

Figure 13.24 (a) Before with different design, (b) 1 year after.

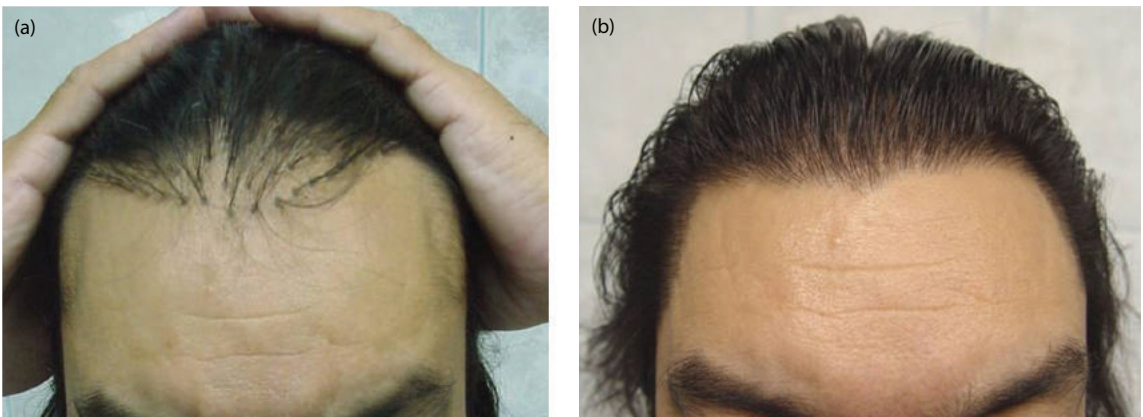


Figure 13.25 (a) Round grafts. (b) One year after FUT.

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14 Hair transplantation in the reconstruction of the face and scalp

Alfonso Barrera

INTRODUCTION

We have been able to provide significant improvements in the reconstruction of the face and scalp utilizing current plastic surgical techniques, such as simple skin grafts, local and regional flaps, free tissue transfers, tissue expansion, lasers, autologous fat grafting, even face transplantation.

Follicular unit hair transplantation, however, adds a new dimension, camouflaging scarring and enhancing aesthetics in the reconstruction of the face and scalp.

In my practice, I often see patients who are seeking correction of iatrogenic alopecias (lost sideburns and temporal hairline after facelift procedures), burn alopecia, and other scarring alopecias due to tumor resections, trauma, congenital deformities, etc.¹

Current techniques of follicular unit hair transplantation can easily be applied to the scalp area; naturally, the graft take in scarred areas is less than in nonscarred areas, due to various factors, including fibrosis and ischemia. In selected cases, autologous fat injections a few months in advance of the hair transplantation may help in preparing the recipient site, making it a better ground for the grafts.

The purpose of this chapter is to share with you my experience on these cases.

In almost all these cases, I operate under IV sedation (Midazolam and Fentanyl) and local anesthesia; only in small children do I operate under general anesthesia.

Clearly in areas of scarring alopecia, either scalp or facial, often there is fibrosis and less vascularity, and tissues are thin and often tight. It is best not to try to pack too densely the grafts, I would not exceed 30–35/cm²; beyond that may interfere with graft take. In selected cases I will prepare the recipient site by autologous fat grafting prior to the hair grafting, and this can help in improving the quality of the recipient site and may increase the yield of hair growth.

To date we are unable to make new hair, so to be candidates for this procedure patients need to have a reasonably good amount of donor hair. We are only doing a redistribution of the patient's own hair. The supply and demand ratio must be favorable for the patient to be a good candidate. In cases where the donor supply is limited, we have to selectively favor certain areas to be grafted to give the patient a strategic redistribution to the most important areas.

It is very important to give the patient realistic expectations as to the limited density that we can accomplish with hair transplantation.

I always make sure the patient understands that very likely it will take two or three sessions of hair transplantation to get reasonable hair density, and these procedures are done a year apart. It is often not a one-shot deal.

The eyelashes with the strip graft technique (see below) may well get the desired result in one session; other areas will take at least two sessions.

TECHNIQUE

Technique for hair transplantation to the scalp

With the patient on the supine position, under IV sedation with midazolam (Versed, Dormicum) and Sublimaze (fentanyl) and occipital and supraorbital nerve blocks with 0.5% Bupivacaine (Marcaine) with epinephrine 1:200,000.

Once the area is locally well anesthetized, I use tumescence infiltration along the donor ellipse. This provides hemostasis and, I feel, assists in the graft issection.

My tumescence solution consists of 120 cc of normal saline with 20 cc of 2% plain xylocaine plus 1 cc of epinephrine 1:1000 plus 40 of triamcinolone (Kenalog) the same solution is used to infiltrate both the donor and the recipient area. By adding Kenalog, I have found significantly less postoperative pain, and significantly less postoperative edema have been seen (Figure 14.1).



Figure 14.1 Donor site ellipse, in this case 1 cm by 16 cm, which should yield about 1500 grafts.



Figure 14.2 Patient in supine position, with the head turned to the left, harvesting the right half of the donor ellipse.

A horizontal ellipse of scalp is harvested from the occipital area, often extending to the temporal areas, frequently from above the ear on one side to above the ear on the other side.

The ellipse will vary in dimensions depending on the number of grafts planned and the density of the donor site. When planning on 2000 or more grafts, in my practice generally the ellipse will measure 25–30 cm by 1 cm in width at the midline, sometimes up to 1.5 cm gradually tapering to 1 cm over the temporal areas. It is important to make sure to have a tension-free closure as it allows for optimal donor site healing (Figures 14.2 through 14.8).

First, I have the patient’s head turned to the left and I harvest the right half of the ellipse. This is then immediately dissected into 1.5 mm thick slices under the microscope at 10×. Two or three surgical technicians dissect these slices into the individual follicular unit micrografts (one to two hair grafts) and minigrafts (three to four hair grafts). This is also done usually under 3.5× loupe magnification or microscopes (10×), especially if the hair is gray

or very light in color, which makes the dissection easier and safer.

As the grafts are dissected, the surgeon proceeds to close the right side of the ellipse by doing a single-layer closure with #3 “0” Prolene or Nylon, then the head is turned to the right and the left half is harvested and closed in the same fashion. Usually I find no need to undermine when harvesting these narrow and long ellipses, but undermining is done as needed.

Then, we proceed patiently to insert the grafts (Figure 14.9).

On the scalp, I use follicular unit grafting by a stick and place technique using a 22.5 Sharp point blade or a Feather 11 blade. Often the blade is inserted at a more acute angle (20°–30° as opposed to 45°) than usual to compensate for the thinness of the tissues, allowing the graft to be sufficiently embedded into the recipient slit—that is, I make the slit and immediately my assistant inserts the graft by sliding it along the side of my blade.

To avoid the “popping out” of grafts, I insert them initially 5 mm apart from each other. Working from

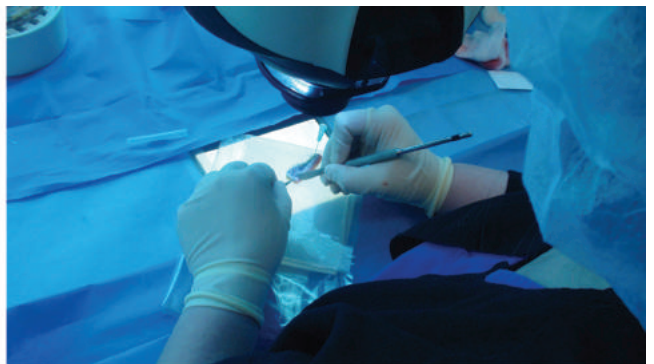


Figure 14.3 Use of the Manthis microscope at 10× power magnification.



Figure 14.4 Initial 2 mm slices on a petri dish in chilled saline solution, out of this slices the grafts are dissected.

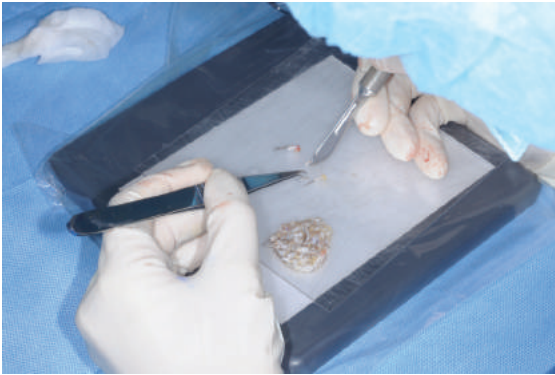


Figure 14.5 Graft dissection. It is important to use background lighting, by transillumination.



Figure 14.6 Follicular units micrografts 1,2 hair grafts, and 3–4 hair minigrafts.

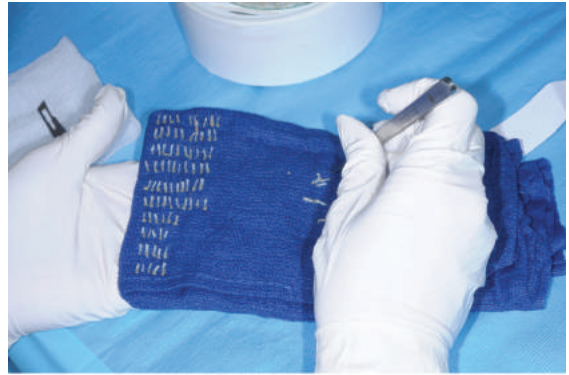


Figure 14.7 Lining up the grafts on a wet surgical towel in groups of 10 by 10 = 100.

anterior to posterior direction, 20–30 minutes later, I return to the anterior-most part. By then the fibrinogen has converted into fibrin, and the grafts are a bit more stable in their corresponding recipient slits. I then make slits between them, and now the grafts are about 2.5 mm from each other. The same process is repeated until all the grafts are inserted and densely packed (about 1–1.5 mm from each other).

Greater emphasis is given to the front part of the scalp than to the back, as the front is more visible and important in framing the face. The hair can always be combed back helping to cover the posterior scalp.

For dressing, I use Adaptic, Kurlex, and a 3 inch Ace bandage for the first 48 hours, and then I allow the patient to gently shampoo daily.

I remove the donor site sutures 10 days later.

A lot of the transplanted hair will go into telogen (rest phase) and will shed in the first 2–3 weeks, then at about 12–14 weeks it shifts into anagen (growth phase) and the hair begins to grow. By the third or fourth month, it becomes evident that hair begins to grow. Over the next 6–10 months, hair gains length and thickness. The final result is usually evident at 1 year postoperatively, and then if the patient desires, a second session may be done.

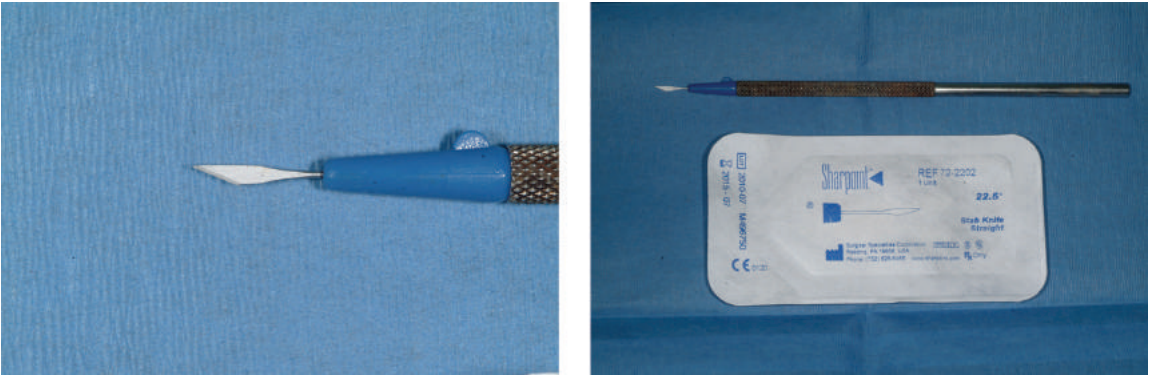


Figure 14.8 The 22.5° Sharpoint blade, preferred for the scalp. The 15° Sharpoint blade or the 18-gauge needle preferred for the face.

As far as mustache, beard, and eyebrows, I prefer to make the most of the recipient slits first (with 22.5° Sharpoint blade) and insert the grafts after that.

On the face there tends to be a lot more “popping out” than on the scalp, particularly with the “stick and place” technique.

On the beard and moustache, I incline the blade to get the growth in a caudal direction; again most incisions are done in a preliminary fashion, and then the grafts are inserted.

On the eyebrows, I use a 15° Sharpoint or a 22-gauge needle. Here it is crucial to incline the blade or needle as much as possible 5°–10° because they always tend to grow a lot more perpendicular to the surface than intended. We

are trying to mimic nature cephalically and laterally in the medial area and laterally lateral to that.

Usually, I would do 150–200 grafts per eyebrow. As the grafts are inserted, we check that the direction of the hair shaft of each graft is the most desirable or it is turned around, making sure the curl, if any, favors the direction we need the hair to grow.

Naturally trimming will be needed, and often grooming.

On eyelash reconstruction, I prefer to use a scalp strip as opposed to individual follicular unit grafts. I harvest a strip of scalp from a retro-auricular or occipital about two rows of hair, and the length needed. I use a chalazion clamp and stabilize the lid at the same time, protecting the eye globe. Then

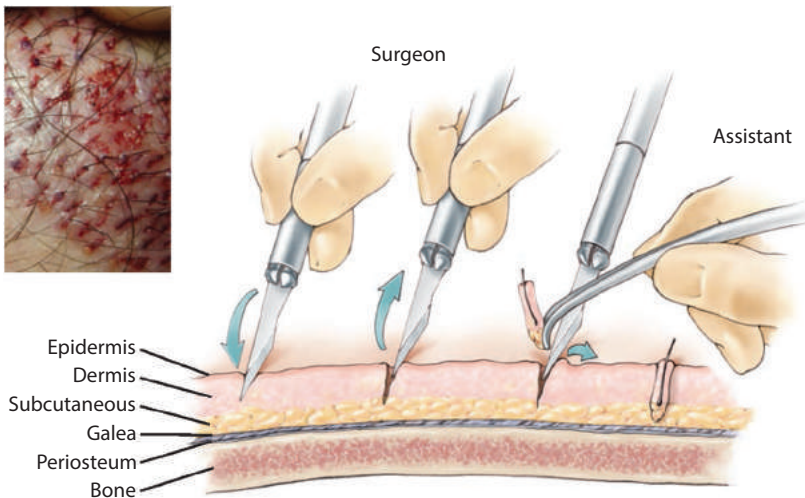


Figure 14.9 Stick and place technique. Immediately after making the slit, the graft is inserted. (From Barrera and Uebel, *Hair Transplantation: The Art of Micrografting and Minigrafting*, 2nd edn. Boca Raton, FL: CRC Press; 2013. With permission.)

hair transplantation in the reconstruction of the face and scalp

I use a Sharpoint blade to incise at the tarsal plate free edge, opening the ciliary edge of the lid, and doing this far enough to then be able to accommodate the scalp strip. You want to see how it lays better as to the direction of the hair on the strip. Trimming will likely be needed as well as curling.

Individual single hair grafting to reconstruct the eyelashes has been nicely presented by Marcelo Gendelman

of Brazil, who has great experience using a French needle and feeding the graft into the lid on the skin side and exiting at the tarsal plate.^{2,3}

Most cases are done under IV sedation with Versed and Fentanyl and local anesthesia (xylocaine, Marcaine with epinephrine). Representative examples are shown in Figures 14.10 through 14.19.



Figure 14.10 A 21-year-old female who suffered from an automobile accident resulting in scarring alopecia of the frontal scalp on the right side, shown here immediately postoperatively and a year later.



Figure 14.11 Young partially paralyzed man due to a fractured spine, here with scarring alopecia from a healed decubitus ulcer (pressure sore), shown before, and a year postoperatively.

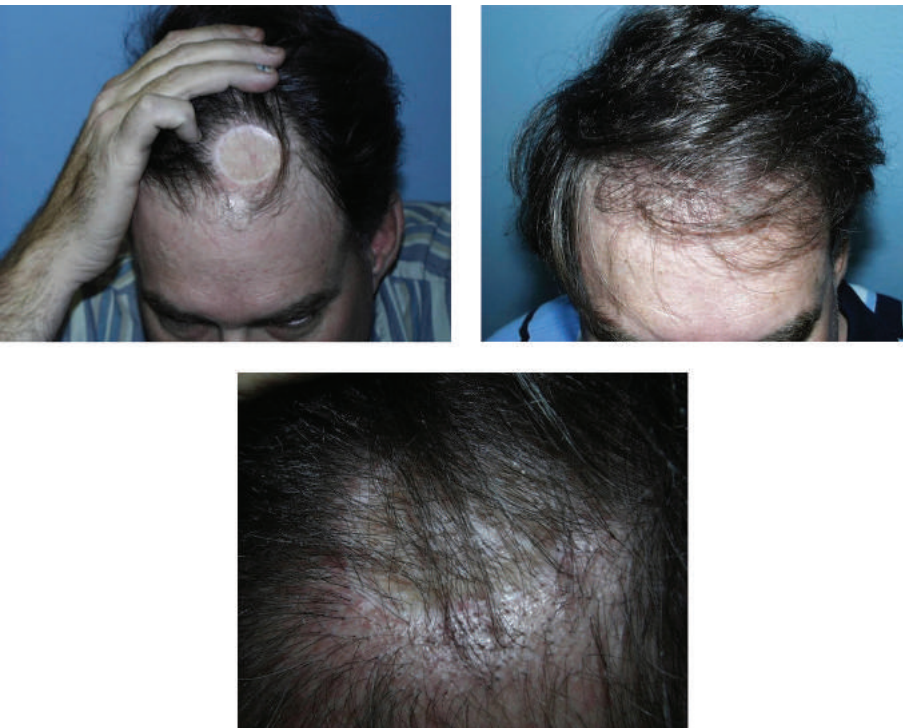


Figure 14.12 Middle-age man after resection of a melanoma from the scalp and full thickness skin graft directly on periosteum. Shown before and a year after the procedure.



Figure 14.13 Young female with scarring alopecia of frontal scalp from an automobile accident. Shown before and a year postoperatively.



Figure 14.14 Young female with burn alopecia of the front scalp and eyebrows, shown before and a year postoperatively.