacifier which would enhance mechanical properties and color stability of the prosthesis. Intrinsic colored silicone was packed and polymerized at temperature of 100 °C in a hot-air oven. The prosthesis was retrieved; finished and initial trial was performed. Eye lashes and eye brow hair were stitched. Finally extrinsic tinting (Technovent Ltd.; Leeds, UK) was done to perfectly blend with the patient's skin tone. The silicone flowed on to the bridge of the nose part of acrylic resin base was cut.

The laboratory analogs of both dalla bona (Attachment Intl, Inc., Burlingame, CA) and O-ring attachment (Attachment Intl, Inc.) was duplicated in putty rubber base (Aquasil; Dentsply, Caulk, Milford, Del) relined with light body polyvinylsiloxane (Reprosil; Dentsply). Pattern resin (Pattern resin; GC Corp, Tokyo, Japan) was poured into the duplicated mold to fabricate the castabledalla bona and O-ring stud patrices (Fig. 3).

The castabledalla bona and O-ring patrices were waxed-up and cast (Fig. 4). The cast dalla bona and O-ring patrices was retrieved, finished and polished. The prefabricated dalla bona matrix and the O-ring fitted well to the cast corresponding patrices.

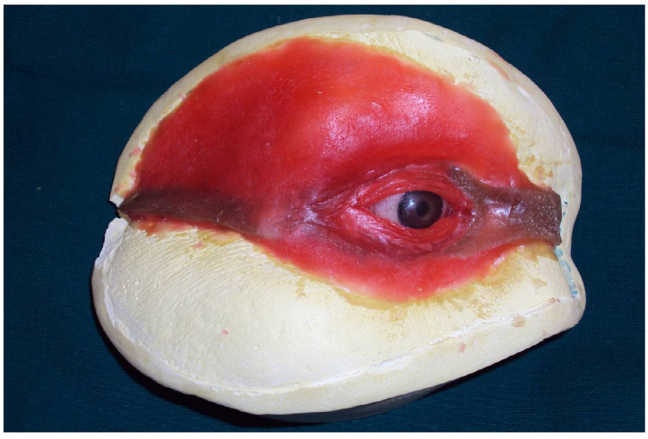

Fig. 2. Final wax-up of the prosthesis embedded with acrylic resin base.

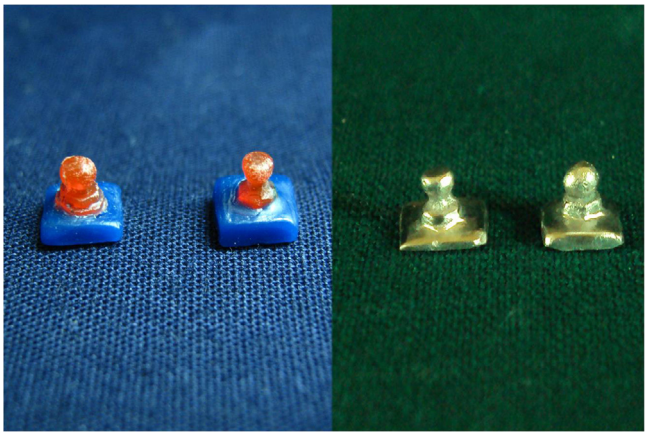

Fig. 4. Wax-up of duplicated pattern resin analogs and cast patrices.