



Volume 16, Number 2

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# Long-term Evaluation of Hair Transplantation into Various Recipient Sites

Sungjoo "Tommy" Hwang, MD, PhD Seoul, South Korea

In 1959, Dr. Norman Orentreich suggested the term "donor dominance" in androgenetic alopecia to convey that the hair in the grafts continued to grow in the area of alopecia (the recipient area) and that it maintained the same texture and color and, apparently, grew at the same rate and with the same period of anagen that governed the nature of the hair in the donor site. With this concept in mind, there have been many developments in hair restoration surgery, and more recently, hair transplantation has been employed not only for the treatment of androgenetic alopecia, but also for other hairless areas such as the eyebrows and the pubic area. It is believed that the hairs in the latter sites will maintain their growth characteristics as in transplantation for androgenetic alopecia, but there have been few studies done to confirm this assumption. I therefore carried out a series of studies designed to evaluate whether hairs would keep their original growth characteristics after transplantation to a new anatomical site, such as the lower leg, nape of the neck, palm, hand dorsum, lower back, and wrist.

The short-term evaluations regarding these experiments were presented at the ISHRS 2003 (New York) Annual Scientific Meeting, and now let me report the long-term evaluations in addition to short-term results.

#### **Methods and Results**

### Study I: Hair Transplantation to the Lower Leg

#### **Methods**

In March of 1998, an elliptical strip (1 x 2cm) was harvested from the occipital scalp and 93 hairs were transplanted to the medial aspect of the author's lower leg using the KNU implanter. At 6 months, 3 years, and 8 years after transplantation, Iris scissors were used to cut 20 hairs among surviving hairs on the lower leg (recipient) as well as 150–200 occipital scalp hairs as close to the skin surface as possible. After 4 weeks, the same hairs were cut again, in a similar fashion, from both the recipient area (lower leg) and the donor site (occipital scalp). Twenty hair specimens were collected from each group and attached to a glass slide using double-sided and one-sided cellophane adhesive tape. The length and diameter of the hairs (in millimeters) were measured by means of a microscope equipped with an ocular micrometer.<sup>3</sup> At 3 years, the number of surviving hairs in the recipient area was counted.

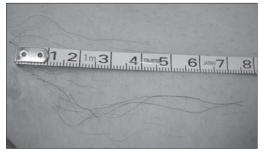


Figure 1. Transplanted hairs on the lower leg. The longest hair was measured at 12cm during the follow-up examination and 8cm at 8 years post surgery.

#### **Results**

The survival rate was 60.2% at 3 years after the transplantation. The surviving hairs on the lower leg showed a significantly lower growth rate, but the same diameter as the occipital hairs. However, the results were similar at 6 months, and 3 and 8 years post surgery (Table 1). The longest hair was measured at 12cm at 3 years and at 8cm at 8 years after transplantation (Figure 1).

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# President's Message

Paul T. Rose, MD, JD Tampa, Florida

#### The Right Way to Perform a Hair Transplant

I am sure that many of you have patients inquiring as to whether you perform a hair replacement procedure the "best way" or perhaps "the right way." Patients may ask if you are using the latest, most innovative technique, such as the "ultra superultra-refined individually unique" method or even the "super no-stretch high-definition reality-show-tested high-survival sure-to-grow" method.



Paul T. Rose, MD, JD

Kidding aside, patients are increasingly being barraged with hype and information that is often misleading. The in-

formation comes from various sources telling them that only Dr. X with his or her secret method and unsurpassed surgical training can perform the procedure.

What I have learned and come to believe is that a perfect methodology does not exist for all patients. Each patient is unique. Nevertheless, there is, in fact, a right way and a wrong way to undertake a hair transplant procedure.

The right way to perform the procedure starts with the consultation and a frank and open discussion of the process. The consultation should include a review of the patient's medical history and other pertinent data, a review of the methodology, and a discussion about realistic results that can be achieved.

From my point of view, the right way to perform a hair transplant procedure is to use follicular unit grafting (FUG). My technique may include the use of double follicular units (DFUs) and follicular families and paired grafts. The right technique includes a gradient of density and careful attention to the various aspects of the hairline. The right technique includes densities of 40-50 FUs, sometimes higher in the frontal hairline zone. The right technique includes a donor strip that is rarely wider than 1cm and closes without tension. I try to take out only that amount of tissue that ensures a closure under minimal or preferably no tension. I use sutures because I can better approximate the wound edges, particularly with the trichophytic ledge closure that I employ. Critical to the right technique process is an appropriately trained and dedicated staff. My approach is the right technique for me because I can obtain aesthetically pleasing and reliable results.

If I use the follicular isolation technique (FIT), I allow for a reasonable number of grafts to be obtained in one session. My right technique is the right technique because it provides for my patients reproducible results.

Importantly, I realize that the right technique is only my "right technique." It is what works for me. Others have a "right" technique that works for them, and not surprisingly their technique may differ from mine. I acknowledge that there are other surgeons who also offer surgery "the right way," but by using very different techniques. These surgeons may use multi-unit grafts (MUGs), take more donor tissue, use more lateral slits, or routinely use body hair. Whatever they do, they believe that they are acting in their pateint's best interest, and it works in their hands. They believe that with the right technique, a dependable result will be achieved.

While I am less certain about the absolute right way to perform the procedure, I am certain about the wrong way to perform hair restoration.

Start off with a cursory consultation and you'll possibly miss something important in the health history. Add to the mix unrealistic expectations and promises for unachievable results, mix in some disparaging remarks about other physicians, and you are well on your way to a potent concoction.

From a surgical approach, if one takes too much donor tissue and creates a scar, it will be used by unhappy patients to demean the procedure and show the "butchering" of patients. One can also claim densities that may be unproven and convince patients to consent to the removal of what may be excessive amounts of donor tissue or, worse yet, result in poor yield, and possible inability to plan for the future.

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# Co-Editors' Messages

#### Jerry E. Cooley, MD Charlotte, North Carolina



Jerry E. Cooley, MD

I was born and raised in Missouri, the "Show Me State." The origins of this nickname are obscure but the most common explanation is that it was coined, or at least popularized, in 1899 by a U.S. Congressman from Missouri named Willard Duncan Vandiver. Vandiver, a scholar, writer, and lecturer was speaking at a meeting in Philadelphia and was

questioning the accuracy of an earlier speaker's remarks. Vandiver declared, "I come from a state that raises corn and cotton and cockleburs...and frothy eloquence neither convinces nor satisfies me. I am from Missouri. You have got to show me." Missourians were known as no-nonsense country folk who demanded proof before accepting something as true.

The "show me" attitude is not necessarily rude or confrontational. In our professional lives, we are frequently presented with claims about new techniques and the results certain surgeons are able to achieve. There is absolutely nothing wrong, and in fact it is our duty, to politely request proof for such claims. Some, however, seem confused about the distinction between "tell me" and "show me." Telling others about your new technique is the first step, but this should be followed by presenting credible evidence.

When Dr. Gary Hitzig began claiming several years ago that he was "auto-cloning" beard hairs, I was naturally skeptical. So I flew up to New York and asked him to "show me." With a flick of his wrist, he plucked a bunch of beard

whiskers from a patient using his special needle holder. When I looked at his grafts under the microscope, I was surprised to see that many (not all) were in fact intact hair follicles! I had truly been shown, and there was no doubt in my mind that intact beard follicles could be plucked and transplanted to the scalp where they would grow. Textbooks typically describe plucked scalp hair as having only some adherent epithelial cells from the outer root sheath. To my knowledge, there has never been reports of being able to pluck intact follicles. Time to revise the textbooks!

The concept of donor dominance has been a well-accepted principle in our specialty for 50 years. Along comes Dr. Tommy Hwang who claimed that the recipient site had an important influence on grafted hair. His initial results were published in a peer-reviewed medical journal, and in this issue he shares his long-term results. He provides compelling proof that the recipient site determines graft survival and subsequent growth rate while hair caliber remains similar to hair from the donor site. In my mind, he has convinced me that our new understanding should be of "donor dominance/recipient site influence." Now we need research to understand exactly how the recipient site affects graft survival and growth rate. Is it merely a function of blood flow? Some of those doing body hair transplants have claimed that chest hair grafted to the scalp will grow longer like scalp hair, but we need more convincing evidence of this. It would certainly add more support to this emerging concept.

Jerry Cooley, MD

#### Robert S. Haber, MD Cleveland, Ohio



Robert S. Haber, MD

The eighteenth century philosopher Joseph Joubert once said, "It is better to debate a question without settling it than to settle a question without debating it."

Unfortunately, there are those among us who would prefer to decide what is right by declaration rather than through scientific debate. In some ways, this may be a natural tendency. We go to great lengths to perfect one technique

or another, or develop a new device, and when we've got it right, we are eager to share it with our colleagues. If we are confronted with doubt or disagreement, we may become defensive and obstinate. We might even take our ideas outside the professional realm and into the lay public, and attempt to parlay our new idea or device into a competitive advantage, subtly or not so subtly implying that everyone else is "old fashioned."

There is currently a somewhat heated debate amongst experienced hair transplant surgeons regarding the importance of dense packing. This aspect of our technique has gone from ridiculed irresponsibility a number of years ago to Holy Grail today. But should it always be utilized? Is dense packing necessary to achieve high-quality results? Are al-

ternatives equivalent? Are there long-term risks? Without healthy debate, these questions will remain unknown.

If variations in technique are viewed as a sine curve, we may now be seeing the "dense packing" curve shift back down to baseline. Those of us who tend to stay close to the x axis watch with fascination as these extremes develop. We observe and learn, glean and adapt what we can, and often shake our heads at the anger that sometimes accompanies these developments.

These pages have been used many times to remind our readers to keep an open mind and accept criticism as constructive, not an attack on one's integrity. The only thing I am absolutely certain of about my personal technique is that it will be different in some way in six months. At the start of my fellowship with Dr. Dow Stough in 1993, he warned me that what he taught me at the beginning would be different from his approach at the end, and indeed it was so. In fact, I was involved in the evolution, and have since always looked to change something every few months, and never view my technique as complete.

Where healthy debate ends and destructive behavior begins is when one technique is held above others as universally superior, and those not employing it are antiquated.

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#### President's Message

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We must become a field based on evidence-based medicine to garner the respect of patients and fellow physicians outside of our field. We should not use the patient for experimentation without advising the patient of the possible risks and obtaining appropriate consent. We must avoid making claims that are unsupported. We should realize that a great result with a particular approach may not justify a disastrous result with the same approach in other patients.

It is unfortunate that our society currently covets ego, celebrity status, arrogance, and bling. I am more of the opinion that it is foolhardy and small minded to claim that you are the best and no one can ever match your results or abilities. It is similarly folly and self-indulgent to close one's self off to new ideas and discount the contributions of others.

Whatever way you choose to undertake hair restoration for a patient, realize that each patient is unique, and the right way is the way that meets the reasonable expectations of your patient.

Paul T. Rose, MD, JD

#### Haber's Message

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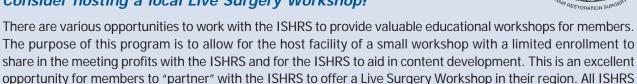
Obviously, as the varied approaches and remarkably consistent excellent surgical results presented at each ISHRS meeting attest, there exists no universal "best technique," whether it be FUE, dense packing, ultra-megasessions, or unique hairline designs, among others.

Time alone will determine which techniques survive and which end up in the hazardous waste container of history. Present your best ideas within the pages of the Forum and allow your colleagues to test, adapt, and modify and either verify or disprove your assertions using scientific principles. Welcome the debate, for that is how we learn.

Bob Haber, MD

## ISHRS Regional Workshops Program

#### Consider hosting a local Live Surgery Workshop!



The CME Committee and Live Surgery Workshop Committee oversee the process and the Board of Governors approves applications. The annual application submission deadline is June 1, for a workshop to take place the following year. Go to www.ISHRS.org, Members Only section, to review the guidelines and obtain an application.



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Please send all submissions and author consent release forms electronically via e-mail. Remember to include all photos and figures referred to in your article as separate attachments (JPEG, Tiff, or Bitmap). Be sure to ATTACH your file(s)—DO NOT embed them in the e-mail itself.

#### An Author Consent Release Form must accompany ALL submissions.

The form can be obtained in the Members Only section of the ISHRS website, under the section "Forum Newsletter," at http://www.ishrs.org/members/ member-index.php.

Send article AND release form to:

Robert Haber, MD E-mail: HaberForum@aol.com

> Submission deadline: May/June, April 10

The fact that something is possible

# **Notes from the Editor Emeritus**

Russel Knudsen, MBBS Sydney, Australia (Forum Editor 1999–2002)



Russell Knudsen, MBBS

Every once in a while we see a significant change in trends for surgical techniques. Increasingly, we are being exhorted by our increasingly bettereducated patients to offer them the latest technique that has been extolled in the websites of surgeons, the Internet discussion groups of lay commercial sites, and the commercial Internet surgeon co-operatives (known as "Alliances" or "Coalitions"). This can make surgeons uncomfortable as they are

used to controlling the discussions and the content of the consultation. However, getting defensive or patronising is no remedy. Rather, we must carefully present our rationale for what we offer. It is a given that there are different philosophies of practice. We are just being increasingly asked to defend our philosophy. In other words, patients are not supplicants in

the process, they are empowered. We are offering a service. Patients want to know whether this is a service worth having. After all, it is

their money and we are not talking physical health but appearance-related surgery.

Excluding FUE, the biggest new trend is density of grafts offered per surgical session. The extreme end of this is the offering of very high-density, single-pass surgery. Whereas once there seemed to be a race to the highest number of grafts offered per session, now it seems there is an unofficial race to offer the highest graft density per session. Some sites are claiming session densities of 100 grafts/cm²! Is this wise? Is this going to be the new gold standard?

Every one of us is doing greater densities than before. In the early to mid-1990s, Dr. Bill Rassman dragged many surgeons, kicking and screaming, into the idea of large sessions of FU grafts. In the early 2000s, Drs. Victor Hasson, Jerry Wong, and others have dragged many of us, some kicking and screaming, into both lateral slits and high-density grafting. Generally, I like to see reproducible results from multiple surgeons before turning my practice upside down. Yet, here I am in 2006 with 6 nurses and techs employed in my Sydney clinic routinely doing 2,000 + grafts per session using lateral slits.

There is no doubt we are now achieving results, in a single session, we once would have regarded as impossible. There is also no doubt that we generally are inherently conservative, generally have satisfied patients, and therefore we wonder about the wisdom of forever raising the technical bar. Inherent conservatism can be seen as a bonus in that the downside of any new "revolutionary" change of technique can take some time to appear. Does anyone doubt that the uproar over donor scars is in part a result of attempting much larger donor removals? The patients focus

on length of donor scar at my consultations. I constantly talk about width of scar and urge them to forget about length. I see patients with bad donor scars who have a short scar for the number of grafts removed. Poor surgical technique perhaps, but definitely poor surgical design.

It is my experience that patients don't always know how much extra cover they want. They will ask how many grafts they need, but this is a complex question relating to age, color of hair, donor calibre, amount of donor hair, and many other factors.

In addition, I talk to the patients about their budget. I tell them some patients work to a goal (e.g., maximum density in a single session), some work to a budget (what they can afford), but most work to a combination of goal and budget (what they can justify to spend). It may be that a significant percentage of surgeons' practices utilising high-density, singlepass surgeries contain goal-driven patients who can afford the inevitable high fees from such groundbreaking surgery.

Dr. David Seager once told me 80% of his practice was patients wanting single-pass surgery. That, however, in my view, is a niche practice

doesn't necessarily make it advisable, and should never make it compulsory.

where he is tapping a niche, affluent market. And this is in no way any criticism of the approach, just reality.

I am trying to do the best for my patient, given what donor hair and financial resources they have and what goals they want to achieve. Some of my consults have realistic planning goals but unrealistic financial budgets. That is when we negotiate to try and find an acceptable compromise.

Interestingly, in my view, one of the reasons alopecia reduction is not making a comeback (in combination with FUT) is that many patients are often happier with less crown density than we, or they, once would have imagined. The naturalness of the results seems to have taken precedence. I support the view that we shouldn't necessarily buy into the argument that higher and higher densities are necessary to make patients happy. After all, don't we intuitively know that significantly less than numerical 100% density is not even noticeable to our patient's naked eye?

We also need to remember that donor hair is a non-renewable resource and that balding is mostly relentlessly progressive. Hair replacement surgery via grafting has always been an area versus density trade-off. That is still the case. Very high densities may in fact require smaller areas to be transplanted in the extensively bald patient.

We risk setting the patients' goals too high, and therefore risk creating unhappy patients who have nonetheless excellent results with lower densities. Can I perhaps term this "high balling"?

A dictum I like to remind myself of is: The fact that something is possible doesn't necessarily make it advisable, and should never make it compulsory.

## Correction on Scalp Elasticity Measurement

Melvin L. Mayer, MD San Diego, California

This brief article serves to correct an error in the formula calculating scalp elasticity, which was published in the 2005 July/August issue of the *Forum* (Volume 15, Number 4; p. 122).

I define scalp elasticity as the percentage of the original length that vertical lines or dots placed 5cm apart (Figure 1) move toward each other when compressed maximally by the examiner's thumbs (Figure 2). Therefore, the formula is:

50mm – x × 100 = Percent scalp elasticity 50mm

x =New compressed measurement of the vertical marks with maximal thumb compression

Example:  $(50mm - 32mm) \times 100 = 18/50 \times 100 = 36\%$ 50mm (Figures 1 and 2)

Scalp Elasticity	Maximum Donor Width Central 50%	Maximum Donor Width Lateral 25% Post-Auricular
10%	10mm	8mm
15%	15mm	10mm
20%	20mm	15mm
25%	22mm	15mm
30%  or  > 30	% 22mm	15mm

This objective, reproducible measurement allows hair transplant surgeons to communicate scalp elasticity accurately, and better plan optimal width excision.





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