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Successful Treatment of the Paralyzed Lower Eyelid Due to Hansen's Disease by Implanting Auricular Cartilage

TO THE EDITOR:

We performed auto-auricular cartilage implants into the paralyzed lower eyelids of some former Hansen's disease patients, who live in our National Sanatorium, in order to improve upon the conditions of lagophthalmos and/or ectropion, due to facial nerve paresis. Sixty-nine eyelids of 50 patients: 34 men and 16 women, from 48 to 88 years of age (74-year-old average) were operated on during a 4½ year period from November 1996 to April 2001. They had complained of eye pain and dryness, spilling out of tears (epiphorea), complications in the treatment of corneal wounds, and ill-fitting artificial eyeballs caused by their lagophthalmos and/or ectropion.

Their facial paresis had persisted over a long period of up to 40 years or more. Some patients had already received another operative procedure, such as partial eyelid suturing or fascial implantation into the eyelids. They may have had some temporary improvement, but the effect could not be maintained.

Some of the skin conditions to be considered were that ex-lepromatous or borderline lepromatous patients' facial skin had suf-

fered atrophic changes or scar formation during the healing process of their leproma. Their tarsus had often shrunk, functioning inadequately as the supporting structure of the free edge of the eyelid. In addition, drooping of the eyelid had become worse due to senile changes in the skin's elasticity. On the other hand, none of their ears had suffered deformity, making them a good source for the resection of cartilage to be used for implantation.

The operative procedure is as follows:

1. The procedure is performed under local anesthesia. One percent lidocaine with 1:100,000 epinephrine is injected into the area where the incision is made: the lower eyelid and both sides of the medial and lateral angle of the eye, as well as the scaphoid fossa on the corresponding ear.

2. Skin incision (Figs. 1–5): The incision at the medial and lateral palpebral angle is required to be deep enough to reach the ligaments which are tightly bound to the orbital bones (Figs. 1–4). The incision of the lower eyelid is made about 5 mm below the bottom eyelash and undermined at the depth of the tarsus; which was frequently obscure in our cases likely due to leproma,

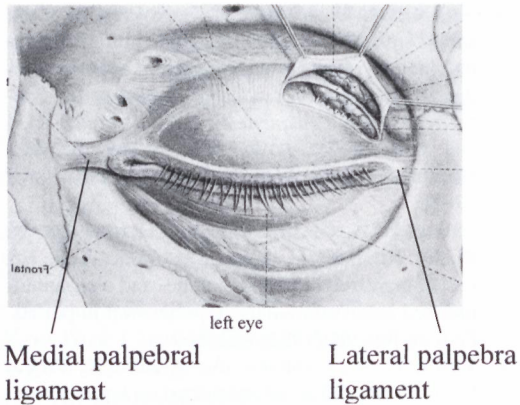


FIG. 1.

leading to just beneath the gray line (Fig. 5). Subcutaneous tunnels are made to connect the spaces under the lower eyelid and both angles of the eye.

3. Harvesting the cartilage graft (Figs. 6, 7): From the scaphoid fossa on the ear we can get a rather long graft leaving a minimal change in the shape of the ear after healing. As much as a 2 cm skin incision is needed to get a 2.5×1 cm resection of cartilage. The incised skin wound is closed by 5/0 nylon sewing the incised skin to the

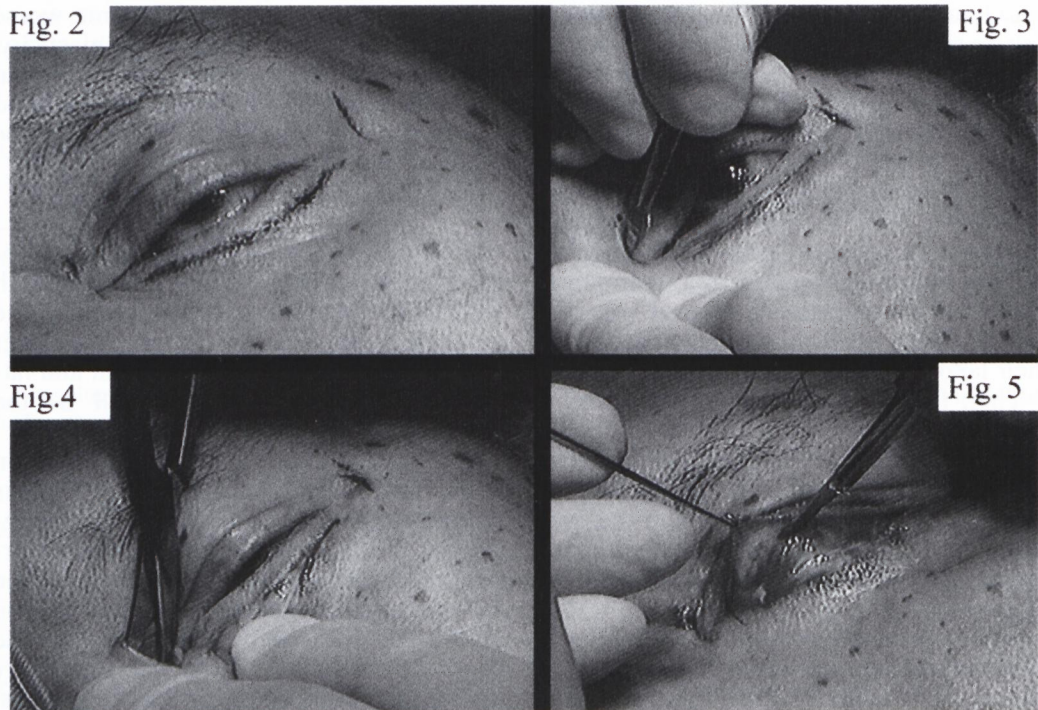
subcutaneous layer of the back of the ear to avoid formation of dead space. It is not necessary to suture the incised cartilage together because the skin sutures will pull the exposed edges of cartilage in reasonable proximity to each other for healing.

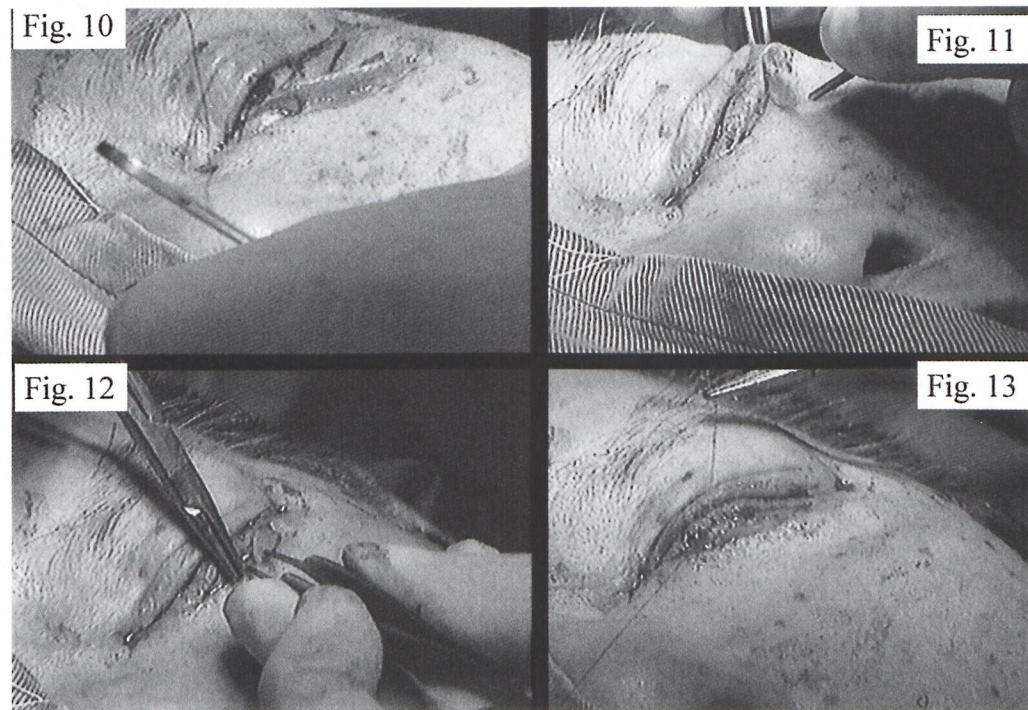
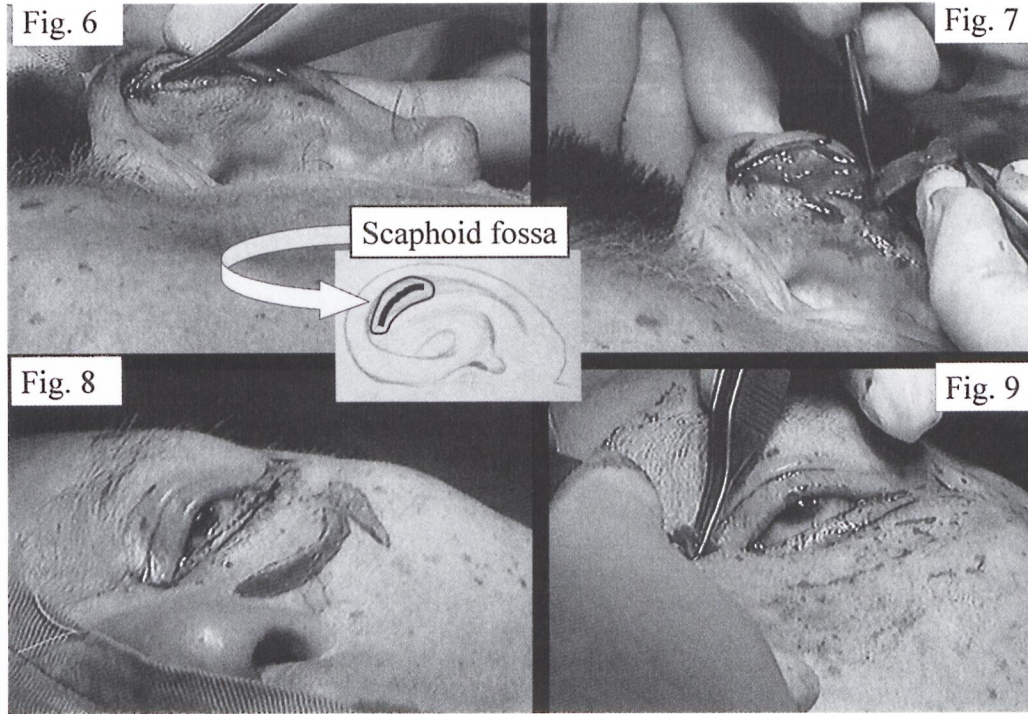
4. The cartilage for implant is cut into two pieces and trimmed to fit the curvature of the eyelid (Fig. 8). The connective tissue around the medial palpebral ligament is thoroughly removed and one edge of the cartilage implant is tightly bound to the uncovered ligament (Figs. 9, 10).

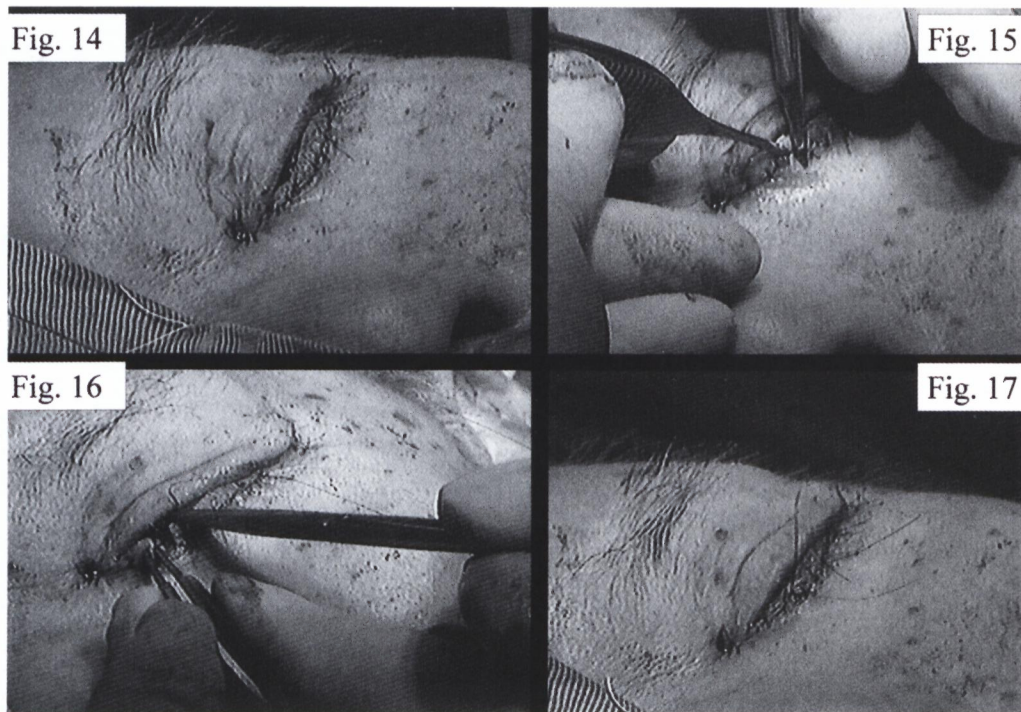
5. Another piece of the implant is bound to the lateral palpebral ligament (Fig. 11). Two pieces of the cartilage are bound to each other (Fig. 12), keeping rather excessive tension. Several sutures between the implant and the subcutaneous tissue are made (Fig. 13).

6. The incised wound is closed by 6/0 nylon. In this case, the cartilage implant resulted in under-correction (Fig. 14).

7. If the degree of ectropion is severe and inadequately corrected by the cartilage implantation only, we add a procedure involving the wedge shape resection onto the rim of the lower eyelid (Figs. 15, 16) or transposition of the small triangular skin flap taken from the medial angle of the eye into the space un-







der the eyelashes (not shown). After this procedure, the eyelids fit more closely (Fig. 17) when compared to Fig. 14.

No adverse results were observed. Most of the cases resulted in a reduction of secondary complications associated with lagophthalmos. Two cases resulted in bacterial infection of the implant, however, these infections could be controlled by antibiotics without the need to remove the cartilage. Either wedge resection or transposition of the skin flap was added to the cartilage implant on 11 severely ectropic eyes, in order to correct the remaining ectropion.

Lagophthalmos is a great problem for former Hansen's disease patients, not only functionally but cosmetically. Successful lower eyelid management can remarkably improve their problem. Since cartilage implant beneath the skin keeps the shape of the lower eyelid without deterioration, the implants work very effectively giving continued relief in most cases. The observation period for the longest case of 5 years and 2 months still shows excellent results.

Harvesting the cartilage from the ear is very easy and the donor site wound will heal without any deformity of the ear. Procedures for the operation are technically easy, taking less than one hour for each side and they can be performed under local anesthetics. In addition to the positive outcome, our method can be performed very safely, even on aged people.

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