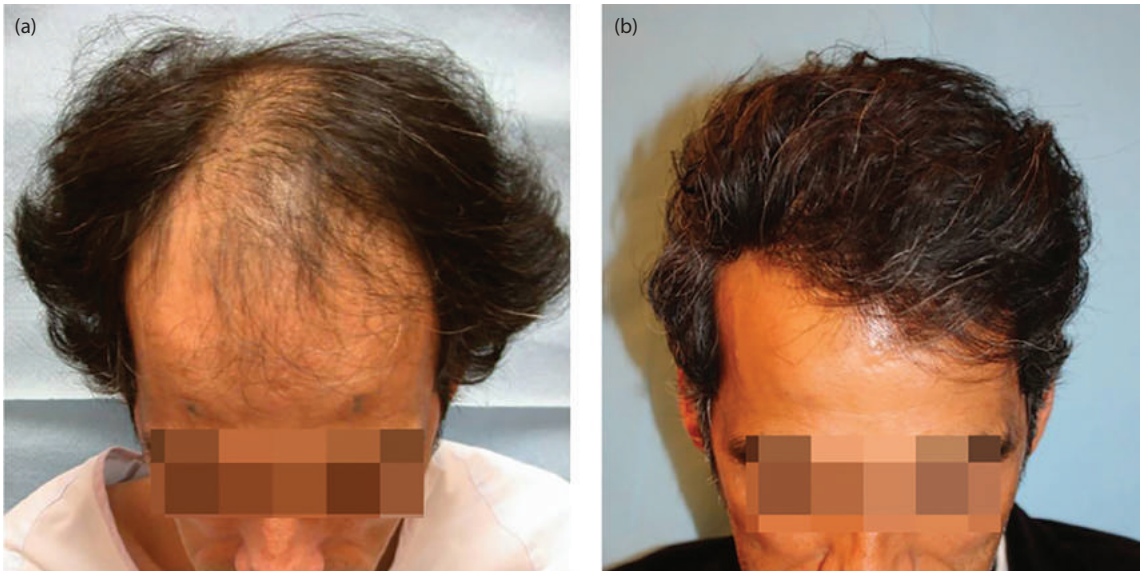

Figure 15.26 **(a) Male androgenetic alopecia (stage 2 or Hamilton V), (b) with FUL transplantation (5100 hairs) in two sessions.**

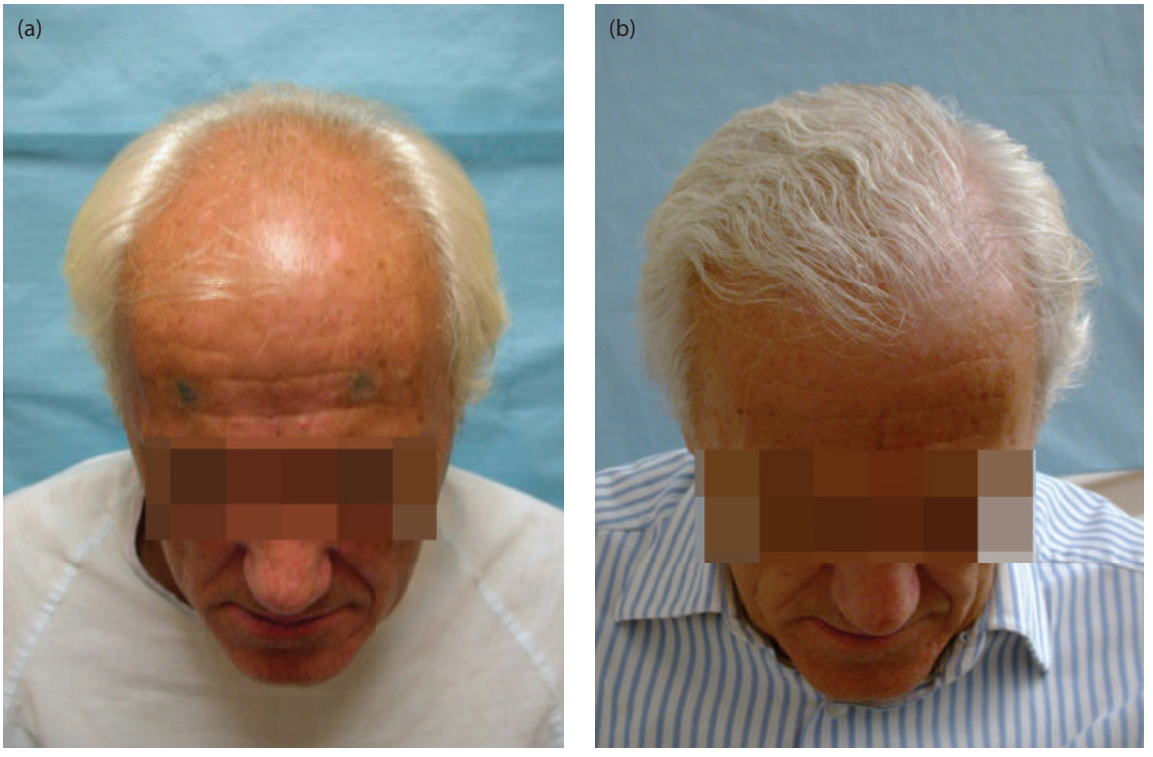

Figure 15.27 **(a) Male androgenetic alopecia (stage 3 or Hamilton VI), (b) with FUL transplantation (2700 hairs) in one session.**

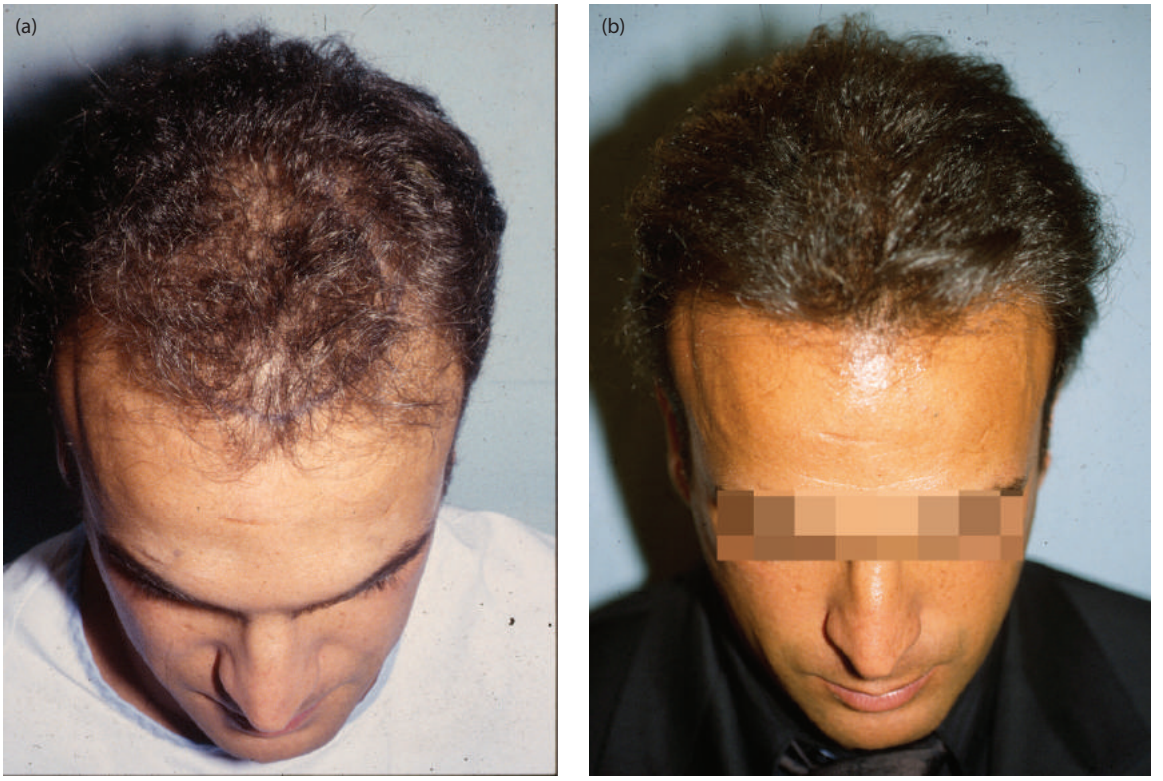

Figure 15.28 **(a,b) Male androgenetic alopecia with combining treatments: FUL transplantation in two sessions, minoxidil 5%, and finasteride.**

- Stage II: Alopecia with short hairs, located 1 cm behind the frontal line: treated with 1500–2000 hairs in one or two sessions (Figures 15.31a and b).
- Stage III: Almost important alopecia of the vertex, with preservation of a thin strip of remaining hair on the forehead): treated with 3000–4000 hairs in two sessions (Figures 15.32a and b).

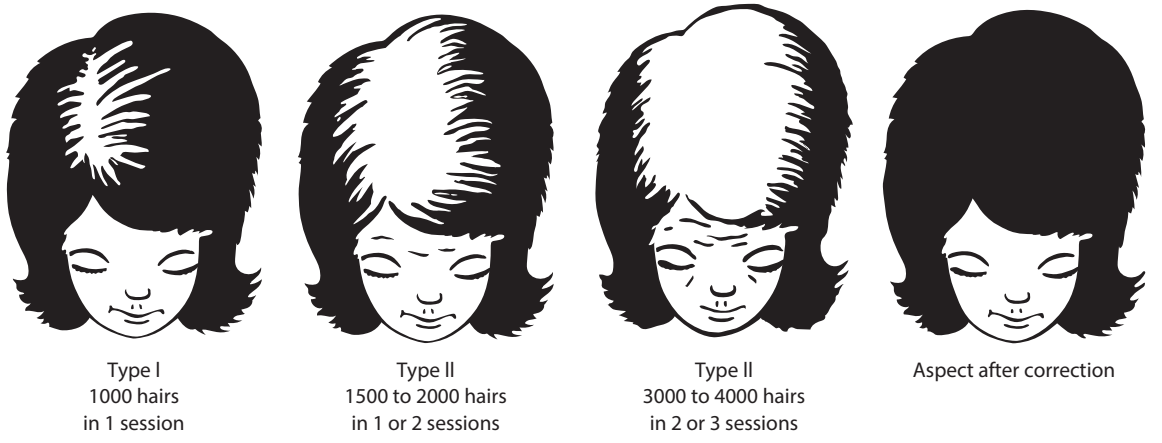

Figure 15.29 **The three stages of evolution of the classification of female androgenetic alopecia. (Adapted from Ludwig E, *Br J Dermatol*. 1977;97:247–254.)**

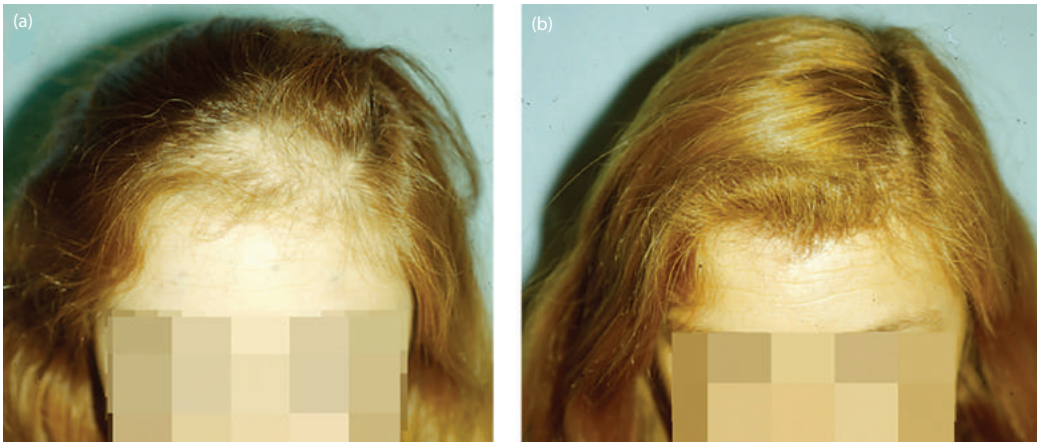

Figure 15.30 **(a,b) Female androgenetic alopecia (stage 1) with FUL transplantation (1200 hairs) in one session.**

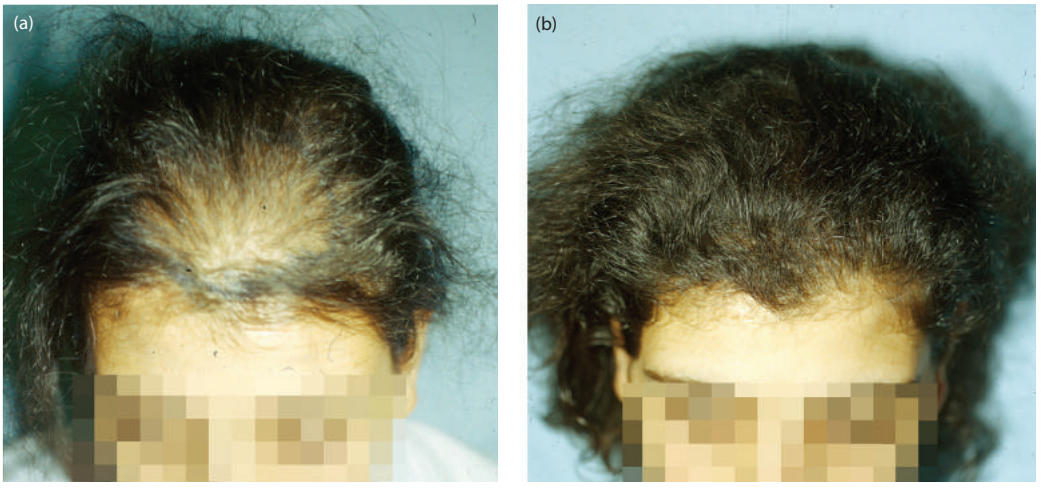

Figure 15.31 **(a,b) Female androgenetic alopecia (stage 2) with FUL transplantation (1600 hairs) in one session.**

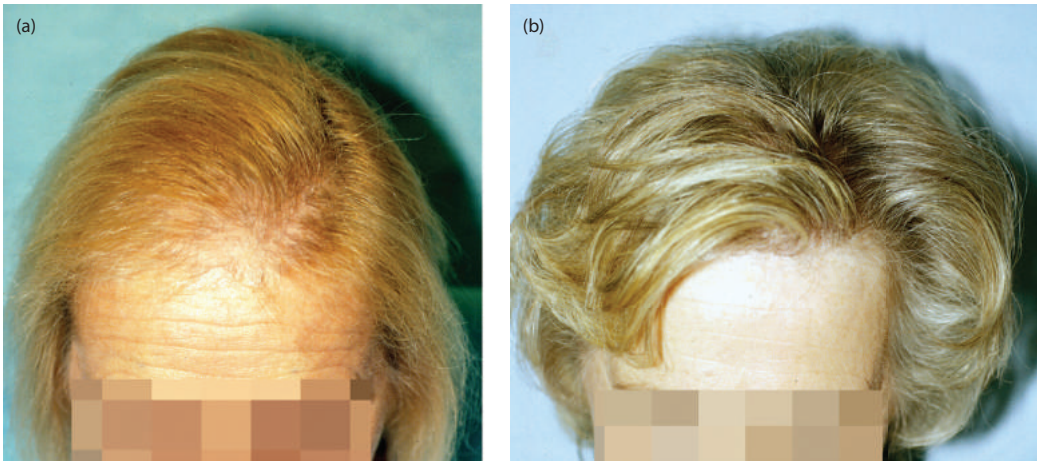

Figure 15.32 **(a,b) Female androgenetic alopecia (stage 2) with FUL transplantation (1700 hairs) in two sessions.**

The micrograft treatment may be combined with a local anti-hair-loss treatment (minoxidil 2%), intradermal injection of PRP, and/or oral anti-androgens such as cyproterone acetate or spironolacton.[28]

In transsexuals

We must fulfill the frontal recessions and give a fine frontal line of a feminine pattern.

OTHER ALOPECIA

- Traction alopecia[36]: Repeated traction (blow hair drying, straightening, braids, etc.), especially in African American patients (Figures 15.33a and b), can induce definitive alopecia of the frontotemporal region. Before considering implantation, one must control the absence of regrowth despite stopping traction for at least 6 months (see Chapter 12).
- Pseudopeladic alopecia, if stabilized and if the occipital donor area is not definitely spared.
- Alopecia and scars after facelift (Figures 15.34a and b).
- Scarring alopecia after burns, after radiotherapy, post-traumatic, etc. (Figures 15.35a and b).

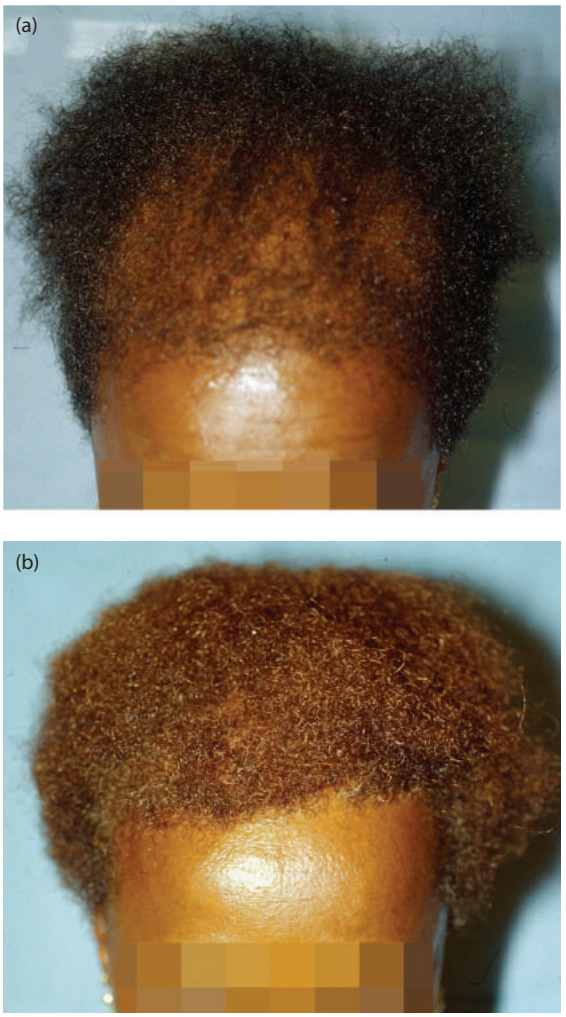

Figure 15.33 **(a,b) Definitive traction alopecia in an African American patient with FUL transplantation (1800 hairs) in two sessions.**

BODY HAIR ALOPECIA

Permanent alopecia of the eyebrows

Follicular transplantation is a simple surgical technique that corrects most of the definitive eyebrow alopecias.[37–39] It consists of implanting on the absent or sparse area of the eyebrow hair follicles harvested from the scalp or, more rarely, from a hairy area of the body.

Eyebrow alopecia causes

Alopecia of the eyebrow is relatively common in the population.[40] The most common causes are

- Eyebrow density loss related to aging. This usually starts at the tail of the eyebrow and then gradually affects the entire eyebrow. A few short and sparse hairs persist (Figure 15.36).
- Alopecia of the eyebrow tail linked to repeated aesthetic depilation (Figure 15.37).
- Post-traumatic alopecia or after removal of a lesion of the eyebrow.
- Alopecia areata is a common cause of alopecia of the eyebrow.
- Some eyebrow alopecias have been corrected with dermopigmentation (tattooing) (Figure 15.38).
- Except for alopecia areata, all the eyebrow alopecias can be corrected definitively with a single hair transplantation.

Eyebrow transplantation procedure

The design of the eyebrow is done according to three diagonals to locate the head, the body, and the tail of the eyebrow (Figure 15.39).[38,39,41,42]

The transplantation is performed under local anesthesia with previous oral sedation. A strip of scalp (6 cms × 1 cm) is harvested from the lower occipital area or the temporal region. The donor site is then sutured using absorbable running suture.

The strip is segmented under a microscope in order to get a group of micrografts containing one follicle and a group of micrografts containing two follicles (Figure 15.40).

Follicular units are combined and selected according to their shape (the goal is to get follicles with a large

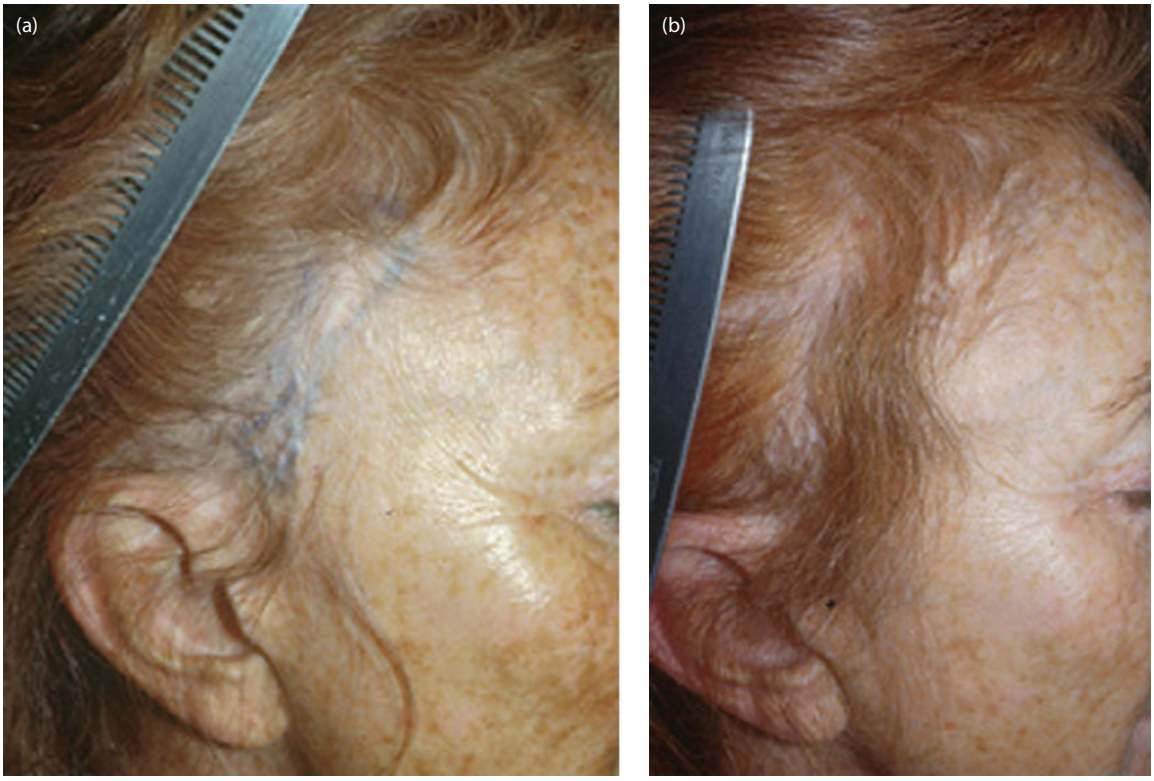

Figure 15.34 **(a,b) Preauricular alopecia after a facelift with FUL transplantation (900 hairs) in one session.**

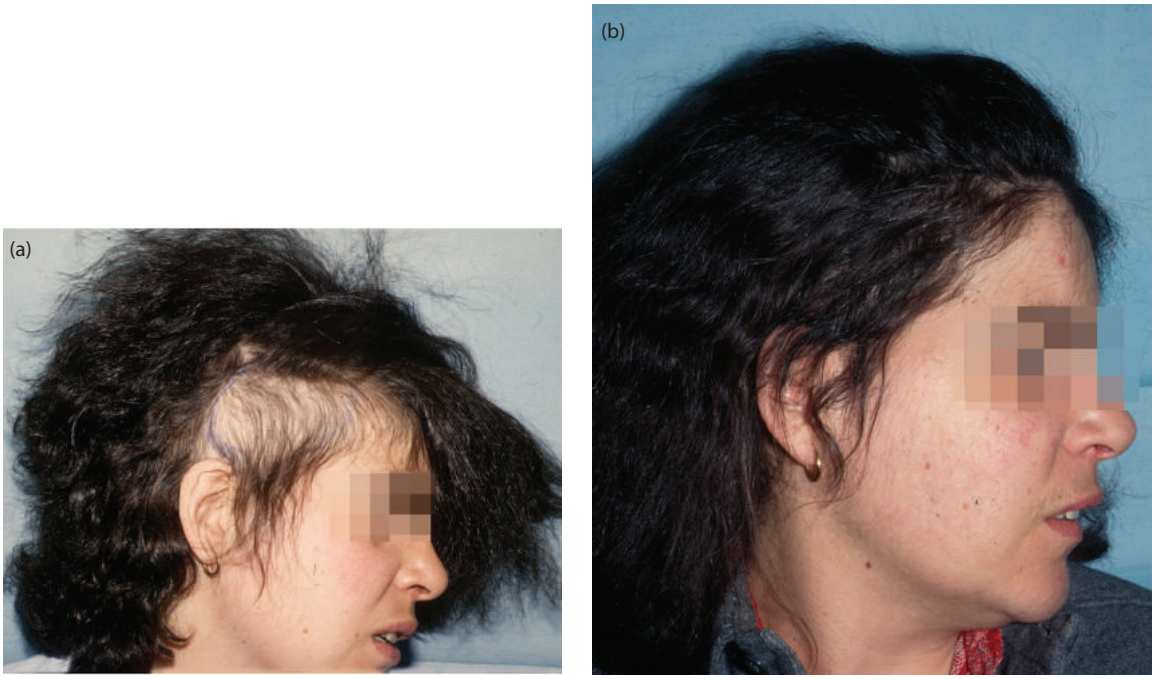

Figure 15.35 **(a,b) Alopecia after radiotherapy for a malignant brain tumor with FUL transplantation (2200 hairs) in two sessions.**

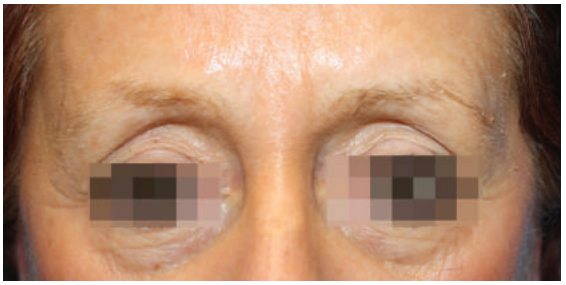

Figure 15.36 **Eyebrows density loss due to aging.**

Figure 15.37 **Eyebrow alopecia due to repeated depilation. (Courtesy of Dr. Eric Bouhanna.)**

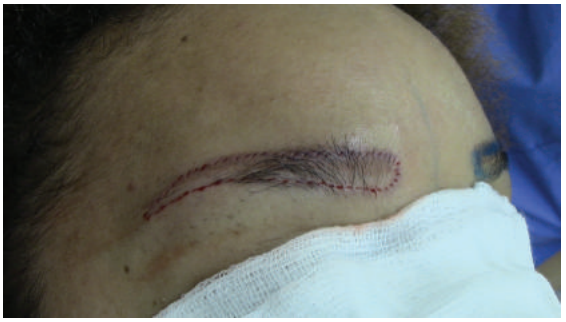

Figure 15.38 **Eyebrow alopecia with a tattooing correction. (Courtesy of Dr. Eric Bouhanna.)**

curvature) and thickness (selection of thick follicles and thin follicles).

The grafts are delicately placed on gauzes soaked in ice-cold saline to preserve them from dryness before implantation.

The eyebrow is anesthetized by infiltration of lidocaine with epinephrine 1%. The implantation is guided by the design done before surgery. The use of magnifying glasses is recommended to improve the precision of the graft insertion. Using a 18-gauge needle, twisted into "bayonet" fashion (Figure 15.41), microperforations on the recipient

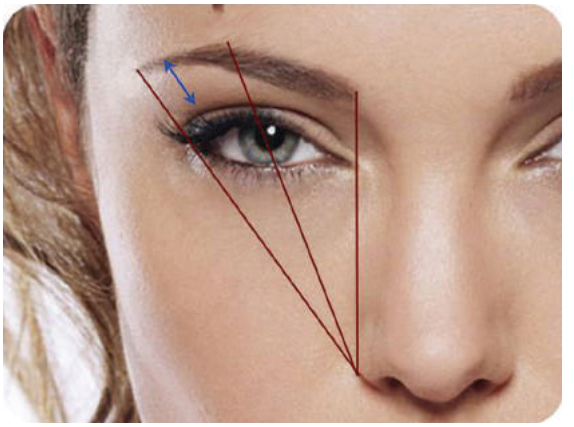

Figure 15.39 **Eyebrow design according to the three diagonals. (Courtesy of Dr. Eric Bouhanna.)**

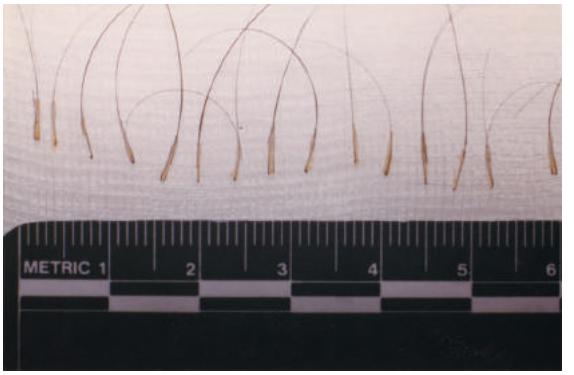

Figure 15.40 **One and two follicular unit long hair (FUL) before the eyebrow transplantation.**

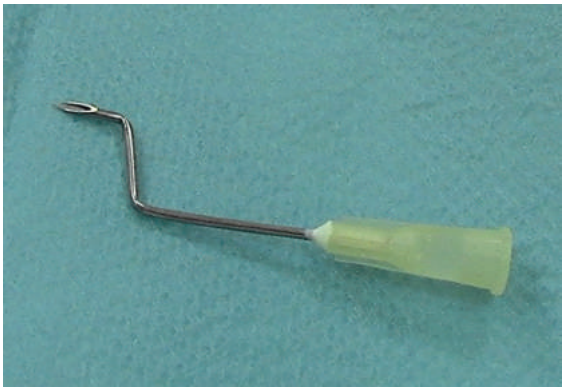

Figure 15.41 **Microperforations with a 18-gauge needle modified in a "bayonet" fashion.**

Figure 15.42 **Design of the eyebrow with the various hair orientations. (Courtesy of Dr. Eric Bouhanna.)**

area are carried out, taking care of the various orientations and remaining as tangentially nearly parallel to the skin (Figure 15.42).

After completing all the perforations on the recipient sites, micrografts are gently introduced with microsurgical forceps. The implantation must be done very gently to avoid any injury of the follicles. One-follicular implants with thinner shafts will be placed on the superior and inferior edges of the eyebrow, while thicker two-follicular implants are placed in the dense central body of the eyebrow. The oblique orientation of the hairs will be upwards to the head of the eyebrow, downwards to the tail of the eyebrow, and horizontally to the body of the eyebrow. These refinements are easier to do with the follicular unit long hair (FUL) (Figure 15.42).

Once all the follicles are implanted, meticulous control of the orientations of each graft s performed.

No dressing is necessary.

Eyebrow transplantation results

The preview result is immediate but sometimes transitory. Some of the implanted hair may fall during the postoperative weeks. A complete regrowth is expected 2 or 3 months later. To avoid any anxiety and feelings of failure, the patient needs to be well informed before and after surgery about this transient evolution.

The almost final result is observed 6–9 months later (Figures 15.43a and b).

Patients are informed about applying a modeling gel on the new implanted shafts, in order to guide smoothly all the hair of the eyebrow.

The eyebrows are trimmed according to the implanted hair growth about every 2 weeks.

Eyebrow transplantation is currently the best solution to seamlessly rebuild an eyebrow. The result depends on the quality of technical implantation and the careful selection of each implanted hair.

Ideally the hair with a highly curved or curly shaft is most suitable (Figures 15.44a and b and 15.45a and b).

Eyebrow grafting is satisfactory in most cases. It is, however, decreased in the case of smoking, or when the implantation is performed on fibrous scar tissue.

Sometimes the use of the extraction harvesting technique by FUE (follicular unit extraction) is possible for implantation of the eyebrows. However, with the prior scalp shaving, the natural curvature of the grafted hair shaft is not visible and this makes it difficult to get the correct positioning of implants. FUE is, however, indicated in some cases, especially for men who have workable hair on the chest or limbs.[43]

Alopecia of the eyelashes

The introduction of micrografts allows a definitive aesthetic reconstruction by implanting selected hairs "one by one."[43,44] The lashes will be cut to the desired length every 15–20 days.

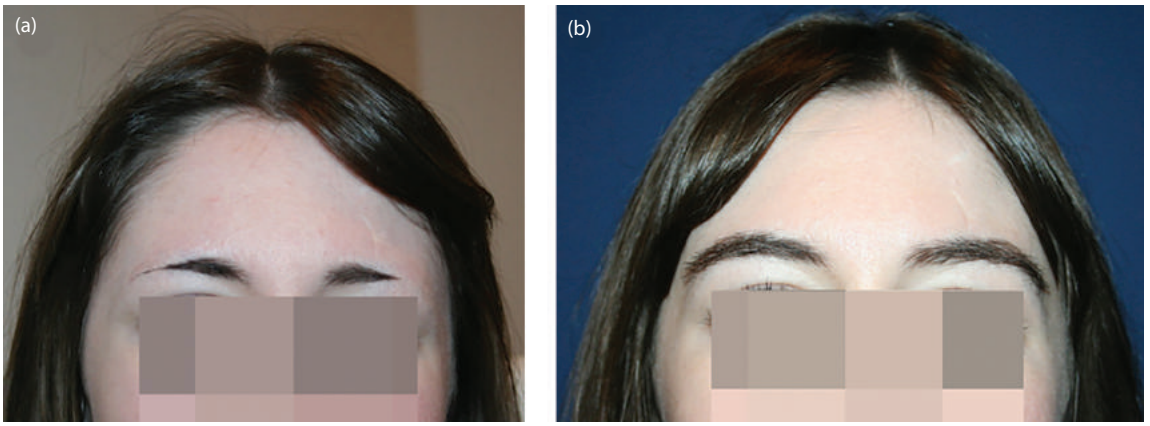

Figure 15.43 **(a) Tail eyebrow alopecia and (b) correction with one FUL transplantation session. (Courtesy of Dr. Eric Bouhanna.)**

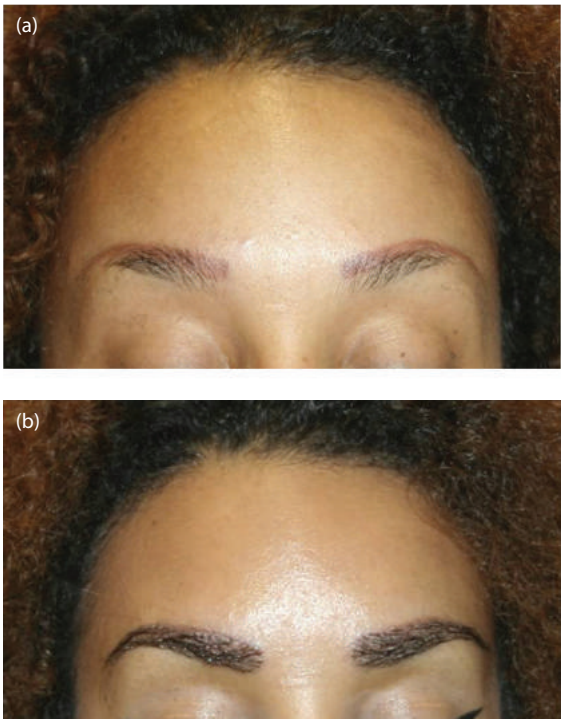

Figure 15.44 **(a) Tattooed eyebrow and (b) correction with one FUL transplantation session. (Courtesy of Dr. Eric Bouhanna.)**

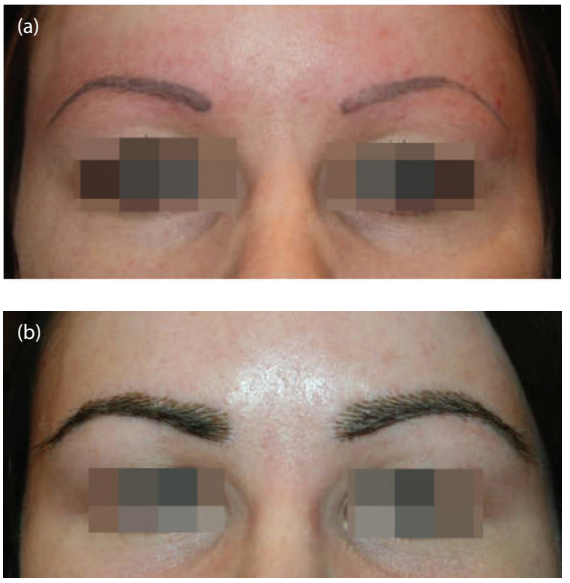

Figure 15.45 **(a) Tattooed eyebrow alopecia and (b) correction with one FUL transplantation session. (Courtesy of Dr. Eric Bouhanna.)**

Alopecia of the beard and mustache

Alopecia of the beard and the mustache is often of scar origin (harelip, acne scars) or a lack of beard due to ethnic origin (Asian male patients) (Figures 15.46a–c).[37,38] Increasingly, for ethnic and religious wishes (Middle East origin), a densification of the beard or mustache is

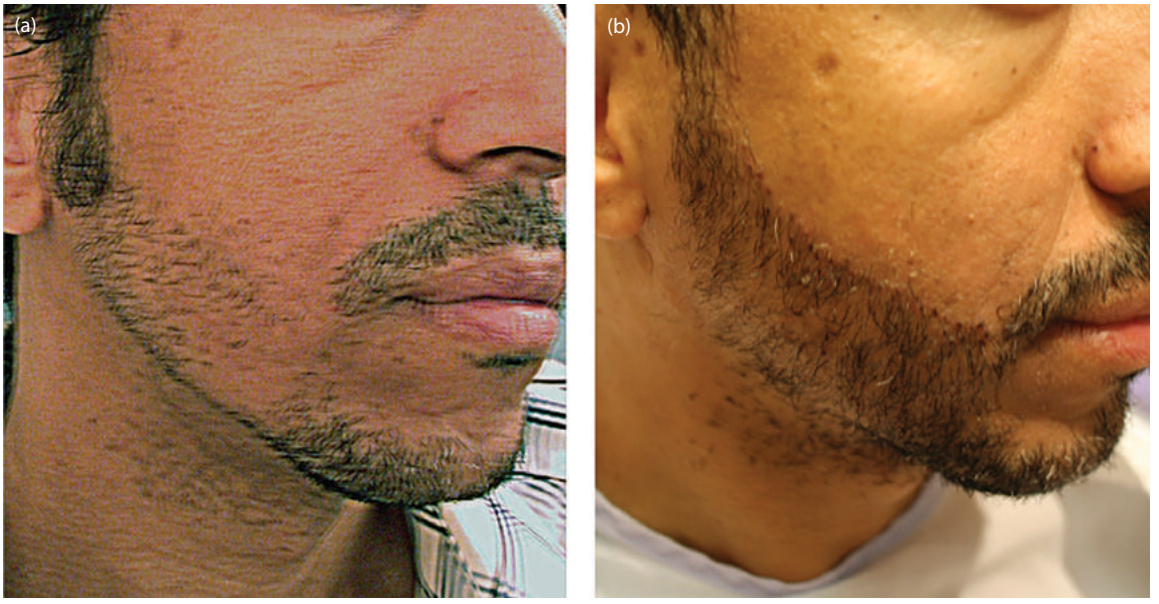

Figure 15.46 **(a) Beard alopecia. (b) Four days after one FUL transplantation session.**

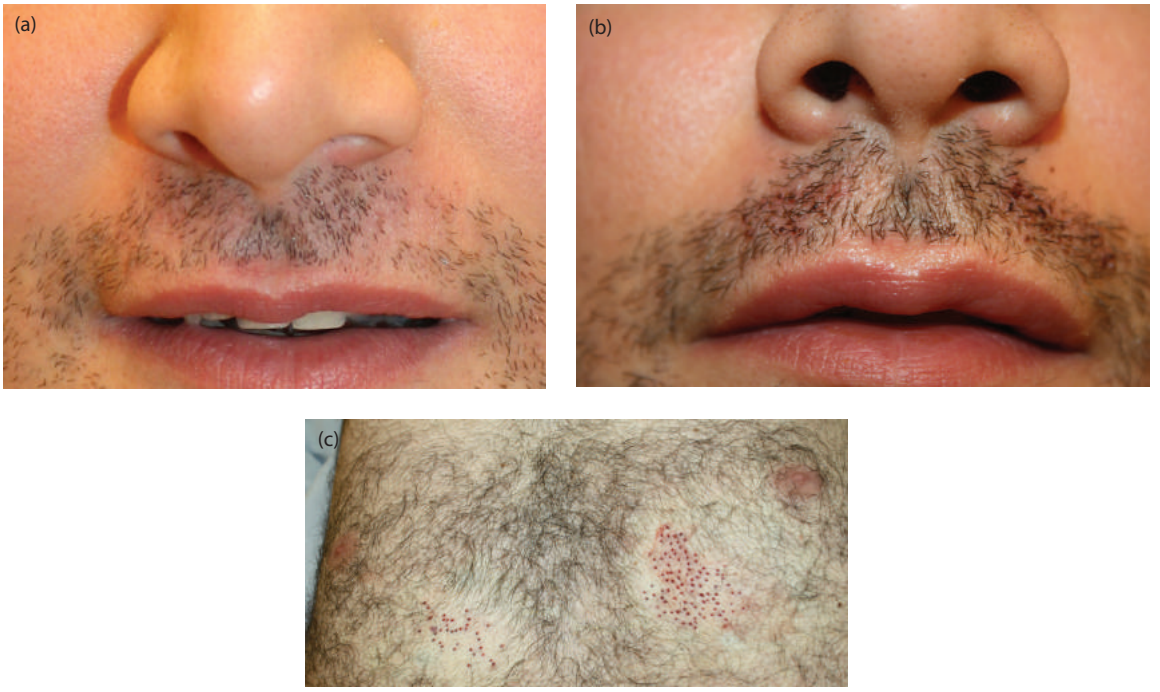

Figure 15.47 **(a) Male beard scars. (b) Four days after FUE transplantation. (c) Harvesting of FUE from chest body hair.**

requested. In these cases, it is very important to understand the psychological profile. The procedure is similar to that for the eyebrow and transplanted with one hair follicular unit, and in most cases with the follicular unit long hair (FUL) or sometimes with FUE. In a few cases, follicular unit extraction (FUE) is done by harvesting chest body hair (Figures 15.47a–c).

Alopecia of pubic hairs

This hair loss can be due to some gynecologic surgery procedures or postmenopausal hormonal effects.[37,38,43,45]

Reconstruction and densification of pubic hair are done according to many parameters.

An oblique centripetal orientation of the implants is of great importance to achieve a natural aspect.

Each one- to two-hair follicular unit long hair (FUL) are selected during segmentation and insertion.

The puncture perforations are done with 18-gauge needles with an obliquity nearly parallel to the skin. The needle is twisted into bayonet fashion to achieve a more acute angle incision.

No dressing is necessary.

CONCLUSION

Hair transplantation for male and/or female androgenetic alopecia can usefully be combined with the positive effect of various hair growth molecules (minoxidil, finasteride, intradermal injections of PRP, hormonal treatments, anti-androgens, etc.) densifying permanently bald areas. The aesthetic desire and the psychological profile are specific for each individual.

Follicular units of long hair (FUL), manual follicular extraction (FUE), automatic or robotic FUE, and conventional follicular unit transplant (FUT) can achieve most problems of hair thinning (scalp, beard, mustache, eyebrows, or pubis) for men and women and transgender. The methods also can treat most definitive alopecia of other etiology.

The follicular unit procedures are mostly selected according to ethnic origin (African American, Asian, etc.), the donor area density, and the extent of the baldness.[45,46]

Dermatological cosmetic surgery of the scalp requires, because of its specificity, a good knowledge of the anatomy of the scalp, the hair physiology and pathology, and a perfect handling of all the procedures of skin surgery. It is important to highlight seven key points:

- Establish an accurate analysis of the psychological profile of the patient (whether male or female).
- Present a precise planning of the immediate and future treatments, explaining the advantages and disadvantages of each procedure.
- According to the digital phototrichogram and the multifactorial classification, make an immediate and a prospective evaluation of the aesthetic result, taking into account the possible evolution of the alopecia process in the recipient area and in the donor area.

- Have a correct handling of all the procedures for selecting the best indications.
- Do not use any techniques that are unscientific, unreliable, or inadequately established.
- Be well aware of complications, the better to avoid or correct them.
- Examine the patient every year to control the evolution of the alopecia process and to determine if any additional refinements are required.

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