

Treatment of Facial Palsies With External Eyelid Weights

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• **PURPOSE:** Because ocular exposure is a major complication of facial paralysis, an external gold eyelid load weight was evaluated for effectiveness in the treatment of this problem.

• **METHODS:** We prospectively studied 12 patients with unilateral facial paralysis who were treated with the external eyelid weights. Follow-up examinations included corneal exposure, amount of artificial tear usage, patient comfort, and complications associated with the weights. Treatment end points were the patient's decision to undergo a canthoplasty or placement of an implanted weight or resolution of the facial paresis to better than House's grade IV/VI.

• **RESULTS:** Of the 12 patients studied, ten had decreased corneal exposure on the affected side, with a coincident decrease in artificial tear drop use and increased comfort. One patient had no improvement in a corneal defect, and one was unable to apply the weight. Five patients had some difficulty in positioning the weight, which was related to upper eyelid dermatochalasis in four of the five. Only two weights were lost in over two years of total wearing time.

• **CONCLUSIONS:** External eyelid weights are useful in the treatment of ocular exposure associated with facial paralysis. The weights decreased corneal exposure, decreased reliance on artificial tear drops, and increased patient comfort. The weights

were helpful as a trial before implantation of eyelid weights and as a longer-term treatment for ocular exposure in patients with temporary facial paralysis. Loose upper eyelid skin may limit their usefulness in some patients.

OCULAR EXPOSURE IS ONE OF THE MOST CLINICALLY significant complications of facial nerve palsies. Seiff and Chang¹ described a successful staged approach to the treatment of this ophthalmic problem. Supportive care of the eye with aggressive use of artificial tear drops and ointments is the mainstay of initial treatment. Unfortunately, patients frequently become frustrated with this intensive supportive regimen. Compliance decreases, which leads to corneal decompensation.

Implanted gold eyelid load weights have been found to be effective in reducing the supportive care necessary.¹⁻⁷ MedDev Corporation (Los Altos, California) recently developed an external gold eyelid weight for use in treating ocular exposure associated with facial paralysis. We studied the experience of the first 12 patients to use these new external weights as part of the initial treatment of their ocular exposure.

PATIENTS AND METHODS

THE EXTERNAL GOLD EYELID LOAD WEIGHTS ARE SIMILAR in design to those currently available from MedDev for implantation, except that they lack fixation holes. The weights are made of 99.9% gold and are used in 1.0-, 1.2-, 1.4-, and 1.6-g sizes. Several of the weights were coated with skin-toned enamel, but most were polished gold. The weights were fixed to

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Fig. 1 (Seiff and associates). Left, Eyes open without external eyelid weight. Right, Eyes open with external eyelid weight (arrow).

the pretarsal surface of the upper eyelid with medical grade double-sided tape (Figs. 1 and 2).

Patients with unilateral facial paralyses were considered for participation in this study if they had palsy classified as House's grade IV/VI or worse (Table 1) and appeared able to comply with treatment instructions.⁸ Twelve patients with facial paralyses, four men and eight women, whose ages ranged from 23 to 82 years (mean, 53.75 years), were selected to use the external eyelid weights after informed consent was obtained. In ten patients paralysis was associated with

surgical resection of tumors, (eight with acoustic neuromas, one with hemangioma, and one with mucoepidermoid carcinoma), from a cerebro vascular accident in one patient, and from herpes zoster in one patient. Eight patients had House's grade VI/VI palsy, one had grade V/VI palsy, and three had grade IV/VI palsy (Table 2).

Patients underwent a complete preliminary ophthalmic examination, which included assessments of ocular discomfort and artificial tear drop and ointment usage. Corneal exposure was determined by



Fig. 2 (Seiff and associates). Left, Eyes closed without external eyelid weight. Right, Eyes closed with external eyelid weight (arrow).

TABLE 1

FACIAL PARALYSIS GRADING SYSTEM*

GRADE	DESCRIPTION	CHARACTERISTICS
I	Normal	Normal facial function in all areas
II	Mild dysfunction	Gross: Slight weakness on close inspection; slight synkinesis, no contracture or spasm At rest: Normal symmetry and tone Motion: Forehead: Moderate function Eye: Complete closure with minimal effort Mouth: Slight asymmetry
III	Moderate dysfunction	Gross: Obvious weakness but not disfiguring; noticeable but not severe synkinesis, contracture, spasm At rest: Normal symmetry and tone Motion: Forehead: Slight movement Eye: Complete closure with effort Mouth: Asymmetric and slightly weak with maximal effort
IV	Moderately severe dysfunction	Gross: Obvious disfiguring weakness; severe synkinesis, contracture, spasm At rest: Normal symmetry and tone Motion: Forehead: None Eye: Incomplete closure Mouth: Asymmetric and weak with maximal effort
V	Severe dysfunction	Gross: Barely perceptible motion; absent synkinesis, contracture, spasm At rest: Asymmetric Motion: Forehead: None Eye: Incomplete closure Mouth: Slight movement
VI	Total paralysis	No movement

*Adapted from the classification by House.⁸

fluorescein staining of the epithelium. Location and severity of the staining was noted for each patient, as demonstrated on slit-lamp examination.

Patients were asked to use the external eyelid weight as much as possible but were advised to remove it if eyelid irritation developed. They were told to use

0.5% or 1% carboxymethylcellulose drops at least four times per day and lubricating ointment at bedtime. This regimen typically represented a marked decrease in number of drops used compared to treatment before the use of weights. If ocular dryness or redness developed, patients were told to increase the drops and ointment as needed. Patients were asked to use the weights at night, and nocturnal ocular occlusion with moisture chambers was discontinued. Patients were followed up at regular intervals, and data were collected prospectively. End points for treatment with the external eyelid weights were the patient's desire to undergo a canthoplasty, placement of an implanted weight, or resolution of the facial palsy to better than House grade IV/VI.

RESULTS

OF THE 12 PATIENTS, TEN HAD MORE OCULAR COMFORT with the external weight than without (Table 3). Ocular comfort was attained in all patients who received the decreased artificial tear drop and ointment regimen described previously, and the patients appreciated this convenience. Patients with marked corneal exposure before the weight was applied (as demonstrated with fluorescein staining) improved, and patients with minimal exposure remained stable. However, one elderly patient found the weight too difficult to use and discontinued it after two days (Patient 10). Another patient, with both trigeminal and facial nerve pareses, was given the weight to help treat a corneal epithelial defect (Patient 4). The defect did not improve, and the weight was removed after three days so that more aggressive treatment could be instituted. Ultimately, the defect healed.

Patients were to use the external weights until they underwent canthoplasty, a weight was implanted, or their paralyses improved to better than grade IV/VI. The time to one of these end points varied, ranging from two to 249 days (mean, 69.5 days). Three patients with permanent or long-standing palsies, who were very pleased with the effect of the external weight, quickly chose to have a weight implanted (mean, 8.0 days; Patients 2, 3, and 9). Two other

TABLE 2

CHARACTERISTICS OF PATIENTS WITH FACIAL PALSY

PATIENT NO., AGE (YRS), GENDER	CAUSE OF PALSY	GRADE*
1, 44, F	Acoustic neuroma	VI
2, 63, M	Mucoepidermoid carcinoma	VI
3, 53, F	Herpes zoster	IV
4, 51, M	Acoustic neuroma	V
5, 57, M	Cerebrovascular accident	IV
6, 43, M	Hemangioma	VI
7, 79, F	Acoustic neuroma	IV
8, 71, F	Acoustic neuroma	VI
9, 23, F	Acoustic neuroma	VI
10, 82, F	Acoustic neuroma	VI
11, 47, F	Acoustic neuroma	VI
12, 32, F	Acoustic neuroma	VI

*According to the classification by House.⁸

patients with permanent palsies preferred to avoid surgical procedures while they recovered from a recent major operation (Patients 5 and 7). They used their external weights for extended periods of time (mean, 136 days). Five patients, who had what were believed to be temporary facial palsies, used the weights for an average of 107 days, hoping for spontaneous improvement and wishing to avoid surgery (Patients 1, 6, 8, 11, and 12). Three of these patients (Patients 1, 8, and 11) opted to proceed with more definitive treatment after 23, 58, and 20 days, respectively. The other two patients had to date used the external weights for 183 and 249 days and planned to continue indefinitely (Table 3).

Nine of the 12 patients ultimately underwent implantation of a gold eyelid weight, with or without lateral canthoplasty (Table 3). One patient was successfully treated with a lateral canthoplasty alone, and two patients described previously continued to use the external weight for several months. All 12 patients attained good corneal protection.

The weights were worn by the 12 patients for a total of 834 days. During that time, one weight each was lost by two patients. A commonly encountered problem was difficulty in applying and retaining the weight, which was noted by five patients. Dermato-

chalasis of the upper eyelid made proper weight placement difficult in four of these patients (Table 3).

No instance of contact dermatitis associated with the gold or tape was noted. Patients typically tolerated the weight for periods of two to five days, leaving it on while bathing. One patient reported removing the weight each day to shower and then replacing it. However, mild eyelid irritation developed in two patients when the weight was worn more than three days at a time.

Before weight placement, all patients in this study had upper eyelid retraction on the paralyzed side of the face. The weights caused a slight relative blepharoptosis of the upper eyelid during use by some patients. No patient complained of blepharoptosis, and this treatment was far better accepted than the pretreatment retraction with accompanying ocular irritation.

DISCUSSION

MULLER-JENSEN AND MULLER-JENSEN⁹ PROVIDED A BRIEF discussion of eyelid loading with external lead weights. In the present study, we investigated the use of external gold eyelid weights in the treatment of the ophthalmic complications of facial paralysis.

The 12 patients in this series had severe facial paralyzes, many with only a minimal expectation of recovery. This group of patients with facial palsy is not typical of those encountered in most practices but does provide a trial group to test the effectiveness of the weights in patients with severe, long-lasting palsy. It could be expected that patients with idiopathic, short-term facial palsies (such as Bell's palsies) would find these external weights of as much benefit as did the group described in this study. The average number of days that the weights were used was 70 and was over 150 days in three patients who had no difficulty with them. This time period should be long enough for recovery in most patients with idiopathic facial palsy.

Corneal exposure remained stable or improved with the external weights, coincident with a decrease in the use of artificial tear drops and ointment. All

TABLE 3

RESULTS WITH EXTERNAL EYELID WEIGHT

PATIENT NO	PERMANENT (LONG-STANDING) OR TEMPORARY PALSY	TREATMENT GOAL	DAYS USED	SYMPTOMS IMPROVED	ULTIMATE TREATMENT	DIFFICULTY WITH WEIGHT	PRESENCE OF DERMATOCHALASIS
1	Temporary	Avoid surgical procedure	23	Yes	Implanted weight	No	No
2	Permanent	Definitive treatment	4	Yes	Implanted weight, canthoplasty	No	No
3	Permanent	Definitive treatment	13	Yes	Implanted weight	No	No
4	Permanent	Treat corneal defect	3	No	Implanted weight	No	No
5	Permanent	Avoid surgical procedure	218	Yes	Implanted weight	Yes	No
6	Temporary	Temporize	183	Yes	Still using	No	No
7	Permanent	Avoid surgical procedure	54	Yes	Implanted weight, canthoplasty	Yes	Yes
8	Temporary	Temporize	58	Yes	Canthoplasty	Yes	Yes
9	Permanent	Definitive treatment	7	Yes	Implanted weight	No	No
10	Permanent	Definitive treatment	2	No	Implanted weight	Yes	Yes
11	Temporary	Definitive treatment	20	Yes	Implanted weight, canthoplasty	Yes	Yes
12	Temporary	Avoid surgical procedure	249	Yes	Still using	No	No

but two patients found that the weights provided a higher level of comfort and convenience than the previously needed aggressive regimen of artificial tears and lubricants.

Patients used the external weights for varying periods of time. The external weights proved useful as a trial for subsequent weight implantation. Patients with permanent or long-standing palsies and those with other problems, which limited their ability to care for their eyes, opted quickly to change to permanently implanted weights and canthoplasty after discovering how much they benefited from the external device. Patients recovering from major procedures, fearing surgery, or awaiting recovery of what was felt to be a temporary paralysis tended to use the external weights for more extended periods of time.

From the experience gained in this study, it appears reasonable to leave the weights in place for two to five days. Two patients complained of eyelid discomfort or itching if the weight was left in place longer. Although we expected to see cases of contact dermatitis from the gold or adhesive, none were noted. One patient removed the weight each day to bathe; however, this did not appear to be necessary, as several

patients regularly showered with it in place. Aggressive washing or swimming with the weight in place should be avoided.

Dermatochalasis of the upper eyelids appeared to pose the greatest problem for successful use of the external weights. Because of the loose, thin skin, the weights tended to hang down into the visual axis, and the adhesive did not stick well. Elderly patients and those with poor dexterity had difficulty applying and maintaining the weights. The weights should be used cautiously in these patients. Loss of the weight was a surprisingly minor problem. Only two weights were lost in a total of 834 days of use.

Overall, the external weights were found to be helpful as a trial before implantation of eyelid weights and as a longer-term treatment for patients with temporary facial paralyses. Ocular comfort and corneal compensation were improved or stabilized in virtually all patients. Although expected problems, such as contact dermatitis and loss of the weights, were minimal, dermatochalasis and patient dexterity were noted to be potential limitations in the use of these devices. Nonetheless, the results of this study indicate that gold external eyelid weights are useful in the

treatment of the ophthalmic complications of facial paralysis. Further investigations will better define their exact role.

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