Temporalis transplantation for paralytic lagophthalmos

DHAN K. SEN

*Department of Ophthalmology,
Christian Medical College and Hospital, Vellore, South India*

Various forms of treatment of severe paralytic lagophthalmos have been tried, especially in countries where anaesthetic leprosy leads to exposure of the cornea. At this hospital encouraging results have been obtained by transposing part of the temporalis muscle with the overlying fascia so that it exerts a sphincter-like action on the palpebral aperture.

Technique

Under infiltration anaesthesia a hockey-stick incision, about 4 in. long, is made 1.5 cm. in front of the tragus (Fig. 1). A skin flap is reflected forwards and downwards and the fascia covering the temporalis muscle is exposed. Two parallel and nearly vertical incisions, 2 in. long and 8 mm. apart, are made in the temporalis fascia; these are joined at the base by a horizontal incision. The vertical incisions are extended upwards for 4 mm. on to the periosteum covering the parietal bone and the upper ends are then joined by another horizontal incision (Fig. 2). The inclusion of the periosteal tag is very important as it serves as the common link between the muscle and its fascia. The muscle fibres start from the periosteum and the fascial fibres merge into the periosteum. Therefore, the fascial strip remains attached to the muscle slip through the periosteal tag and does not come off on pulling. The portion of the temporalis fascia marked out by these incisions is then freed from the muscle up to the level of origin of the muscle fibres; it is reflected upwards (Fig. 3) and split longitudinally into two equal halves (Fig. 4). Two parallel vertical incisions are now made on the muscle deep to the bone along the line of the original fascial incision. The small rectangular

FIG. 1 Hockey-stick incision and four other small incisions around the eye

FIG. 2 Incisions in the temporalis fascia (TF) and periosteum (P)

FIG. 3 Fascial strip reflected upwards, and underlying temporalis muscle fibres (TM) exposed

piece of periosteum marked out by the incisions is raised from the bone and blunt dissection is then carried directly downwards to detach the muscle strip from the bone (Fig. 4). The muscle slip with the strips of fascia attached to it through the periosteal tag is then reflected down (Fig. 5).

FIG. 4 Periosteal tag (P) with muscle slip (T.M.) detached from the bone. The reflected fascial strip is split into two

FIG. 5 Muscle strip and fascial strips are reflected downwards. The periosteal tag (P) connects the two structures. Fascial strips are taken round the upper and lower lid margins to the medial canthus

Four more skin incisions each 1.5 cm. long are made 2 mm. lateral to the outer canthus vertically, over the medial palpebral ligament vertically, and 3 mm. from and parallel to the lid margin at the centre of each lid, upper and lower (Fig. 1). Subcutaneous tunnels are made with closed artery forceps and the muscle slip and two fascial strips are passed so that the latter emerge at the outer canthal incision. The fascial strips are then taken round the upper and lower lid margins to the medial canthus (Fig. 5), their passage being facilitated by skin incisions in the lids. At the medial canthus they are crossed, drawn taut so that the palpebral fissure is reduced to the desired width, and firmly anchored to the medial palpebral ligament by 0000 black silk stitches which also take a secure bite into the underlying periosteum. Any excess of the fascial strips is excised. The skin incisions around the eye are closed by 000 black silk sutures. The hockey-stick incision is closed in interrupted stitches using 0 black silk.

The dressing is changed on the second postoperative day. Thereafter a simple dry dressing for a few days is enough. The skin stitches are removed on the fifth postoperative day.

The patient is told that he will be able to reduce the width of the palpebral fissure still further by clenching his teeth, and he is supplied with chewing gum for chewing exercises. The habit becomes such that after some time he needs no effort to reduce the width of the palpebral aperture whenever he wishes.

Comment

The common surgical techniques for paralytic lagophthalmos usually require some form of tarsorrhaphy, Axenfeld's suture, or modifications thereof. A lateral tarsorrhaphy is usually advised but that does not give relief if the corneal exposure is marked. A large tarsorrhaphy interferes with vision and the patient feels handicapped especially when the condition is bilateral as in cases of anaesthetic leprosy. Axenfeld's suture as described by Duke-Elder (1952) offers an alternative method and may act as a temporary measure, but it is not satisfactory for permanent results, as the patient has no control over the width of the palpebral fissure.

Though temporalis transplantation is being practised in some centres the procedure has not yet gained much acceptance, and does not appear in the text-books of ophthalmic surgery. It may appear clumsy to surgeons who are used to clean and fine surgery, but the results are certainly worth the trouble. As lagophthalmos is usually bilateral in leprosy the postoperative cosmetic appearance is also satisfactory.

Summary

A temporalis transplantation procedure for severe paralytic lagophthalmos as met with in anaesthetic leprosy is described. The procedure simulates the sphincter action of the orbicularis muscle and the patient is able to control the width of the palpebral aperture by clenching the teeth.

My thanks are due to Prof. Roy Ebenezer for permission to publish this report, and to Dr. Anna Thomas for her assistance in preparing it.

References

DUKE-ELDER, S. (1952) "Text-book of Ophthalmology", vol. 5, p. 5194. Kimpton, London