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CASE REPORT

Prosthetic rehabilitation of an ocular defect with post-enucleation socket syndrome: A case report

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KEYWORDS

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Abstract Ocular trauma can be caused by road traffic accidents, falls, assaults, or work-related accidents. Enucleation is often indicated after ocular injury or for the treatment of intraocular tumors, severe ocular infections, and painful blind eyes. Rehabilitation of an enucleated socket without an intraocular implant or with an inappropriately sized implant can result in superior sulcus deepening, enophthalmos, ptosis, ectropion, and lower lid laxity, which are collectively known as post-enucleation socket syndrome. This clinical report describes the rehabilitation of post-enucleation socket syndrome with a modified ocular prosthesis. Modifications to the ocular prosthesis were performed to correct the ptosis, superior sulcus deepening, and enophthalmos. The rehabilitation procedure produced satisfactory results.

1. Introduction

Ocular trauma often results from road traffic accidents or from sharp objects like pencils, glass, nails, or needles (Stevens, 1997). Enucleation is often indicated for serious injuries to the eyes. After enucleation surgery, the loss of volume and rotation of intraorbital contents can result in superior sulcus deepening, enophthalmos, ptosis, ectropion, and lower lid laxity, which are known as post-enucleation socket syndrome.

Ptosis of the upper eye is characterized by an abnormally low-lying upper eyelid margin, which narrows the palpebral opening of the eye. There are two types of ptosis: pseudo and true. Pseudo ptosis usually results from a lack of orbital volume, and may result from microphthalmus, enophthalmos, phthisis bulbi, or poorly fitted prostheses. True ptosis is commonly attributed to improper development of the levator muscle, aging, trauma, or muscular or neurologic disease. Superior sulcus deformity produces deep surface contours in the upper eyelid above the tarsus and may arise from atrophy of the orbital fat, degeneration of the extraocular muscles, or displacement of the orbital implant. Ocular prostheses are indicated in post-enucleation and anophthalmic socket syndromes, and they improve quality of life of patients (Raizada and Rani, 2007).

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Patients with ophthalmic sockets complain about mucoid discharge associated with wearing their prosthetic eyes. This problem is the second highest concern among patients with prosthetic eyes. Deposits dictate the responses of sockets to prosthetic eyes, and different cleaning regimens and surface finishes can reduce problems (Pine et al., 2013). This clinical report describes the rehabilitation of post-enucleation socket syndrome with an ocular prosthesis. Surface finish modifications to the ocular prosthesis were done to correct ptosis, superior sulcus deepening, and enophthalmos.

2. Case Report

A 50-year-old male was referred to the maxillofacial prosthetic service for rehabilitation of an ocular defect. The patient's chief complaint was a defect associated with an artificial right eye. The patient's past medical history revealed that the eye was lost after it was injured with a stick 15 years previously. Enucleation was performed, and an intraorbital implant was placed 2 months prior to presentation (Fig. 1a and b).

Examination of the eye revealed the presence of superior sulcus deepening, upper eyelid ptosis, superior and inferior eyelid laxity, normal lacrimal secretion, adequate superior fornix depth, and shallow inferior fornix depth (Fig. 1). The treatment plan involved fabrication of an ocular prosthesis with modifications to correct the upper eyelid ptosis and the superior sulcus deformities. An ocular impression of the eye was made with polyvinyl siloxane impression material (Fig. 2) (3M ESPE, Express, 3M, USA). A mold was made with Type III dental stone (Lafarge Prestia, Meriel, France), and a conformer was fabricated with clear, heat-polymerized polymethyl methacrylate (PMMA) resin (Vertex-Dental, Zeist, Netherlands), according to the manufacturer's instructions (Fig. 3).

Figure 1 Appearance of patient with right ocular defect in frontal view (A) and lateral view (B).

Figure 2 Impression of ocular defect made with polyvinyl siloxane impression material.

Figure 3 Clear heat polymerizing polymethyl methacrylate (PMMA).

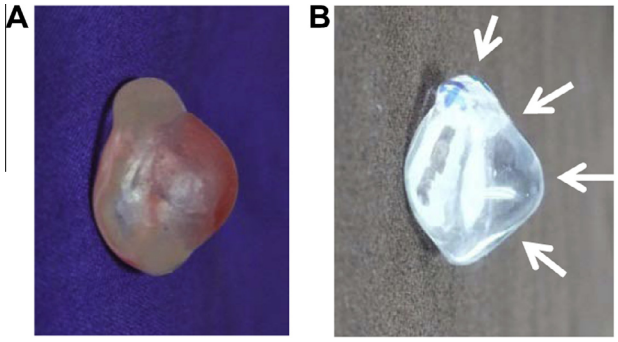

Figure 4 Adjustment done on the conformer; reducing the anterio-superior aspect, addition of wax on the anterior corneal area, reducing the anterior-inferior surface and addition of wax on postero-superior (A) and final conformer (B).

The conformer was tried in the patient, and modifications were made according to Allen's Technique (Allen, 1976). The conformer was reduced on the anterior-superior aspect to reposition the superior tarsal plate, correct the ptosis, and increase eye opening. Baseplate wax (Carvex TT 100 soft, Carvex, Holland BV, Haarlem, Holland) was added on the anterior corneal area to support the upper eyelid, and the anterior-inferior surface of the conformer was reduced to lift the lower eyelid. Baseplate wax was also added on the postero-superior surface to lift the margin of the eye (Figs. 4 and 5). Finally, the baseplate wax was replaced with PMMA. The final conformer was delivered to the patient, who was instructed to wear it for 2 weeks (Fig. 4) to allow tissue adaptation.

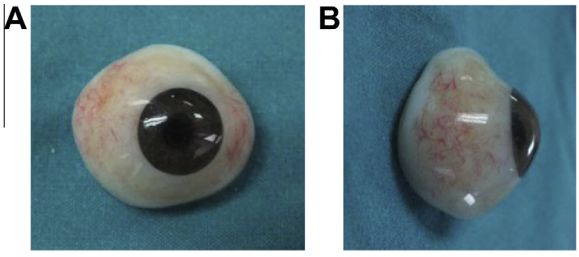

Figure 5 Final ocular prosthesis on frontal view (A) and lateral view (B).