Gold weights as upper eyelid implants for facial paralysis

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Abstract Facial nerve palsy results in paralysis of orbicularis oculi muscle. This results in symptoms of ocular irritation due to inadequate eyelid closure. The primary objective of the surgeon is to protect the eye, via surgical or non-surgical methods. Surgical methods involve tarsorrhaphy, gold weights or springs as well as lower lid procedures. Nine such cases where Gold Weights were implanted in the upper eyelid with good results, are presented.

Keywords Facial palsy · Gold weights as upper eye lid implants.

Introduction

Facial nerve palsy results in paralysis of orbicularis oculi muscle. This results in symptoms of ocular irritation due to inadequate eyelid closure. The primary objective of the surgeon is to protect the eye, via surgical or non-surgical methods. Surgical methods involve tarsorrhaphy, gold weights or springs as well as lower lid procedures [1].

Implantation of gold weights in the upper eyelid is a simple procedure which is effective in the ocular management in facial paralysis [2–5]. Nine such cases where Gold Weights were implanted in the upper eyelid with good results are presented.

Materials and methods

A study was carried out by analysis of nine patients who underwent gold weight implant in upper eyelid for the ocular management of facial paralysis in last 2 years. The cause of facial paralysis was different in different cases. Two of these patients had facial palsy following surgery for acoustic neuroma, one was following glomus jugulare, two were old Bell's palsy, two were having carcinoma of middle ear who had undergone subtotal petrosectomy, one had malignant otitis externa and one had undergone surgery for carcinoma of parotid. The inadequacy of eye closure was assessed in all these cases (Fig. 1). Measurements were taken by taping the weights to the pretarsal portion of the upper lid to determine the weight needed to reduce the lagophthalmos. The heavier weights can induce ptosis 1.8–2.2 g are most commonly used. Preoperative perfect measurements give optimum results. The follow up of these cases is available for 6 months to 2 years.

Gold implant

Is made up of 24 carat pure gold. It has three holes for fixing the implant. The implant is available in the form of strip of gold plate weighing 1.8, 1.9, 2, 2.1, 2.2 g made as per the requirement.

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Fig. 1 Preoperative picture

Fig. 3 Incision deepened upto the tarsal plate

Surgical technique

1. Topical anesthesia is given with 4% lignocaine drops in the eye. Two percent lignocaine with adrenaline is injected in the upper eyelid.
2. Cornea is protected with lid guard.
3. Incision is marked 6 mm from lid margin.
4. Length of incision should be 1.5 cm (Fig. 2).
5. Incision is deepened upto the tarsal plate (Fig 3).
6. Gold plate is kept in the tunnel and secured with 5–0 ethilon with simple sutures (Fig. 4).
7. Secure the implant by putting three such sutures and burry the implant in the tunnel.
8. Suturing of eyelid is done with 5-0 vicryl with simple sutures going through skin, as well muscle (Fig. 5).

Fig. 4 The gold implant secured to the tarsal plate

Fig. 2 Incision on upper eyelid

Fig. 5 Suturing

Fig. 6 Postoperative picture

Results

Results of the surgery were good in all nine cases. Patients were able to close the eye with reduction of all the ocular symptoms (Fig. 6). One patient had inadequate closure of the eye probably due to laxity of the lower eyelid due to longstanding facial palsy. Other patients showed satisfactory long term results. Implantation in the upper eyelid is a reversible surgery [6]. The two patients in whom it was done for Bell's palsy did not show any improvement even after 1 year. So removal of the implant could not be done in any of the patients.

Discussion

Facial nerve paralysis results in inadequate eye closure, oral incontinence and social handicaps. The muscles of the face are exquisitely designed for both voluntary and involuntary expression. Paresis of the orbicularis oculi muscle results in diminished blink, incomplete eyelid closure, impairment of the nasolacrimal pumping system and occasional eyelid malposition. The blink reflex and lid position are important in maintaining the ocular surface epithelial integrity. Lack of blinking and incomplete eyelid closure result in increased evaporation from the ocular surface, discontinuity of the precorneal tear film and degenerative changes in the surface erosions (exposure keratitis) and ulceration which ultimately can result in permanent visual loss. When intrinsic corneal disease coexists with paralytic lagophthalmos (e.g. neurotrophic keratitis with corneal anesthesia) or decreased tear production (e.g. autonomic facial nerve involvement) ocular surface deterioration is often accelerated [7]. The ophthalmic management of paralytic lagophthalmos is directed at maintaining a normal

corneal epithelium which provides comfort and preserves visual acuity. Initial management would include an ocular lubricant such as a tear substitute or ointment. If this is not effective or if the paralysis is expected to persist, more permanent therapy would include procedures which narrow the palpebral fissure such as tarsorrhaphy, lower lid elevation with spacers, medial canthoplasty or procedures which increase the amplitude of the blink reflex such as gold weight or spring implant.

Tarsorrhaphy has been the standard method of managing exposure keratitis and is often effective if large enough. However, larger tarsorrhaphies are disfiguring and do limit peripheral vision.

Gold weight implantation is the most direct and effective method of enhancing the blink reflex [8–10].

It is a simple method and is done under local anesthesia as an OPD procedure. Complications are negligible if done properly. The result of gold implantation in the present study are satisfactory and comparable to results of the proponents of this procedure all over world [11, 12].

Conclusion

Gold implant for upper eyelid is an effective procedure for avoiding the ocular symptoms of facial palsy.

References

1. Levine RE (1992) Reanimation of paralyzed eyelids. *Facial Plast Surg* 8:121–126.
2. May M (1987) Gold weight and wire spring implants as alternatives to tarsorrhaphy. *Archotolaryngol Head Neck Surg* 113:656–660
3. May M (1988) Paralyzed eyelids reanimated with a closed-eyelid spring. *Laryngoscope* 98:382–385
4. May M, Hoffmann DF, Buerger GF, Soll DB (1990) Management of the paralyzed lower eyelid by implanting auricular cartilage. *Arch Otolaryngol Head Neck Surg* 116:786–788
5. Neuman AR, Weinberg A, Sela M, Peled IJ, Wexler MR (1989) The correction of seventh nerve palsy lagophthalmos with gold lid load (16 years experience). *Ann Plast Surg* 22:142–145
6. O'Connell JE, Robin PE (1991) Eyelid gold weights in the management of facial palsy. *J Laryngol Otol* 105:471–474
7. Self SR, Chang J (1992) Management of ophthalmic complications of facial nerve palsy. *Otolaryngol Clin North Am* 25:669–690
8. Karen M Abella, Robert S Bakera, David. Cowena, John D Porter (1998) Efficacy of gold weight implants in facial nerve palsy: quantitative alterations in blinking. *Vision Research*, 3(19):3019–3023
9. Hontanilla B (2001) Weight measurement of upper eyelid gold implants for lagophthalmos in facial paralysis. *Plast Reconstr Surg*. 108(6):1539–1543

10. Aggarwal E, Naik M, Honavar S (2004) Effectiveness of the gold weight trial procedure in predicting the ideal weight for lid loading in facial palsy: A prospective study. *Amn J Ophthalmology* 143(6):1009–1012
11. Tate, James R, Kriet, David J, Tollefson, Travis T (2006) Paralytic lagophthalmos: gold-weight implantation. *J ENT*
12. Jayashankar N, Morwani KP, Shaan MJ, Bhatia SR, KT Patil ((2008) Customised gold weight eyelid implantation in paralytic lagophthalmos, *The Journal of Laryngology & Otology* 122:1088–1091