Gold weight implants in the management of lagophthalmos in leprosy patients

ESSAM EL TOUKHY
Assistant Professor of Ophthalmology, Cairo University & deputy Director, National Eye Centre, Cairo, Egypt

Accepted for publication 08 December 2009

Summary
Objectives: To evaluate the use of gold weights as upper lid implants in the management of lagophthalmos due to facial nerve affection in leprosy patients.

Design: Gold implants of various weights were inserted in the upper eyelids of 12 patients with leprosy. Pre- and post-operative lid closures were recorded and patients were followed up for 1 year.

Results: Despite early satisfactory results with good closure, six out of 12 implants were extruded within the first year. Two more implants had to be removed due to chronic inflammatory reaction.

Conclusion: Long term result of gold weight implants in leprosy patient is unsatisfactory and needs further evaluation.

Introduction

Leprosy, a chronic infectious disease caused by Mycobacterium leprae, affects peripheral nerves and skin. The eyes are frequently affected with partial or total loss of vision.1,2 Corneal blindness is a leading cause of potentially blinding pathology in leprosy and is second only to cataract.3,4 The main corneal changes are exposure keratitis due to lagophthalmos, and reduced or absent corneal sensation, both predisposing to corneal ulceration and scarring.5,6 Most of the lagophthalmos in leprosy is the result of nerve damage affecting the zygomatic and temporal branches of the seventh cranial nerve. Prevention should be the primary method of controlling lagophthalmos, and should be achieved by early recognition of facial patches and adequate steroid treatment of Type 1 reactions.7–9

Surgical intervention is the only method for correcting lagophthalmos and preventing corneal disease and vision loss. Several surgical procedures were described with variable outcomes. Lateral tarsorraphy is simple but produces a poor cosmetic outcome. Horizontal lower lid shortening is more complex but works only on the lower lid and cannot correct lagophthalmos more than 3 mm. Temporalis transfer is more complex and requires a long...
period of intensive physiotherapy. Lagophthalmos in non-leprosy patients is now commonly managed with upper lid closure augmentation procedures that provide a downward force on the upper lid when the levator palpebrae relaxes. Stainless steel wire implants and ear cartilage grafts to strengthen the levator muscle are typical procedures.\textsuperscript{10,11}

Lid loading with a gold weight of appropriate size is another procedure with a high success rate in selected cases.\textsuperscript{12,13} In our practice, gold weight implants were used in more than 60 patients over the past 15 years with a high success rate. We evaluated gold weight implants in the management of lagophthalmos due to leprosy in Egyptian patients.

**Materials and Methods**

Twelve patients with leprosy and lagophthalmos over 5 mm were included in the study. They all had a long-standing history of leprosy with peripheral neuropathy, loss of fingers and toes and chronic foot ulcers. They all reside in a leprosarium. They all finished their MDT therapy 5–10 years ago.

A lateral tarsal strip procedure for lower lid correction was done prior to the gold weight implantation. Patients were referred from their local leprosy clinics when the cornea was still exposed despite the lateral tarsal strip procedure.

The weights are 1 mm thick and 4·5 mm high, and the length is determined by the weight. As a preliminary test, weights were attached to the lid margin to determine the correct force. We used a weight about 0·2 gm heavier than that determined by testing the force with assumption that this would help strengthen the levator muscle.

The surgical technique was as follows: an incision was made in the upper lid crease, the tarsus was exposed, and sufficient tissue was elevated in the plane beneath the orbicularis to accommodate the implant so that its lower edge was 4 mm above the lashes. This would allow the weight to be covered by the thick portion of the upper lid. Two non-absorbable ethibond 5/0 sutures were passed through the holes in the weight and were used to attach it to the tarsus. The orbicularis was closed as a separate layer and the skin was then closed. All procedures were done under local anaesthesia.

All surgeries were done as outpatient procedures in the leprosy clinic, Kalaa, Cairo in collaboration with leprosy control department, Ministry of Health, Egypt. Informed consent from each patient was obtained prior to surgery, and the Leprosy control department, Ministry of Health gave ethical permission for the study.

**Results**

All 12 patients were males, age ranged from 38–73 years (mean 46 years); seven patients had been treated as paucibacillary (PB) and five as multibacillary (MB) leprosy. The follow-up period after surgery was more than 12 months. No major complications occurred. Minor transient complications in the form of postoperative lid oedema and/or ecchymosis resolved spontaneously.

Among the 12 patients (at 3 months follow-up), 11 had satisfactory closure (defined as a reduction of the lid gap of 3 mm or more). Complete lid closure was achieved in eight out of the 12 cases; this resulted in improvement of corneal irritation and good eye coverage particularly during sleep. Incomplete closure was attained in four patients, however, they all had similar improvement in the corneal manifestations.
Between the 3 months follow-up and 1 year follow-up six out of the 12 implants were extruded and two more had to be removed due to severe inflammatory reactions. This lowered the success rate to 33% (4/12 cases) after 1 year. No difference between PB and MB patients was noticed in the success rate or the occurrence of complications. Reviewing the files of the two patients who developed severe inflammatory reactions revealed a history of previous steroid treatment of ‘reactions’, type unspecified.

Discussion

Gold weights have been used as a lid loading material for the management of paralytic lagophthalmos for decades with a high success rate. A low incidence of extrusion (2.6%) was attained in a survey of over 600 ophthalmologists, representing over 2000 procedures. The procedure is simple, effective, is done under local anesthesia and can be used with other lower lid procedures as well.

Patients with leprosy have immunological abnormalities due either to specific genetic predispositions or as the result of the anti-leprosy medicines used for treatment of leprosy itself. The high incidence of extrusion and inflammatory reactions that occurred in our patients may also be related to their poor socio-economic state and the high incidence of infections occurring in them.

Extrusion or removal of the implants resulted in recurrence of the corneal exposure. Recession of the levator muscle was done while removing the two implants to induce ptosis and help cover the exposed cornea in these two patients.

In our study, gold implantation had a low success rate. Careful selection of cases to decrease incidence of infection and/or extrusion is needed.

References