

## Eyelid gold weights in the management of facial palsy

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### Abstract

We reviewed our experiences with 20 patients with established facial palsy who had a total of 24 gold weights inserted. All patients had corneal symptoms: ulceration, exposure keratitis or discomfort abolished. Functional improvement *i.e.* reduction of lagophthalmos and restoration of the blink reflex was good in our opinion and that of the patients in all cases. Dissatisfaction with the cosmetic result was expressed by two patients due to the prominence of the weight under the thin eyelid skin. Three patients had to have the weight replaced because it was too light. Two patients had their weights removed because of recurrent eyelid infections. In two patients the weights were removed as they had migrated over the tarsal rim. In one of these patients the weight was replaced immediately in the appropriate position, in the other it was not replaced as dissatisfaction had been expressed due to the bulky appearance of the weight under the eyelid skin.

### Introduction

The insertion of a gold weight into the upper eyelid in patients with facial palsy, to provide improvement in function and the cosmetic appearance of the eye is an easy simple procedure which can be performed under local or general anaesthesia. The procedure can be easily revised or reversed if necessary.

### Material and methods

During the period 1978–1990, a total of 24 gold weights were inserted into the upper eyelids of 20 patients with eye symptoms secondary to established facial palsy. Seven patients had a gold weight only while five had a gold weight added to an already established McLaughlin's tarsorrhaphy. Eight patients had a McLaughlin's tarsorrhaphy and gold weight as a combined procedure. There were 12 females and eight males. The age range of the patients, at the time of insertion of the gold weights, varied from 26–71 years old. The causes of the facial palsies are shown in Table I. The weights were inserted into the eyelids from a few months to 45 years after the onset of the facial palsy. Follow-up has been from 5 months to 7 years. Gold weights were inserted for one or a combination of the reasons listed below:

1. when an adequate permanent lateral tarsorrhaphy did not control eye symptoms (irritation, epiphora, exposure keratitis, corneal ulceration);
2. where eye symptoms were controlled but only with a tarsorrhaphy which restricted the visual field. The addition of a gold weight permitted the tarsorrhaphy to be reduced in extent without compromising the cornea;
3. as a cosmetic procedure to reduce the wide-eyed

appearance due to lagophthalmos and to improve the blink reflex;

4. for a combination of the reasons above.

Three patients also had cross-face nerve grafts. Two patients had interposition facial nerve grafts. Two patients had facio-hypoglossal grafts and one patient a facial nerve decompression, from the middle cranial fossa to the stylomastoid foramen, in an attempt to improve their facial nerve function. Plastic surgical procedures were also carried out. Five patients had static fascial slings and five had a static fascial sling combined with a nasolabial 'lemon slice'. These procedures were performed to obtain alignment of the mouth at rest and to reduce problems with drooling of saliva and mastication. The weight of the flaccid musculature of the paralysed side of the face on the lower eyelid enhances any tendency to lower lid ectropion. Static sling procedures help to reduce this effect.

### Operative procedure

The implants used initially were obtained commercially. They are of 24 carat gold, weigh 1 gm and measure

TABLE I  
CAUSES OF THE FACIAL PALSIES

	No. of patients
Acoustic neuroma	10
Glomus tumour	2
Primary cholesteatoma	1
Cholesteatoma	1
Meningioma	1
Parotid tumour	1
Head injury	3
Bell's palsy	1
Total	20

5 × 10 mm with an upper marginal hold. (Fig. 1). Heavier weights may be obtained with great difficulty, and at considerable extra expense. For this reason, during the last year, we began to produce our own weights with a considerable reduction in cost. A 10 gm gold strip is purchased commercially and from this strip a range of different weights of gold implant can be produced (usually five or six). (We utilized the technique described by McLaughlin (1952) for all our tarsorrhaphies). All but one of our cases was carried out under general anaesthesia but local anaesthesia may be used as effectively. (May, 1987; Sobol and Alward, 1990).

An incision 1 cm long is made in the tarsal, supratarsal fold. The incision is extended through skin, subcutaneous tissue and through the invariably atrophic orbicularis oculi and levator palpebrae muscles onto the tarsal plate. A pocket is created to accommodate the weight so that it is positioned centrally on the tarsal plate 3 mm from the lid margin. An absorbable suture, through the hole in the weight, holds the prosthesis in position. This technique is described by May (1987).

## Results

### Group 1. Gold weight only

In seven patients a gold weight only was used in the upper eyelid. In six of these, it was inserted solely for cosmetic reasons. In one patient, as well as cosmetic problems, exposure keratitis was troublesome. These patients had a cosmetic disability due to lagophthalmos giving a wide-eyed appearance on the affected side. The insertion of a gold weight reduced this deformity in all the patients producing symmetry of the open eyes at rest (Fig. 2) and restored the blink reflex. (Fig. 3). Although only one patient had exposure keratitis prior to insertion of the gold weight all had suffered from drying and an uncomfortable sensation of the eye despite intensive medical treatment. These problems were cured by insertion of the weights.

Two patients had to have their weights removed and replaced, at 2 months and 13 months, after insertion

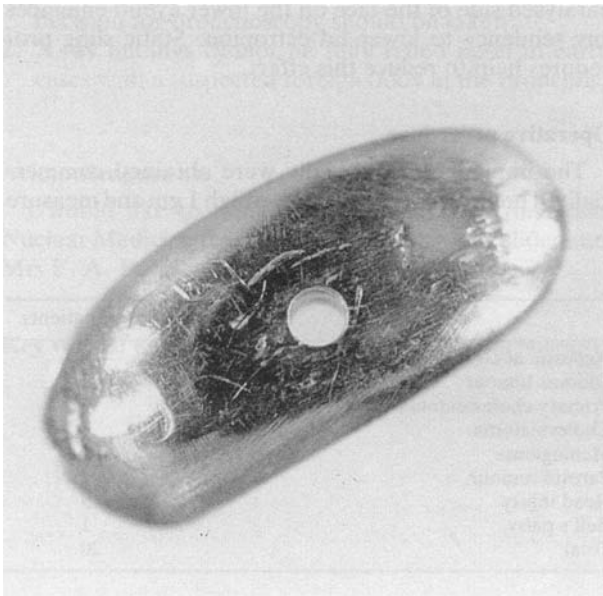


FIG. 1  
Commercial eyelid gold weight.

because they were too light. Insertion of a heavier weight solved this problem. One patient had to have the weight removed 12 months after insertion because it appeared to be causing recurrent eyelid infections and one case had the weight removed five years after insertion due to migration in position over the tarsal rim. Review has been from 5 months to 2 years.

### Group 2. Gold weight added to an established lateral tarsorrhaphy

Five patients had a gold weight added to an already established tarsorrhaphy. In two cases, despite the tarsorrhaphy, corneal ulcers had developed, in two others persistent exposure keratitis had occurred. It was felt that extension of the tarsorrhaphy would limit the visual field and have an adverse cosmetic effect. The addition of the gold weight allowed rapid healing of the cornea to occur in all four cases. There have been no further problems with corneal damage. In one case the weight had to be replaced after seven years to a heavier model to obtain eye closure. One case had a gold weight added to the tarsorrhaphy for cosmetic reasons only. Total satisfaction with the cosmetic result has been expressed by all the patients. Review has been between 14 months to 7 years.

### Group 3. Gold weight and tarsorrhaphy as a combined procedure

Eight patients had a McLaughlin's tarsorrhaphy and gold weight as a combined procedure, five for exposure keratitis and one for a corneal ulcer. Two patients had a gold weight combined with a tarsorrhaphy for cosmetic purposes. In these two patients the tarsorrhaphy was done to control lower lid ectropion. In the six patients with corneal problems these rapidly resolved. In one of these cases the weight caused recurrent eyelid infections and so had to be removed after two months and one weight had to be repositioned after two years. The two patients who had the procedure for cosmetic reasons were satisfied with the results.

## Discussion

Patients with a facial palsy often have eye problems. These range from ocular irritation, exposure keratitis and corneal ulceration. the risks of developing these



FIG. 2  
Eyes open. Symmetry at rest. Right facial palsy.



FIG. 3  
Eyes closed. Right facial palsy.

complications are related to the degree of lagophthalmos, decreased corneal sensation (not uncommon after removal of large acoustic neuromas), lack of tearing and ectropion of the lower eyelid. The most severe problems occur in those patients who do not have a good Bell's phenomenon *i.e.* the reflex ability of the cornea on the paralysed side of the face to move upwards and outwards. The combination of lack of Bell's phenomenon, an Anaesthetic cornea and Dryness of the eye, the BAD syndrome, inevitably leads to corneal injury. (Levine, 1986). Even those with good 'Bell's phenomenon' suffer exposure of the lower lateral sclera. Cosmetic effects are considerable, with a wide-eyed staring look due to lagophthalmos and loss of the blink reflex. Ectropion of the lower lid is not uncommon and is aggravated by weak mid-facial musculature.

The time honoured method of alleviating these problems is with a lateral tarsorrhaphy. This procedure on its own does not always achieve the objectives of avoiding corneal complications and producing an acceptable cosmetic result. In order to provide adequate corneal protection in some of our cases, extension of the tarsorrhaphy would inevitably have led to reduction of the visual field.

The use of gold weights in the management of lagophthalmos due to facial palsy was reported by Smellie (1966) and Barclay and Roberts (1969). The movements of the upper lid in facial palsy were described by Smellie (1966):

1. the upper eyelid follows the eye on looking downward and this ability is partially retained despite a facial palsy;
2. if the paralyzed eyelid is observed during a normal blink reflex a just discernible movement of the paralyzed eyelid in time with the blink of the normal side can be detected;

Smellie (1966) attributes the second observation to reciprocal reflex relaxation of the levator palpebrae aided by gravity allowing the eyelid to fall. The addition of a gold weight to augment the effect of gravity enhances the effects above to produce a near normal blink reflex.

Gold weight implantation depends on the effects of gravity. The blink reflex obtained is not as brisk as the normal side. Theoretically, problems should arise at night due to a recumbent posture, reduced blinking and

scleral exposure, but gold weighting appears to abolish this.

Gold weight implantation does not interfere with normal eyelid function (Smellie, 1966) and so is especially suitable in those patients with a partial facial paralysis.

The major problem we experienced with the technique was the difficulty in judging the weight of gold required to produce the desired result. Three patients required replacement of their weight to a heavier prosthesis. May (1987) suggests having a range of gold weights 0.6–1.2 gm available in the clinic. He then assesses the prosthesis in terms of weight, restoration of the blink reflex and patient acceptability by temporarily pasting the weight to the upper eyelid. Now that we are producing our own weights at a much reduced cost we shall be in a position to adopt this technique. We have found that weights up to 1.4 gm may be required.

Occasionally the weight is noticeable through the thin upper eyelid skin especially in women where the skin tends to be thinner than in men. Two patients requested removal of their weight for this reason. The other patients felt it was a minor problem compensated for by the benefits gained. Two patients had to have their weights removed due to recurrent eyelid infections. Whilst the weight was in and free of problems function and cosmetic results were excellent. Two patients experienced cosmetic problems at two and five years due to migration of the weight. In one patient the weight was repositioned and no further problems have occurred. The other patient requested that his weight was not replaced due to the prominence of the weight under the eyelid skin. Within a few weeks despite an adequate tarsorrhaphy and aggressive medical management a corneal ulcer developed.

## Conclusions

The insertion of an eyelid gold weight in the upper lid in established facial palsy is an effective method of reducing the incidence of discomfort in the eye and corneal complications. It also reduces lagophthalmos and improves the blink reflex and so improves function and cosmetic appearance. The technique is technically simple, has few complications and is easily revised or reversed.

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## References

- Barclay, T. L., Roberts, A. C. (1969) Restoration of movement to the upper eyelid in facial palsy. *British Journal of Plastic Surgery*, **22**: 257–261.
- Levine, R. E. (1986) Eyelid reanimation surgery. In: *The Facial Nerve*. (May, M., ed.) Thieme Inc.: New York, p. 681.
- May, M. (1987) Gold weight and wire spring implants as alter-

natives to tarsorrhaphy. *Archives of Otolaryngology Head and Neck Surgery*, **113**: 656–660.

McLaughlin, C. R. (1952) Epiphora in facial paralysis. *British Journal of Plastic Surgery*, **263**: 87–95.

Smellie, G. D. (1966) Restoration of the blinking reflex in facial palsy by a simple lid load operation. *British Journal of Plastic Surgery*, **19**: 279–283.

Sobol, S. M., Alward, P. D. (1990) Early gold weight implant for rehabilitation of faulty eyelid closure with facial paralysis: an alternative to tarsorrhaphy. *Head and Neck*, **12**: 149–153.

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