

Custom made gold lid implant prosthesis for rehabilitation of Lagophthalmos

Clinical Report

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ABSTRACT

Patients with lagophthalmos (inability to close eyelid) are at risk of severe eye complication due to corneal exposure. Various treatment modalities can be used to restore function and esthetics. Among all, custom gold lid implant is an effective method of treatment with little morbidity and better patient compliance. The prosthodontist functions as an integral part of the treatment team to achieve the most functional and esthetic result.

KEY WORDS: Gold lid implant, lagophthalmos

INTRODUCTION

Lagophthalmos is the inability to close the eyelid. It may be the result of the residual effect of VIIth cranial nerve damage secondary from Bell's palsy, tumors, cancer removal, T.M.J. arthrotomy, congenital dysphasias, infections or degenerative diseases. Ocular problem are the serious consequence of facial nerve paralysis because the orbicularis oculi muscle is paralyzed, leaving the levator palpebrae muscle unopposed. The eyelids do not close and a wide-eyed appearance results. The inability to blink leads to Bell's phenomenon in which the pupil turns up, exposing the sclera inferiorly and covering the cornea with the upper lid.

Failure to provide protection to the eye may lead to exposure keratitis, corneal abrasions or blindness.^[1,3]

A variety of non-surgical and surgical treatment modalities like lateral tarsoraphy, cyanoacrylate adhesives, eyelid loading techniques, palpebral wire springs, regional muscle transfer, lid magnets etc. have been described with varying success for the reanimation of paretic eyelid.

The eyelid implant method of treatment has proved to be successful, easily accomplished with great

patient compliance. This case report describes the technique for providing upper lid implants of gold for patients who have experienced lagophthalmos. Various loading materials have been used in the past but gold is generally preferred for eyelid-loading procedures. This is because gold combines considerable density with malleability, low reactivity, and good color match through the overlying skin and is relatively well tolerated by the surrounding tissues.^[2,6]

Advantages of gold lid loading:^[5,6]

Lid loading procedure maintains the palpebral fissure dimensions so that field of vision is not decreased.

- The prosthesis can be tested preoperatively, unlike magnets and springs.
- Procedure can be performed under local anaesthesia.
- More esthetic results can be achieved with custom-made prosthesis that follows the natural eye contour and blends with the folds of the eyelid.
- Ease of reversibility in case of patient with recovering facial paralysis.

Rationale

Implantation of weight in the eyelid introduces a gravitational downward force that serves to counterbalance the upward pull of levator palpebrae muscle. Eyelid movement can thus be stimulated by

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Figure 1: Pre-operative showing lagophthalmos and facial paralysis of right side



Figure 2: Determining appropriate weight to close the eyelid



Figure 3: Impression of right eye for custom fabrication of gold lid

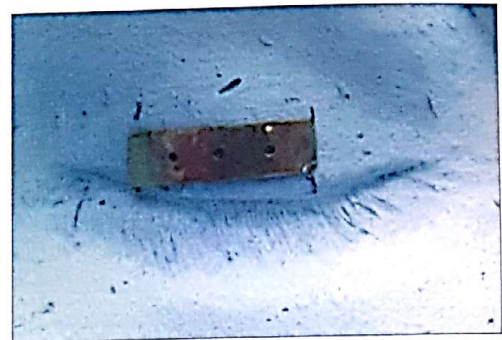


Figure 4: Trial of custom fabricated gold lid



Figure 5: Incision line 3mm from the eyelid margin

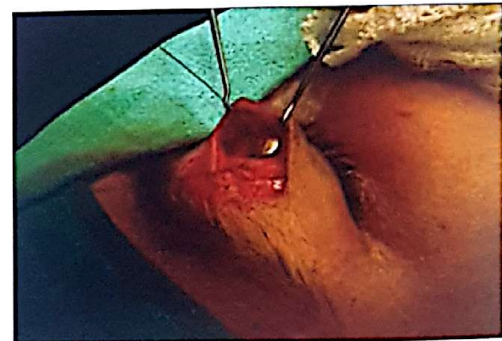


Figure 6: Gold lid implant placement Between the tarsal plate and the orbicularis



Figure 7: After 6 month post-operative

relaxing and contracting the levator palpebri muscle.^[4]

Clinical report

A patient aged 22 reported to the department of otolaryngology, All India Institute of Medical Sciences with a chief complaint of inability to close right eyelid and unaesthetic appearance. On examination, it was found that patient was unable to close the right eyelid, deviation of tongue on the affected side on protrusion [Figure 1], inability to raise eyebrow on the right side, and deviation of mouth on the opposite side on opening. Based on clinical findings patient was diagnosed as Bells Palsy of right side. Patient was

referred to department of prosthodontics and it was decided to place a custom fabricated gold weight in more favorable position to close the eyelid.

Pre-operative assessment

- The exact shape and weight of the implant was determined preoperatively
- The requisite equipment included range of weights constructed from brass available in increments of 0.2 gm from 0.6 to 1.6 gm
- Pliers were used to shape the weight so as to obtain a reasonable fit for assessment purposes
- Double sided tape was used to hold the weight to the eyelid
- The weight that best counterbalances the levator palpebri muscle and gives the best result in both static and dynamic simulation was selected [Figure 2].
- Specification of the prosthesis in this patient was 8 mm × 5 mm × 1 mm and the weight selected was 1.25 gm.

Making impression of the eyelid region

- Tap the eyelid shut
- Impression was then made of the eyelid region with a thin mix of irreversible hydrocolloid
- Quick set plaster was poured over the hydrocolloid to provide support [Figure 3]

Fabrication of custom gold lid prosthesis

- Upper eyelid of the master cast was lubricated and

a properly contoured wax pattern was fabricated

- Wax pattern was invested and casted in 22K gold
- Custom made gold lid implant prosthesis was tried on the model [Figure 4]
- Three holes were made on the superior surface of the lid implant to facilitate its fixation during implant.

Surgical technique

- Site of placement: Between the tarsal plate and the orbicularis muscle along mid pupillary line
- Incision was made in the tarsal-subtarsal fold and the pocket was elevated just superficial to the tarsal plate [Figure 5]
- Gold lid implant was placed in the middle of eyelid, 3 mm from the eyelid margin [Figure 6]
- Lid implant was then sutured to the orbital septum through each of the three holes.
- After 6 month patient was able to close her eyelid. [Figure 7]

DISCUSSION

Complications were nonexistent and it appears that custom made gold lid implant is valuable and perhaps preferred method of eyelid reanimation for patients with paresis who suffers from lagophthalmos of upper eyelid. It is hoped that, with time, fewer tarsorrhaphies and more reanimating procedures will be performed for patients with facial paralysis.^[2,4,7]

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