British Journal of Plastic Surgery (1992), 45, 460–464

BRITISH JOURNAL OF PLASTIC SURGERY

Morbidity after gold weight insertion into the upper eyelid in facial palsy

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SUMMARY. **Morbidity and outcome after gold weight insertion into the upper eyelid in patients with lagophthalmos were assessed retrospectively by patient questionnaire and case-note review. Results indicated that although satisfaction with the lid and overall facial appearance was high, complications and symptoms attributable to the gold weights were not uncommon.**

Paralysis of the orbicularis oculi muscle in patients with facial palsy results in inability to close the eyelids (*lagophthalmos*) and a staring "wide-eyed" appearance due to unopposed action of the levator palpebrae muscle. In some patients the need to correct the cosmetic defect is combined with a necessity to provide adequate cover for the cornea to remove the potential threat of blindness through prolonged corneal exposure and corneal ulceration.

Tarsorrhaphy has become the preferred surgical option for treatment of lagophthalmos but is not without its drawbacks including restriction of vision and the fact that the lid is not actually reanimated. Other surgical options have been described including the use of autogenous temporalis slings (Gillies, 1934), insertion of lid magnets (Muhlbauer *et al.*, 1973), silicon sling implants (Arion, 1972), palpebral wire springs (Morel-Fatio and Lalardrie, 1964; May, 1987) and insertion of lid loading devices. Lid loading operations rely on relaxation of the levator palpebrae muscle, which occurs during downward gaze and during voluntary and reflex lid closure (Smellie, 1966). Lid loading devices simply act to increase the gravitational pull on the paralysed lid when levator tone is reduced.

Several materials have been promoted for lid loading including stainless steel mesh (Sheehan, 1927), tantalum mesh (Sheehan, 1950) and gold (Smellie, 1966; Barclay and Roberts, 1969; Jobe, 1974; May, 1987; Chapman and Lamberty, 1988; Sobol and Alward, 1990). Gold is now accepted as the most suitable material, since it combines the desirable characteristics of high density and malleability with good colour camouflage beneath the thin skin of the upper eyelid.

Previous reports on the use of gold weights for lid loading have tended to concentrate on surgical technique and on the effectiveness of treatment. Perhaps because of the small numbers of patients reported in many such series, authors have tended to underemphasise the complications and problems associated with lid loading. The current retrospective study was therefore designed to address this particular shortfall by specifically assessing patient satisfaction and lid complications following gold weight insertion.

Materials and methods

The data for this study were provided from operating department records for the 10 year period from 1980 to 1990. Patients recruited into the study had been under the care of 1 consultant only (DHH).

Gold implants were manufactured on-site and preoperative assessment to determine the appropriate weight was routinely carried out by securing a range of trial weights to the upper lid, using adhesive tape, with the patient standing. The weight selected in each case was that which facilitated adequate lid closure without causing undesired ptosis. Surgery was carried out under general or local anaesthesia through a transverse supratarsal incision. The gold weights were inserted into a pocket which was developed between the tarsal plate and the orbicularis oculi muscle. Wounds were closed in 2 layers with subcuticular non-absorbable suture to skin.

Results were assessed retrospectively by review of case notes and also by postal questionnaire. Amongst other points the questionnaire asked about problems with the upper lid, eyelid appearance and the effect of treatment on the patients' overall facial appearance.

Results

A total of 54 patients received gold weight implants to the upper eyelid between 1980 and 1990; of these, 2 patients died subsequent to surgery and 2 foreign patients could not be traced. Out of 50 patients who were followed up for the study 41 (82%) responded to the postal questionnaire. There were 16 males (39%) and 25 females (61%); their ages at the time of surgery for lagophthalmos ranged from 3–68 years and the interval between the onset of symptoms and surgery

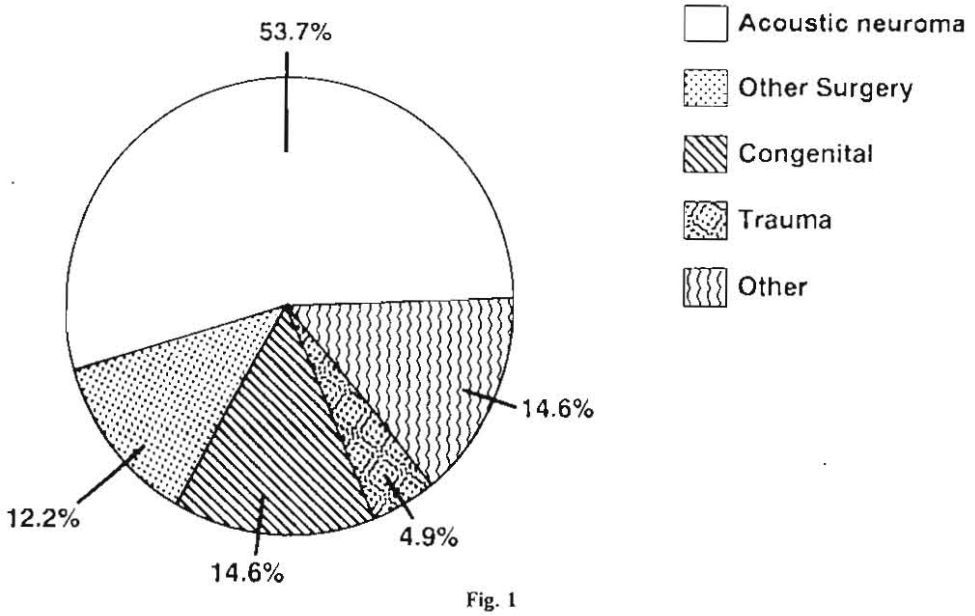

Fig. 1

Figure 1—Aetiology of facial palsy in 41 patients reviewed in the current study.

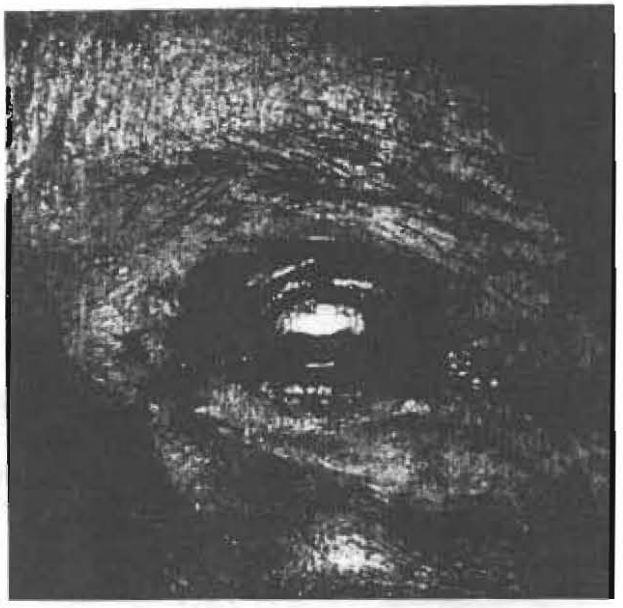

Fig. 2

Figure 2—Ulceration of a gold weight through the lid skin.

ranged from 2 months to 42 years (mean = 8.2 years). The postoperative follow-up interval ranged from 2 months to 10 years (mean = 4.3 years).

The aetiology of facial palsy affecting the patients reviewed is summarised in Figure 1. Surgery for acoustic neuroma formed the largest single group (22/41 = 54%); overall, surgery was the cause of palsy in 26/41 (66%) cases. Congenital facial palsy accounted for only 6/41 (15%) cases, a figure which reflects the remarkable ability of patients in this particular group to achieve adequate corneal protection independently. Trauma was responsible in 5 and "other" causes (15%) included mastoiditis, otitis media and Bell's palsy.

7 out of 41 patients (17%) no longer had their gold implants *in situ* at the time of review; 1 was removed following a sporting injury to the eye, 1 was removed on request and 5 implants ulcerated through the lid skin and either discharged spontaneously or were removed by surgical staff (Fig. 2). Case-note review showed that 2 out of 5 patients in the latter group had undergone previous lid surgery on more than one occasion whilst the other cases had not.

Further surgery to replace the implant with a lighter one was necessary in 3 patients and another patient underwent removal of a weight which had become superficial in its lateral part and for which an identical implant was successfully inserted at a later date. A further patient was offered a heavier weight but declined surgery.

In addition to the 5 patients who suffered "spontaneous" loss of their gold implants, 16 (39%) reported problems attributable to the weight itself. Specific symptoms mentioned included unsightliness due to bulging through the lid, redness, distortion of lid shape, and soreness, particularly after minor knocks. Two patients reported that their implant had shifted medially within the lid, one of these following minor blunt trauma.

In response to specific questioning 5/41 (12%) reported that their vision had improved as a result of gold weight insertion and 6/41 (15%) said it had suffered. 24 out of 41 patients felt that their eye was more comfortable.

A high proportion of patients reported that they had suffered from "watering" of the eye preoperatively (29/41) and 18 of these (62%) said that this symptom was improved after surgery.

Patients were asked if they had persistent symptoms from the eye itself and 33/41 (80.5%) gave affirmative responses. The main symptoms reported included epiphora (15/41; 36.6%), soreness (8/41; 19%), dryness (5/41; 12%), redness (4/41; 10%) and crusting of secretions on the lid margins after sleep (3/41; 7%).

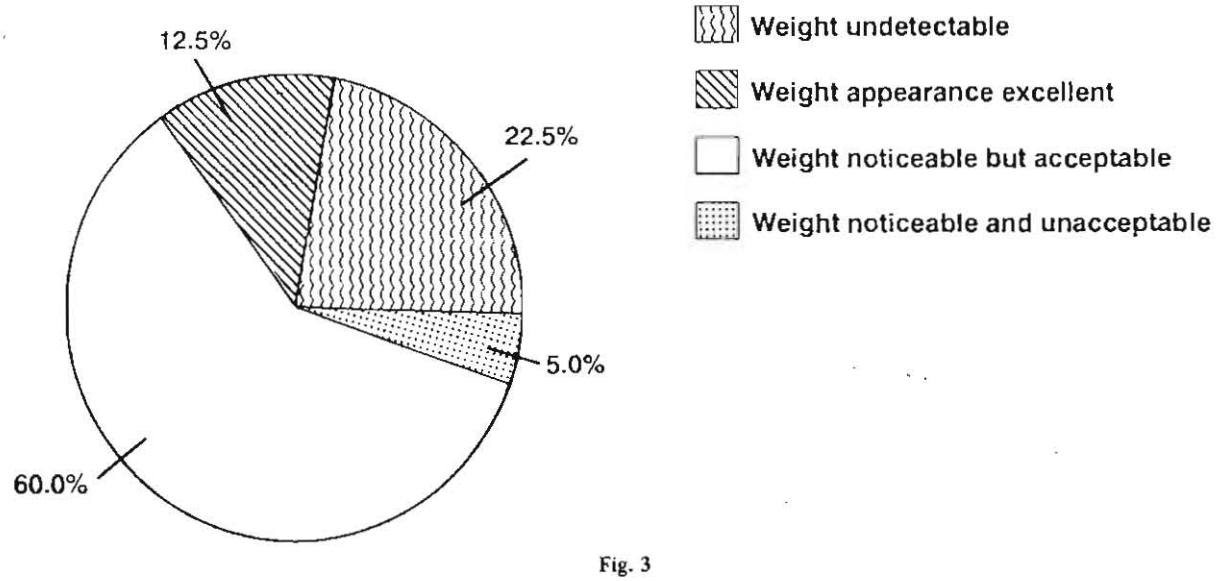

Fig. 3

Figure 3—Patient assessment of lid appearance following surgery.

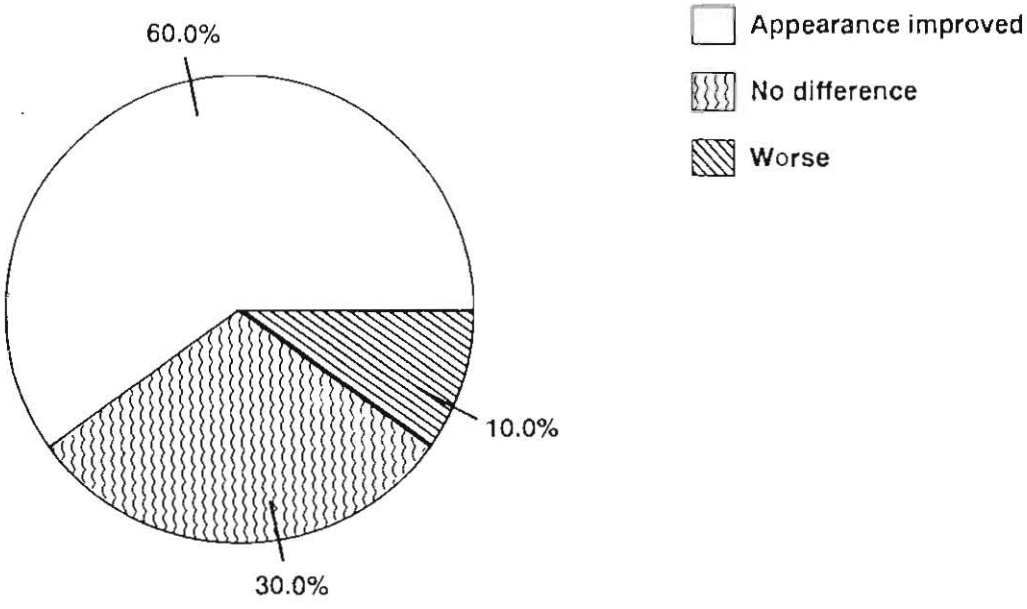

Fig. 4

Figure 4—Patient assessment of the effect of lid loading on overall facial appearance.

Patients were asked to rate the appearance of the lid with the weight *in situ* and 35% responded that it was either undetectable or excellent in appearance (Fig. 3). Only 5% felt that the appearance of the lid after surgery was unacceptable.

Patients were also asked about the overall effect of lid surgery on their appearance and 60% said that it was improved, while 30% said it made no difference and 10% said it was actually worse than before surgery (Fig. 4).

Discussion

Reports on the use of gold weights for lid loading have tended to give the impression that complications are either uncommon or non-existent (Barclay and Roberts, 1969; Jobe, 1974; May, 1987; Freeman *et al.*, 1990; Sobol and Alward, 1990); for example, May (1987), who reported a "success" rate of 91% in a series of 94 implants gave no mention of complications whatever and more recently Liu (1991) reported "no complications" in a series of 15 patients receiving gold weights as a secondary procedure. In contrast, the results of the current study, based on a 10 year review with a mean follow-up interval of 4.6 years, suggest that although many patients were satisfied with the cosmetic outcome, there exists a group of patients for whom surgery has led to troublesome symptoms and even extrusion of the implant. Our results showed that 2 out of 5 patients who suffered the latter complication had undergone previous lid surgery, suggesting that lid

Fig. 5

Figure 5—The current design of weight used at Mount Vernon Hospital; the flat profile helps to avoid unsightly bulging through the upper lid.

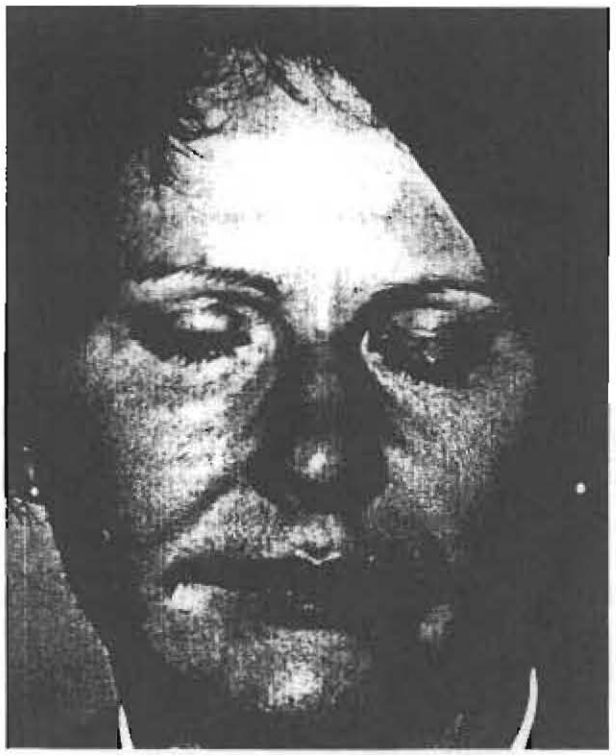

Fig. 6

Figure 6—Satisfactory closure of the right upper lid achieved by gold weight insertion. Slight bulging is evident medially.

loading as a secondary procedure may carry a greater risk of serious complications.

Medial migration of implants has been described previously (Chapman and Lamberty, 1988) and was reported by 2 patients in the current study. One of these was due to a documented episode of local trauma. It is our suspicion that shift, redness and tenderness may all be exacerbated by repeated rubbing of the lid by the patient.

A small number of patients in the current series (3/41) required revision surgery to replace their implants with lighter ones, in spite of routine preoperative assessment as described in the methodology. Liu (1991) advised securing trial weights to the upper lid for upwards of 30 minutes, a somewhat longer duration than that employed in our protocol to date. It is possible that longer trial applications could successfully have avoided the need for revision surgery in this group by identifying those patients with "levator fatigue" which was not evident on brief trial testing.

Previous authors have described the use of a short "up and down" lateral incision through which to develop a pocket to receive the gold implant. We believe that the transverse supratarsal incision provides optimal exposure without compromising cosmesis or safety; adequate exposure is particularly important if the eorrect plane of the pocket is to be developed, since superficial placement may contribute to ulceration or migration. In the current study extrusion never occurred through the incision scar (nor, incidentally, was infection an associated factor).

The design of gold weight employed in this unit has been gradually modified over the 10 year review period in an attempt to reduce unsightly bulging on the upper lid. Gold weights currently used (Fig. 5) are somewhat longer and are flat in cross-section compared with those used previously, which had a convex presenting surface. This rationalisation has helped reduce projection of the implant (Fig. 6) and, theoretically, may reduce the risk of extrusion by avoiding skin tightness over a convex surface and by redistributing the load on the inferior border along a greater length of lid margin.

Acknowledgements

We are grateful to the staff of the Medical Photography and Illustration Department at Mount Vernon Hospital for providing clinical photographs.

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Paper received 21 November 1991.
Accepted 4 February 1992, after revision.