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Eyebrow Transplantation

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It is well known that alopecia of the eyebrows is a symptom of lepromatous leprosy. In more than a thousand patients, coming from rural areas and seen for the first time, G. K. Wilson (4) of Taegu, Korea noted that four-fifths of the patients presented deformities (with anesthesia) and one-third of them had loss of eyebrows. Some negative, nontreated tuberculoid patients presented madarosis, a misleading sign in these patients. In the same area, among four cured patients who were candidates for paramedical work, two were not accepted by officials because of this single stigma of leprosy. It is difficult to convince the man in the street, and even some doctors, that a patient with alopecia of eyebrows is not necessarily contagious, and in Asia this symptom very often prevents the rehabilitation and the reintegration of patients in normal society.

TECHNIQUES OF EYEBROW-RECONSTRUCTION

Several methods are described. These include the following.

1. Transplantation of small islets from the scalp. These are free grafts, about one dozen for one eyebrow. This is an old western method, reaffirmed by Omori of Tokyo and actually no longer in use (personal communication).

2. Transposition of scalp flap without artery pedicle. This procedure has been described by N. H. Antia (1).

3. Temporal artery island scalp flap. This method has been described by P. W. Brand and referred to by N. H. Antia (1). The author recommends the "biologic flap." The hairy skin is transplanted from the scalp with an intact blood supply provided by an artery and vein removed by dissection. This technique gives excellent results.

4. Free graft of scalp, described by Gillies in 1935. This is technically the easiest method. Hair shed postoperatively, regrows after three months, provided the grafts are defatted without damage to the hair follicles and the graft is laid on a well vascularized bed. The latter could be found very superficially (M. Narita) or underneath the subcutaneous fat layer (N. H. Antia). If these principles are not applied, hair regrows only in the marginal parts of the graft, and the cosmetic results will be impaired, since hyperpigmentation of the graft appears as a sign of failure for rehabilitation of the patients.

5. Single hair transplant. This is the method of Arakawa (2) or the rice-planting method of Kanazashi (3). The Japanese authors attach importance to the reconstruction of eyebrows, and the method is given with more detail in the description by M. Kanazashi. In our personal experience the following procedure has been developed.

(a) The graft is taken from the scalp horizontally in the retro-auricular region, not vertically as in the free graft (Gillies method). In this way the scar is easily covered. The graft is cut in two equal pieces and dipped in physiologic saline solution.

(b) On sterilized small wooden blocks these pieces are cut again in several smaller pieces by knife, taking care to lay the graft with the end bulb of the hair follicle on the wooden surface, and to exert a movement with the knife rolling from the border to the center, cutting parallel to the hair implantations. Dividing more and more, isolated hairs with intact end bulbs are finally gathered in saline solution.

(c) The isolated hairs are introduced in special needles with a long bevel and a groove. The armed needles are placed on a rack (12 needles) and presented by the assistants to the implanting surgeon. This division of the graft and preparation of the needles is teamwork.

(d) Each hair is implanted following eyebrow pattern (a previous photograph is useful). One hundred and forty hairs on each side give a nice appearance, and it is

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best to perform these transplantations in two sessions, for example, 70 hairs on each side, followed a few weeks later by the same procedure. In expert hands about 80 per cent of the transplanted hairs regrow.

(e) The insertion of the needle is made at an angle of 45° and in the proper direction, following the stream-line of eyebrows. The depth is about 2-3 mm. With a small stiletto, introduced in a groove of the needle, it is possible to withdraw the latter without removing the implanted hair. The operative field has previously been infiltrated with a local anesthetic. Adrenalin is added in order to prevent bleeding. Bleeding impairs the results of the transplantation. Any long-beveled needle is suitable which can contain and protect the bulbed hair for implantation and permit introduction of a stiletto to fix the hair at a depth of 3 mm. and allow it to be withdrawn leaving the hair at the site. The special Kanazashi needles with a handle are very convenient for these hair transplantations.

One session represents teamwork of about two and a half hours' duration. One might say this is time consuming and ask if it is worthwhile. Considering the cosmetic end results and the rehabilitation prospects for some patients in some countries, it is really of value (Fig 1). In some leprosy settlements with sufficient trained paramedical workers an eyebrow reconstruction team may be of utility even for outpatients.

CONCLUSIONS

Eyebrow-reconstruction differs in importance from one country to another. Whatever the method employed, technical know-how and skill are required. The procedure requires careful dissection and defatting of the graft (methods 1, 2 and 4), preservation of the blood supply for the temporal artery island scalp flap (method 3), and preservation of the single-hair end-bulbs, with microtechnical and cosmetic implantation, in the fifth method. Hair is taken from the scalp, and up to now no other regions have been taken into consideration. However, when it is possible to implant a single hair, it should be possible to remove a single hair with an intact bulb, at least theoretically. It is true that our surgery, seen with a magnifying glass, seems a little elephantine for hair transplantations, and the beauty salons are more busy with hair removing than with hair reconstruction. Electrolysis devices for hair follicles are on the market. I do not have knowledge of hair transplanting devices, but I feel progress is still possible in this field.

FIG. 1. Result of bilateral eyebrow reconstruction by single-hair transplantation (Kanazashi).

SUMMARY

There are several transplantation methods for eyebrows. Up to now we obtain best results from the transplantation method for hairs one by one (Kanazashi method), which assures the possibility for rehabilitation of such leprosy patients, who have sometimes only this stigma of leprosy.

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