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Orbitofacial rehabilitation of IED blast injury using spectacles retained silicone prosthesis – A multidisciplinary approach

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ARTICLE INFO

Article history:
Available online 24 February 2015

Keywords:
Orbitofacial
Silicone
Multidisciplinary

ABSTRACT

Facial deformity may cause functional and psychological impairment. Surgical, prosthetic or combinations are the available rehabilitative option in restoring proper form and aesthetics. In most situations, surgical reconstruction alone may not be feasible. When prosthetic rehabilitation is planned, the prosthesis should be indiscernible as much possible from the surrounding natural tissue. Proper treatment planning entitles the right selection of material and retentive aid for the prosthesis. This case report presents rehabilitation of facial defect secondary to surgical correction of blast injury.

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1. Introduction

The formidable nature of counter insurgency operations tends to produce dreadful amount of maxillofacial injuries. Facial region is one among the least protected and more prone to injuries caused due to splinters. Management of maxillofacial trauma due to gunshot wounds, improvised explosive device (IED) blasts and road traffic accidents involves greater maxillofacial surgical skill and prosthetic rehabilitation.[1] Since surgical correction of large defect is not always feasible, prosthetic rehabilitation remains the cornerstone for providing succour to such patients. Loss of an eye along with associated facial tissue causes great psychological trauma which can adversely affect a patient's quality of life.[2] Prosthetic rehabilitation of these defects requires utmost care in providing closely matching prosthesis. Not being able to use maxillofacial implants further complicates the retention of extraoral prosthesis.[3] This paper presents an integrated approach in rehabilitation of maxillofacial defect caused due to IED blast with surgical reconstruction coupled with a spectacles retained orbitofacial prosthesis.

2. Case report

A 33 year-old male, was referred to prosthodontic OPD from the division of oral and maxillofacial surgery for the prosthetic rehabilitation of orbitofacial defect. History revealed the subject sustained injury to left zygomatico–orbital complex (ZOC) in an IED blast 05 years back. The maxillofacial injury was

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http://dx.doi.org/10.1016/j.jpfa.2015.01.005
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Fig. 1 – Pre and post tarsorraphy left eye.

managed with evisceration left eye and rigid fixation of ZOC in the tertiary hospital. He was subsequently provided with prosthetic eye shell. Individual was then referred to oculoplastic surgeon for review and was referred to the Department of Dental surgery, for removal of bone plates and prosthetic rehabilitation. In the department, complete evisceration of remaining orbital content along with lacrimal gland and permanent tarsorraphy was done as there was very less space available for ocular prosthesis [Fig. 1]. Thereafter the patient was taken up for spectacles mounted Orbito-facial prosthesis.

The eyebrow and eyelashes were lightly lubricated with petroleum jelly and facial impression was made using irreversible hydrocolloid (Algitex, DPI), which was reinforced externally with plaster bandage. Subsequently, a model was poured in dental stone [Fig. 2]. Boley Gauge callipers was used to measure the size of the unaffected eye. A stock eye shell was selected and shade was matched with the opposite eye after which a spectacles frame was selected [Fig. 3]. Wax pattern was made for the Zygomatico-orbital defect and the position of iris shell was determined by asking the patient to look at fixed distant point at the level of his eyes. Normal facial characteristics over the defect area were sculpted in modelling wax using the non-defect side as a guide [Fig. 4]. After trial of wax pattern the position of spectacles on the wax pattern was marked. To maintain the position of the iris a small plastic rod was attached on the tissue surface of the eye shell



Fig. 2 – Facial moulage and working cast.



Fig. 3 – Selection of eye shell and spectacles.

with the help of cyanoacrylate resin and the pattern was flasked. Dewaxing was done to obtain the mould.

Room temperature vulcanizing silicone (RTV) was intrinsically stained to match the colour of the patient's skin and mould was packed with RTV silicone. The processed silicone prosthesis was retrieved, polished and checked for colour and marginal fit. Extrinsic staining was done for closer replication of the skin colour. Patient's own hair was used to create eyebrows and lashes and fixed onto the prosthesis using cyanoacrylate resin. The prosthesis was retained on the face with medical grade adhesive. A Spectacles frame was used to reinforce retention and camouflage prosthesis margins [Fig. 5]. Patient was instructed about the prosthesis maintenance and recall visits.

3. Discussion

Restoration of appearance to best of its form and aesthetics is a challenge in the rehabilitation of maxillofacial defects.



Fig. 4 – Wax pattern try-in.



Fig. 5 – Finished prosthesis.

Maxillofacial prosthesis can be fabricated using variety of materials. These include polyvinyl chloride, latex, polyurethane, polymethylmethacrylate and silicones.[4] Silicones has proved to be a boon in restoring aesthetics as it has some distinct advantages like complete inertness, permanence of consistency, easier to process and colour.[5] Success of a maxillofacial prosthesis is judged by its retention. Spectacles, medical adhesives and osseointegrated implants have been used to enhance retention.[6,7] Methods for attaching and holding facial prosthesis have to be as invisible as possible to make them aesthetically pleasing. In the present case zygomatico–oribital complex fracture was rigidly fixed using bone plates and screws and placement of osseointegrated implants to obtain retention to the prosthesis was not feasible. Spectacles frame along with silicone adhesive was employed in providing retention to the prosthesis and to obscure the margin of the prosthesis.

4. Conclusion

Rehabilitation of a patient with orbito-facial defect has been described in this case report. The orbito-facial prosthesis was primarily retained by adhesive and secondarily by spectacles to reinforce the primary retention and to camouflage the prosthesis. Use of medical grade silicone for facial prosthesis provides life like appearance. All the possible means of retention applicable for a particular patient should be used to enhance the same.

Conflicts of interest

All authors have none to declare.

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