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Harvesting Grafts for Hair Transplantation

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Early in the history of hair transplantation large grafts were used. It was possible to create a natural-looking, undetectable transplant using large grafts but very few were done. It required careful planning beginning with the spacing of the first session and a minimum of four sessions followed up with one or two touch-up sessions after the hair had grown. Most patients ended up with what was called a "dolls head" look because the grafts in the first session were placed too far apart. Later the grafts became progressively smaller and were called minigrafts and micrografts. The final endpoint was follicular unit grafts, which are the natural groups of hair growing in the scalp and consist of 2 to 4 hairs.

When the recipient area became undetectable as a result of using follicular unit grafts the attention was turned to the scars in the donor area. They could usually be hidden if the patient had dense hair and wore it long but might show if the patient went swimming or the wind blew strongly.

The first scars were circles three to four millimeters in diameter positioned in a random fashion in the donor region which consists of the sides and back. Later we learned to join the circles in a line and suture the line shut. The surgeon would usually cut the narrow divisions between the circles and shift the top or bottom slightly producing a wavy line as a scar. This was a significant appearance improvement. Also the sutured lines never bled post-operatively whereas the open circles occasionally bled after surgery requiring the surgeon to meet the patient at night and control the bleeding.

The electric punch which produced the circular grafts was replaced by excising a strip with a single bladed scalpel, a double-bladed scalpel or a multi-bladed scalpel. The multi-bladed scalpel produced multiple narrow strips which could easily be cut into minigrafts. With the single bladed scalpel the surgeon made two parallel incisions and produced a hair-bearing strip which was cut into small grafts. The instrument which endured the longest and most doctors use now is a double-bladed scalpel which can be loaded with a number of spacers between the blades and can produce a strip of variable width. A good estimation of the width of the strip is to compare it to the width of your fingers. The thumb is wider than the little finger. If a patient has a flexible scalp a strip may be used as wide as his thumb; if the scalp is tight, the strip may be as narrow as his little finger. The length of the strip will be determined by the number of grafts which is planned to be transplanted. The strip method produced a fine line if the tension on the closure was minimal. If the tension was large, which often occurred after multiple sessions, an unsightly scar might be made. These were the scars which spawned another method of harvesting called follicular unit extraction.

Dr. Ray Woods, from Sidney Australia, was the first to publically announce that he was using a small punch to harvest a single follicular unit independently for use in hair transplantation. He promoted no linear scars in the donor region. He was very successful and patients traveled to have their transplant by him from all over the world. He did not encourage other physicians to learn his technique saying it was too difficult to teach. Eventually other physicians began to harvest in this manner and follicular unit extraction became a more popular technique.

About the same time surgeons experimented with methods to minimize the scar resulting from strip harvesting. Plastic surgeons had for years been cutting incisions in the scalp hair at an angle to cause some hair to grow thorough the scar of a facelift. This produces thin, fine hair in the scar-line. This worked well in near the hairline where the hair is naturally fine. Hair transplant surgeons followed carefully the angle of the hair shafts to avoid transecting any hairs. Several modifications were made. Dr. Mario Marzola, from Australia, suggested cutting off the upper lip to allow hair to grow through the scar. Dr. Patrick Frechet, from France, recommended excising the lower lip. Dr. Paul Rose developed a method using a scalpel to excise the lip. The author devised a special pair of scissors which simplified and shortened the time to cut the strip. The final result is an invisible scar, that is, a scar which cannot be located. A lay person, that is a person who is not a hair transplant surgeon or a hair transplant technician and which includes barbers, cannot find the scar after one year in 95% of patients who had only one operation. The remainder is fine lines. After two transplant procedures the estimate is 85% with undetectable scars. With each surgery the scalp gets tighter and the possibility of producing a problem scar increases; however, the experienced surgeon can prevent this by modifying the width of the strip to avoid tight closures.

After the trichophytic closure was perfected the main motivation for doing follicular unit extraction, namely the lack of a linear scar disappeared.

Follicular unit excision is not scar-less; it only has no linear scars. For a small case the small white circular scars can be widely dispersed and it is difficult to identify them but for larger cases and for repeated cases the tiny white circular scars merge and the result is maze of scars over the back, kind of a mottled appearance, but no linear scar.

There are many disadvantages to follicular unit extraction. If a large case is done, for example several thousand grafts, the entire back and sides are shaved. Thus the patient has scabs over the sides and back for weeks and nothing to conceal it. Compare that to a properly done strip harvest of the same number of grafts, the only hair cut is the hair that is transplanted. All the other hair is intact. The donor site can not be seen the day after surgery. The sutures are often difficult to find when back-combing.

Grafts harvested by strip grafting are cut under the microscope. Technicians who are highly experienced rarely resect any hairs. Grafts removed by follicular unit extraction are blindly cut. The surgeon examines the angle which a group of hairs exit the scalp and guesses the angle under the skin. It often is not the same as the angle which it exits the scalp. A three hair group or a four hair group will spread like an upside-down ice-cream cone under the surface. The surgeon may

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get one hair, this is a par; if he gets two hairs, it is a birdie; three hairs is a rare eagle. The first thing to do is separate the grafts which have some hair from the grafts with no hair.

Many doctors transplant body hair when after the usual donor hair has been depleted. Hair on the scalp of a man grows for two to four years then falls out and goes into a resting phase for three months then re-grows. It does this all of your lifetime unless it is lost to the balding process. Body hair growth varies slightly by location and among people but in general it has the opposite timing of head hair. That is, it grows for a month or two then falls out and rests for several years. Transplanted body hair spends most of its time not being seen. It is resting under the skin.

If there are so many disadvantages to follicular unit extraction compared to why do many doctors do it and sometimes promote it as the new gold standard in hair transplantation? There are many advantages for the doctors. The doctors charge more per graft for Follicular Extraction (FUE) than for strip transplanting. When it began in America it was usual to charge three times the cost for a FUE. Later it was more common to charge twice as much. This was because the doctor devoted more time to harvesting a FUE than a strip harvesting. Not as many highly skilled technicians are needed to do FUE. This saves the doctor a vast amount of money and makes it simple to get started. Only one doctor is needed to produce the grafts and only one technician is needed to plant the grafts; and she does not need the skill of the technicians who carve the grafts under the microscope. It makes it much simpler to get started doing hair transplantation surgery. Neither the doctor nor the technician has as much to learn.

There are a few cases where FUE may be the best choice for harvesting. A patient who has had a large number of surgeries and has a tight donor site and the donor grafts are widely spaced should be done with FUE. But for most cases, even those that want to wear their hair short; strip grafting with a trichophytic closure is the best choice.