

# Surgical Correction of Plugginess in Hair Transplants

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## Case Presentation

Photos 1–4 illustrate successful treatment of plugginess in a 28-year-old man.

# Before



Photo 1. A frontal view demonstrates the degree of plugginess resulting from this 28-year-old man's hair transplantation.



Photo 2. Close-up of the punch grafts.

# After



Photo 3. A frontal view of the patient after two surgical sessions. Conversion of plugginess to natural was accomplished using fill-in grafting with single follicular units. Plugs were not removed.



Photo 4. A head-tilt view after two surgical sessions. 50% density of hair between plugs was accomplished.

The pluggy look was a signature characteristic of hair transplants before improvements in surgical technique and instruments opened the way to the natural look by use of mini-, micro-, and follicular unit grafts. The large plug graft has had limited use since naturalness became a principal and achievable goal of hair transplantation. However, a number of patients remain with pluggy transplants from earlier surgery and some may have received recent transplants that resulted in plugginess rather than a natural look.

Whether a patient's pluggy look is the result of earlier or more recent hair transplantation, he may present to the hair transplant surgeon with a request to revise plugginess to natural. If the patient has had progressive hair loss since the earlier surgery that resulted in plugginess, revision will have to be accomplished as part of a global hair restoration.

## The Esthetic Problem in Plugginess

Naturalness is difficult to achieve using large plug grafts, usually not due to the plugs so much as to the bare scalp between the plugs. Large plugs cannot be implanted close enough together to achieve the uniform hair density seen with flap surgery or with use of small grafts. Large plugs can also be more difficult than smaller grafts to implant uniformly.

The esthetic deficiency defined as the pluggy look is fundamentally a matter of relative hair density. The density of hair in a large plug graft is 100%. The density of hair in the scalp surrounding the large plug graft is 0%. The eye of the observer easily discriminates 100% from 0% hair density and identifies the pluggy look. Islands of 100% hair density in a field of 0% hair density is esthetically displeasing; the appearance is that of a contrived effort to overcome baldness. Baldness may even be esthetically superior to a scalp that resembles a cornfield as viewed from above.

While the human eye easily notes the difference between 100% and 0% hair density, it does not easily discriminate be-

tween 100% and 50% hair density. If scalp areas surrounding islands of 100% density can be transplanted to achieve an average 50% hair density, the areas of 100% density disappear to the observer's eye and hair density is perceived as "natural."

## Hair Density and Correction of Plugginess

Surgical revision of the pluggy look to natural can be accomplished by removing plug grafts, cutting plugs into smaller grafts, and using the smaller grafts to fill space between the plug graft sites to increase overall hair density to 50% and eliminating areas of 0% density. Alternatively, without plug removal, only fill-in grafting between plug grafts can be accomplished with single follicular unit grafts.

Use of small grafts to fill in between large grafts has proven to be the simplest and most effective technique for revising plugginess and achieving the natural appearance desired by the patient. Large-graft removal is carried out only when fill-in grafting is not indicated:

1. When the plugs are located very low on the hairline, and fill-in grafting would contribute to placement of the hairline too low on the forehead, or
2. when the patient does not have enough donor hair to achieve 50% density between large grafts—for example, when the patient has 20 to 30 large plugs at the center of the vertex, no hair in surrounding areas, and limited donor hair.

## Surgical Technique for Large-Graft Removal

Surgical removal of large plug grafts presents a significant risk for transecting follicles in the process of graft removal. As noted earlier, large plug graft removal is avoided if possible.

If large-graft removal is indicated, a manual punch is generally superior to a power punch because it gives the

*continued on page 252*

# Letters to the Editors

## MIDLINE CONVERGENCE

To the Editors:

I read Dr. Sharon Keene's article, "Midline Convergence: Nature's Way to Maximize the Appearance of Midline Density," with interest (September/October *Forum*, 2005, Volume 15, Number 5; p. 157). I have noticed the converging pattern that she speaks about in the frontal area and in fact published a photo showing this pattern along with a description of it in the *ESHRS Journal* (Volume 3, Number 3, 2003; pp. 4–6), with needles inserted in the frontal recipient area to emphasize the point that the idea of "general direction patterns" is in fact only "general."<sup>1</sup> I am worried that all attempts to provide "general" patterns of hair direction anywhere on the scalp may have the unintended effect of making people think that they should be slavishly following one general pattern or another, for example, those described by Dr. Keene. In fact, what one should be following is the direction and angle of the hair at whatever location the recipient incision is being made.<sup>1</sup> This varies tremendously, sometimes from cm to cm, in any area whether it is frontal, mid-scalp, or vertex area. Those less accustomed to operating in areas of early MPB can be led astray by suggested *general* patterns as easily as they are by *general* rules about almost any aspect of complex surgery.

## POST-OPERATIVE EDEMA

To the Editors:

Dr. Gholamali Abbasi's paper on "Hair Transplantation without Post-operative Edema" in the September/October *Forum* (Volume 15, Number 5) was very well done. Such studies create the basis for evidence-based medical practice and help to resolve longstanding clinical debates sustained by differing anecdotal observations. Prior to reading the paper I had tried many different measures to prevent post-

Suffice it to say that when I'm operating on a patient with relatively early to moderately advanced MPB, it is not uncommon for me to spend between 1 ¼ hours and 2 hours making approximately 2,000 recipient sites. It is a laborious process that I describe in detail in the textbook and elsewhere.<sup>1,2,3</sup> Unless this sort of effort is put forth, it is too easy to injure existing hair follicles and thereby create less rather than more hair, or very little gain when one is operating on such patients.

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## References

1. Unger WP. Hair direction and angle. *The News Letter of the European Society of Hair Restoration Surgery* 2003; 3(1): 4–5, Figure 6.
2. Unger WP, Beehner M. Basic principles and organization. In: *Hair Transplantation*, 4<sup>th</sup> edition. Unger WP, Shapiro R, eds. New York: Marcel Dekker, 2004; 116–117.
3. Unger WP. Why Mixed Grafting: Follicular Units and Multi-Follicular Unit Grafts. In: *Hair Transplantation*, 4<sup>th</sup> edition Unger WP, Shapiro R, eds. New York: Marcel Dekker, 2004: 489–490, Figure 12F–14E.

operative edema without much progress. Upon reading Dr. Abbasi's paper I adopted the addition of triamcinolone to my tumescent solution and have seen a dramatic decrease in both the occurrence and extent of post-operative swelling. On behalf of my patients, thank you Dr. Abbasi.

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## Surgical Correction of Plugginess

continued from page 251

surgeon more control during the removal procedure. The punch incision is not sutured after graft removal. Rather, the punch incision is closed 1) with scar tissue removed from the donor area from the previous punch graft surgery, or 2) with bald tissue punched from the recipient site. Replacement of tissue at the site of plug graft removal ensures faster healing and no scarring.

## Surgical Technique for Fill-in Transplantation

The single follicular unit is preferred for fill-in grafting to revise plugginess to natural. Use of larger fill-in grafts is made difficult by scar tissue around the large plug graft that increases risk for pop-up of larger fill-in grafts. Smaller grafts also can be implanted close together to achieve the goal of average 50% density between the 100% density plugs.

A strip is harvested from hair-bearing donor skin that includes old punch graft scars. The old donor punch scar area can be reduced in the process of harvesting the donor strip. Thus, plugginess correction provides an opportunity to revise the old punch scar area at donor site.

A highly scarred donor area may present some minor problems in association with removal of the donor strip:

1. The presence of scar tissue increases risk for transection of hair follicles, and
2. the presence of scar tissue may make it difficult to predict how much donor tissue should be harvested.

Fill-in transplantation to revise plugginess is usually planned for two sessions over a period of three to four months. The second session is required to complete fill-in transplantation 1) after the growth of grafts implanted at the first session has been confirmed, and 2) to deliver the goal of 50% hair density.

Single follicular unit grafts are inserted into slits created with an 18g needle.

Higher density of fill-in transplantation is required as indicated by pre-transplant planning. For example:

- Density of 60% or more may be needed to achieve naturalness in a patient with sharp contrast between black hair and a light scalp skin tone.
- The hairline always requires special attention in pre-transplant planning. The hairline is often the most important site for fill-in grafting to revise plugginess. When fill-in grafting at the hairline is indicated, it is prudent to carry the fill-in grafts to at least a 1 inch width from the hairline; fill-in grafting that is too shallow is inadequate and allows plugginess to still be visible. ♦