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CALL FOR ABSTRACTS!



Deadline:

February 15, 2010

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Trichophytic closure of both wound edges after strip excision for hair transplantation

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*The author has no relevant financial relationships or conflicts of interest to declare.

Introduction

Trichophytic closures have become the standard method of minimizing the visibility of scarring at the donor site. The main methods were previously described by Drs. Patrick Frechet and Paul Rose (de-epithelialization technique of the lower or inferior wound edge) and Dr. Mario Marzola (de-epithelialization technique of the upper or superior wound edge).¹⁻³ However, a detailed review of trichophytic closure with de-epithelialization of both wound edges has not yet been reported.⁴ Since we recognized that the trichophytic closure after de-epithelializing both wound edges more effectively achieves undetectable scarring at the donor site, we started to verify this effect in order to improve on the traditional one-sided trichophytic closure technique.

Donor Scar Classification. The donor wound after trichophytic closure generally develops a scattered scar instead of a linear scar. In order to evaluate the scar appearance we devised a detailed classification of six types and a more cursory evaluation of three types so that outcomes could be distinguished more objectively.

The donor scar was estimated by the following detailed criteria (Figure 1):

1. **Type S** (very good): The donor wound could not be distinguished from the surrounding scalp at all.
2. **Type A-1** (good): The wound showed a nearly invisible scar. The FU density in the scar was almost the same as that of the surrounding scalp, but a skin/scar color contrast was relatively distinguishable.
3. **Type A-2** (good): The donor wound showed a nearly invisible scar, but the FU density in the scar was thinner than the surrounding normal FU density.
4. **Type B** (fair): The donor wound was not clearly scarred, but there were areas of spot-like scars and short linear scars.
5. **Type C** (bad): The donor wound mainly formed a linear scar (width: less than or equal to 1mm).
6. **Type D** (very bad): The donor wound clearly showed a linear scar along the full length (width: greater than 1mm).

These six types were then roughly divided into the assessment of three types based on cursory appearance:

1. **Invisible Scar:** This type was defined as those that scored from Type S to Type A. This type indicates that the donor scar would not be noticed even if others looked at it directly and the patient does not worry about it at all.
2. **Undetectable Scar:** This type was defined as difficult to discover the donor site and ranged from Type S to Type B.
3. **Visible Scar:** This type was defined as Type C and Type D. This is an unacceptable scar that consists of mainly linear scars.

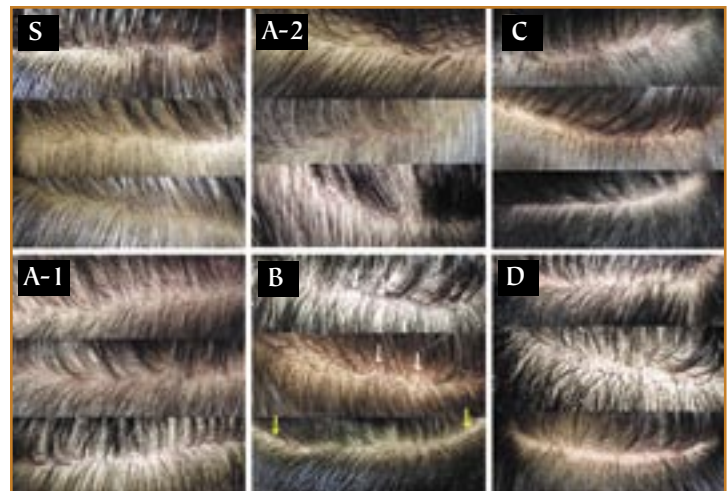


Figure 1. Donor Scar Classification: Six types were classified based on the donor wound healing: Type S; Type A-1; Type A-2; Type B (the white arrows show spot-like scars and the yellow arrows show short linear scars); Type C; and Type D.

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President's Message

Edwin S. Epstein, MD *Virginia Beach, Virginia*

As we approach the year-end holiday season, I want to wish everyone happy holidays. I am pleased to announce the ISHRS is healthy. One year ago worldwide economies were unstable, the U.S. stock market dropped precipitously, and the reserve fund of the ISHRS decreased by 33%. The Board of Governors responded by reducing activity in some programs, by moving funds out of growth stocks and into more conservative, income-producing bonds, and in general took other fiscally responsible actions. As a result of a rise in the stock market, and an excellent turn out at the Amsterdam Annual Meeting, our reserve fund has now reached our 2010 goal.



The surveys from Amsterdam are in. We have listened to suggestions and you can expect the following for the Boston meeting in 2010: registration and gala fees will be reduced, more lunches will be included, and live surgery will return. We are also purchasing an audience response system, which debuted in Amsterdam and was a big hit.

For the first time in the history of the ISHRS, the number of international members has surpassed the U.S. members, 54% vs 46%. I applaud the efforts of those members who have sponsored workshops and various national societies who have increased their memberships and affiliations with the ISHRS. In the upcoming year we plan to increase our public relations and media efforts that will focus on our international members.

On another note, I would like to thank U.S. members who joined the American Medical Association (AMA), which has enabled the ISHRS to qualify for a voting seat in the AMA House of Delegates. This initiative was started by Dr. Tony Mangubat during his presidency as part of a program to increase the awareness of the ISHRS among our peers in allied medical organizations.

Recently one of our members was notified by Care Credit, a financing company for cosmetic procedures, of termination of financing programs because the practice did not meet board certification requirements. After several correspondences with Care Credit explaining the educational activities of the ISHRS and the importance of the American Board of Hair Restoration Surgery, I am pleased to report that Care Credit has included the ABHRS/IBHRS in its list of qualifying boards.

Our public relations effort to promote OPERATION RESTORE has resulted in a large number of patient applicants. Many of these people will need medical evaluations for potential candidacy. I wish to encourage all members to volunteer for the OPERATION RESTORE program. This is a great way to give back, and potentially market your good deeds in your community.

Wishing everyone a happy and healthy new year, and please put Boston on your calendar for October 2010.

Warmest regards,

Edwin S. Epstein, MD

PLEASE CONTRIBUTE TO THIS DATABASE

As described in the last issue of *Forum*, we have created a database for the collection of **hair restoration results on patients with cicatricial alopecia and hair diseases other than androgenetic alopecia.**

Please help by contributing your cases to this database. You may obtain the details and download the registration form at:

www.ishrs.org/cicatricial_alopecia_data_collection_form.php

Thank you.

Co-editors' Messages

Paco Jimenez, MD *Las Palmas, Spain*



It is shameful, whatever the reasons might be, that all the great research performed by Dr. Shoji Okuda (Japan, 1886-1962) remained completely unrecognized and indeed virtually ostracized for so long. Dr. Okuda was never recognized during his lifetime for his achievements in hair transplantation; thus, it is always a pleasure to publish a tribute to this brilliant physician, such as the

one that Drs. Kenichiro Imagawa and Shigeki Inui provide in this issue revealing new aspects of Dr. Okuda's personal life and biography. Dr. Okuda, the great pioneer in hair transplantation, was in reality a general practitioner specialized in ophthalmology. His extensive work on hair transplantation was done in his own clinic at his house, where he also had an animal house for his experiments and where he developed his own instruments. I recommend our readers check out the summary of Dr. Okuda's work that Dr. Richard Shiell wrote in the January 2004 issue of the *Forum*.^{*} Seventy years later (Dr. Okuda published his work in 1939) we can still find some very interesting ideas; for instance, he suggested the phenomenon of "recipient influence" of the transplanted hair although he did not actually coin a term for it. He said that "scalp hair could survive at any place...and that for several years scalp transplanted hairs should be trimmed, but they become gradually assimilated to the transplanted area's hair morphology." Dr. Okuda was also the first to experiment with heterologous hair transplantation, showing that hair transplanted from another person was completely destroyed within 30 days. Dr. Okuda also experimented to some extent with punches as small as 1mm in diameter (a

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Bernard Nusbaum, MD *Coral Gables, Florida*



Techniques in our field are in constant evolution and, in this issue, we continue with our goal of rapid communication, by presenting further variations to the theme of trichophytic closure. Dr. Kazuhito Yamamoto's study of trichophytic trimming of both edges describes not only a new variation but also a novel scheme for objective grading of trichophytic donor scars, recognizing that their morphology differs from that of scars obtained by routine closure techniques. In Dr. Bertram Ng's "How I Do It" column yet another twist to trichophytic closure is presented with Dr. Gabriel Krenitsky's "TrichoSave" technique. In an attempt to further improve our results from donor strip excision while still maximizing yield, Drs. Mel Mayer and Thomas Yee present a simple technique for measuring donor wound tension and its effect on scar width.

While Dr. O'Tar Norwood's refinement of the Hamilton classification of male pattern baldness has served as the cornerstone of clinical description and communication in our field, Dr. Bernard Cohen presents his Cohen Classification based on an updated and improved Hair Loss Profile and Index. His method provides a more precise and detailed means of describing hair loss patterns in both men and women. Dr. Cohen has graciously offered to provide the diagram necessary to implement this method in your practice by contacting him via email.

We are in dire need of more effective, non-invasive methods of quantifying hair loss as well as measuring the response to medical therapy. Dr. Nilofer Farjo, who has done a terrific job as liaison to the hair research commu-

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Editorial Guidelines for Submission and Acceptance of Articles for the *Forum* Publication:

- Articles should be written with the intent of sharing scientific information with the purpose of progressing the art and science of hair restoration and benefiting patient outcomes.
- If results are presented, the medical regimen or surgical techniques that were used to obtain the results should be disclosed in detail.
- Articles submitted with the sole purpose of promotion or marketing will not be accepted.
- Authors should acknowledge all funding sources that supported their work as well as any relevant corporate affiliation.
- Trademarked names should not be used to refer to devices or techniques, when possible.
- Although we encourage submission of articles that may only contain the author's opinion for the purpose of stimulating thought, the editors may present such articles to colleagues who are experts in the particular area in question, for the purpose of obtaining rebuttal opinions to be published alongside the original article. Occasionally, a manuscript might be sent to an external reviewer, who will judge the manuscript in a blinded fashion to make recommendations about its acceptance, further revision, or rejection.
- Once the manuscript is accepted, it will be published as soon as possible, depending on space availability.
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- A completed Author Authorization and Release form—sent as a Word document (not a fax)—must accompany your submission. The form can be obtained in the Members Only section of the Society website at www.ishrs.org.
- All photos and figures referred to in your article should be sent as separate attachments in JPEG or TIFF format. Be sure to attach your files to the email. Do **NOT** embed your files in the email or in the document itself (other than to show placement within the article).

Submission deadlines:

December 5 for January/February 2010 issue
February 5 for March/April 2010 issue
April 5 for May/June 2010 issue

Jimenez Message

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procedure identical to what we now call FUE). However, he found that such a punch size produced a level of transection unacceptable for him, and he preferred to use punches of 2.5-4mm in diameter. Additionally, as the majority of his patients had scarring alopecias they were probably not too bothered about the donor scars but were more interested in having enough hair to cover their defects.

Nusbaum Message

☞ from page 151

nity, provides an insight into the inquisitive mind of one of Amsterdam's Featured Guest Speakers, Dr. Dominique Van Neste, as he describes his cutting-edge methodology for hair measurement.

Video has become one of the most effective teaching methods in our conferences and is an increasingly important tool for expanding your Internet presence. Now, with Dr. Arthur Tykocinski's article "How to make a great surgical

Finally, could trichophytic sectioning of both edges be the solution to finally achieving invisible donor scars? Dr. Kazuhito Yamamoto shares his very impressive results that need our careful attention and further confirmation.

Paco Jimenez, MD

*You may view this article via the Online Forum Article Archives in the Members Only section of the ISHRS website at www.ISHRS.org.

video," you will know exactly the equipment and methods necessary to create your own excellent production.

Along with these features I hope you enjoy the wisdom of experience echoed in Dr. Jerry Cooley's Editor Emeritus column, the healthy debate in our Letters to the Editors section, and the insight offered by our regular features such as Cyberspace Chat, The Dissector, and the "Hair's the Question" quiz.

Overall, I hope this issue enhances your daily practice and touches upon some of the many interesting topics of our wonderful specialty.

Bernard Nusbaum, MD

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Notes from the Editor Emeritus

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



In his best-selling book "Outliers," Malcolm Gladwell describes the key traits of successful people in the past 150 years. One of these characteristics he calls the "10,000 hour rule," which is the period of time necessary to practice in one's field prior to achieving excellence later on. He cites the Beatles and computer billionaire Bill Gates as

examples. From 1960 to 1964, the Beatles played almost nightly in Hamburg, Germany, putting in about 10,000 hours practicing and performing their music. When they returned to England, they were ready to showcase their talent to the world. At the age of 13, Bill Gates was given access to some primitive computers and spent over 10,000 hours in the ensuing years learning programming. After computer technology developed to a sufficient point, he was ready to start his own computer company, as a result of the time he had already spent mastering the field.

Ten thousand hours boils down to 40 hours per week for 5 years, or a somewhat more manageable 20 hours per week for 10 years. I think there is a lesson here for the aspiring hair surgeon. Attending conferences is great. So is reading textbooks and papers. Visiting other surgeons can be tremendously helpful. But I don't think anything can replace putting in the "10,000 hours" immersing oneself in actually seeing patients and doing hair transplants. Because of the long time line from surgery to final result, one will be constantly evaluating the techniques used 6-12 months prior. Changes will be made, and after another long time lapse, the results of these changes can be analyzed. Problems will occur, and gradually one learns how to manage and avoid these problems. Throughout this time, a sufficient volume of surgery is necessary to acquire the skill and judgment needed to progress to the next level.

I don't know exactly how many hours it takes to make a good hair surgeon, but the 5-10 years needed to log "10,000

hours" is a good benchmark to consider as a requisite for later excellence. Perhaps this is surprising or even offensive to new surgeons who think their innate talent has given them a shortcut to success. Looking back on my own experience, I realize now how little I knew in the early days, in contrast to what I thought I knew. Perhaps if I had known how long it would really take to acquire a minimum set of skills, I would have become discouraged and dropped out. Today, even though I am grateful for the skills I have acquired, I am also acutely aware of how much I don't know and much I have left to learn. I hope this insecurity and curiosity will be the seeds for further development.

On the other hand, we all know of surgeons who have been doing hair transplants for 20-30 years and are barely competent, so hours alone do not guarantee excellence. Natural ability appears to be missing in these individuals, as well as a sincere desire to improve and a willingness to receive constructive criticism. For the new and aspiring hair surgeon, these colleagues can serve as a negative example of what not to do.

In my opinion, immersing oneself in hair transplantation should include acquiring the skills to do all aspects of the procedure, including those tasks normally delegated to the assistants. Having the ability to cut and place grafts is a helpful skill for all surgeons to have whether or not they are done on a daily basis. In my practice, I still place a good portion of the grafts myself, partly because I enjoy it and have a hard time turning this over. But I also think this makes me better in all aspects of the surgery from consultation and planning to executing the plan and avoiding complications. I know that many will disagree with this viewpoint but I recommend new surgeons give it serious consideration.

Our days can and should be spiced up with meetings, reading papers, and interacting with colleagues. These elements refine and redirect us in critical ways. A certain amount of luck is always helpful as well. But if excellence is our goal, none of these can substitute for the "10,000 hours" spent practicing and perfecting our craft. ✧

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Trichophytic closure

from front page

Prospective Bilateral Controlled Comparison Study

Materials and Methods. A bilateral comparison study in the same patient was performed to examine the effect of de-epithelialization of both wound edges. Of 80 randomly selected patients who underwent strip excision between October 2007 and March 2008, the author studied 36 consecutive patients (32 men and 4 women) who had undergone their first transplant procedure and consulted our clinic for follow-up more than 6 months after surgery.

The donor wound was divided into two halves. One half was closed by lower edge trichophytic closure ("Lower") and the other half was closed by double-sided trichophytic closure ("Both"). The two methods were alternately performed on the right and left half, respectively, in order to avoid the intentional selection of either side by the surgeon. In this study, conventional trichophytic closure technique was performed as follows. Using scissors, each wound edge was cut with wedge-like incisions 1-1.5mm in width and 0.5 to less than 1.0mm depth. Caution was taken to excise shallower trichophytic triangular strips rather than ones that are too deep in order to completely protect the bulge area of the follicles and the sebaceous glands.^{5,6} This procedure did not include additional undermining but a subcutaneous and superficial fascial suture was used for closure. Deep-layer closure was performed at intervals of 1.5cm with interrupted 3/0 polydioxanone, which holds its tensile strength for an extended time period. Superficial-layer closure of the wound edges was performed with simple continuous absorbable 5/0 sutures such as polyglycolic acid or polyglactin 910. Sutures were removed 8-14 days post-op.

Follow-up examination involved assessment of the wound width, FU density of scars, and skin/scar color contrast. Objective evaluations of wound appearance were made by the attending physician using photographs and clinical inspection and the donor scar type was classified. Moreover, a randomly chosen staff member who did not know which method had been performed on which half judged whether the scar appeared more or less distinct on the right or left side as a subjective judgment.

Results. The Invisible Scar type was found in 75% (27/36) and 89% (32/36) in "Lower" and in "Both," respectively. The Undetectable Scar type was found in 86% (31/36) and 94% (34/36) of "Lower" and "Both," respectively. The Visible Scar type was found in 14% (5/36) and 6% (2/36) of "Lower" and "Both," respectively (Table 1). There was a significant improvement on the "Both" half compared with the "Lower" half of the donor scar type as assessed by photography and direct inspection ($p < .05$, Mann-Whitney U test). On comparison of each half in the same patient by our staff member, cases showing an equivalent wound appearance comprised 42% (15/36), but it was more difficult to distinguish the donor wound in "Both" than in "Lower" for all of the remaining patients (58%: 21/36) ($p < .001$, chi-square test). The following three striking aspects

were pointed out. First, approximately 10% of the Visible Scar type for the "Lower" and "Both" groups had a donor strip width of 1.0cm or less, whereas this type was not seen in groups with a maximum strip width of 1.0-1.5cm. Second, the Visible Scar type comprised 0% (0/5) for "Both" as opposed to 40% (2/5) for "Lower" when the maximum strip width was more than 1.5cm. Third, regardless of the maximum excision width, the resultant donor wound was more attractive for "Both" than for "Lower" in all except for cases in which both halves were equal. Figure 2 shows examples in which the difference between each half is easily visible.



Figure 2. Photographs from two representative subjects that showed notable differences between "Lower" and "Both." A: "Lower" half shows Type C and "Both" half shows Type A-2; B: "Lower" half shows Type A-2 and "Both" half shows Type S.

Retrospective Comparison Study

Materials and Methods. The donor scar type of three groups—lower edge trichophytic ("Lower") group, both edges trichophytic ("Both") group, and "Both" with intra-epidermal (buried, continuous) wavy suture (IWS)—was examined retrospectively. Since improvement of the appearance of the donor wound depends on the superficial layer suture if the donor wound is sutured with minimal or no tension, the IWS seems to be the optimal method for the superficial layer suture.⁷

In the "Lower" group, 60 consecutive patients (58 men and 2 women) who underwent lower edge trichophytic closure during the first transplant procedure performed between March and October 2007 and returned to our clinic more than 6 months after surgery were enrolled. The "Both" group consisted of 36 patients as described above. In the "Both" with

	Assessment		Type		Maximum Width of Strip*		
					<1.0cm (n=24)	1.0-1.5cm (n=7)	≥1.5cm (n=5)
"Lower" half (n=36)	Invisible Scar	75% (27)	Type S	22% (8)	79% (19)	86% (6)	40% (2)
			Type A-1	19% (7)			
			Type A-2	33% (12)			
	Undetectable Scar	86% (31)	Type B	11% (4)	8% (2)	14% (1)	20% (1)
	Visible Scar	14% (5)	Type C	11% (4)	13% (3)	0% (0)	20% (1)
			Type D	3% (1)	0% (0)		20% (1)
"Both" half (n=36)	Invisible Scar	89% (32)	Type S	33% (12)	83% (20)	100% (7)	100% (5)
			Type A-1	25% (9)			
			Type A-2	31% (11)			
	Undetectable Scar	94% (34)	Type B	6% (2)	6% (2)	0% (0)	0% (0)
	Visible Scar	6% (2)	Type C	6% (2)	8% (2)	0% (0)	0% (0)
			Type D	0% (0)	0% (0)		0% (0)

Table 1. The percentages of each donor scar type included differences in the maximum width of the strip in the comparison examination between "Lower" closure and "Both" closure in the same patient.

*Not including the width of trichophytic strip.

IWS group, 36 consecutive patients (31 men and 5 women) who underwent “Both” with IWS in the first session between March and September 2008 and returned to our clinic more than 6 months after surgery were examined.

Results. The Invisible Scar type was found in 79% (76/96), 89% (32/36), and 97% (35/36) in the “Lower” group, “Both” group, and “Both” with IWS group, respectively. The Undetectable Scar type was found in 89% (85/96), 94% (34/36), and 100% (36/36) in “Lower,” “Both,” and “Both” with IWS, respectively. The Visible Scar type was found in 12% (11/96), 6% (2/36), and 0% (0/36) in “Lower,” “Both,” and “Both” with IWS group, respectively (Table 2). In the “Both” with IWS group, there was no significant difference in the donor wound appearance in relation to the maximum excision width of the strip (Table 3).

	Invisible Scar	Undetectable Scar	Visible Scar
“Lower” group (n=60)	80% (48)	90% (54)	10% (6)
“Both”+“Lower” group			
“Lower” half (n=36)	78% (28)	86% (31)	14% (5)
“Both” half (n=36)	89% (32)	94% (34)	6% (2)
“Both”+IWS group (n=36)	97% (35)	100% (36)	0% (0)

Table 2. The percentages of each scar assessment type in the three groups. There was no significant difference between “Lower” and “Both” ($p = .56$) or between “Both” and “Both” with IWS ($p = .28$). The appearance in the “Both” with IWS group was significantly better than that in the “Lower” group ($p < .05$) ($\chi^2 = .022$) (chi-square test).

Assessment (n=36)	Type	Maximum Width of Strip*		
		<1.0cm (n=21)	1.0-1.5cm (n=10)	≥1.5cm (n=5)
Invisible Scar 97% (35)	Type S	38.1% (8)	30% (3)	20% (1)
	Type A-1	14.3% (3)	20% (2)	40% (2)
	Type A-2	42.9% (9)	50% (5)	40% (2)
Undetectable Scar 100% (36)	Type B	4.8% (1)	0% (0)	0% (0)
Visible Scar 0% (0)	Type C	0% (0)	0% (0)	0% (0)
	Type D	0% (0)	0% (0)	0% (0)

Table 3. The percentages of each donor scar type after intra-epidermal wavy suture following treatment of both edges for trichophytic closure. *Not including the width of trichophytic strip.

Discussion

Trichophytic closure makes the appearance of donor scars less noticeable by having the hair follicles penetrate the scar and adjacent epidermis. A possible, negative aspect is that donor closure tension increases when too much epidermis is removed, yet, generally, a cosmetic improvement of the donor wound was seen despite the extra removal of epidermis with the “Both” technique, which involves approximately 1mm of

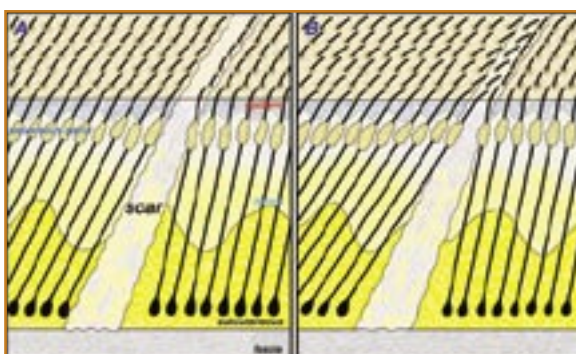


Figure 3. A: Lower edge trichophytic closure; B: Double-sided trichophytic closure. Double-sided trichophytic closure makes the scar less visible than lower edge trichophytic closure even when the resultant scar becomes wider.

excess de-epithelialized epidermal width. This may be due to drawing both edges of the surrounding skin to the center of the wound and maintaining high FU density in the central part of the scar, especially when the wound is sutured without tension. Even if the wound is stretched to the limits of its tensile strength postoperatively, the donor scar is difficult to distinguish since there are many follicles that penetrate through the scar with high FU density, and the penetrating follicles presumably restrict extension of the scar (Figure 3).

In the comparison study of “Lower” and “Both” in the same patient, the latter obtained a better cosmetic scar than the former, indicating that redirecting more follicles into the donor wound is beneficial. It is recognized that the tension at the donor site has a marked influence on the resultant width of the donor wound. Suturing with no

or less tension is indispensable to obtain a cosmetic scar using the double-sided trichophytic technique. Therefore, we educate patients to massage the donor area pre- and post-operatively.⁸ In addition, the donor site should be undermined or closed using a deep-layer suture to minimize tension in the epidermal level for as long as possible. We propose that these techniques should be used even when less donor site

tension is encountered in order to produce a more satisfactory scar. If the donor wound develops an Invisible Scar, it may be unnecessary to excise the previous donor scar during a subsequent hair transplant procedure and patients will have less anxiety about donor scars.

Conclusion

Trichophytic closure of both edges can achieve a superior donor site scar than the lower edge only technique after the first hair transplant procedure. These findings may indicate that performing trichophytic closure of both edges should be considered in order to obtain a more cosmetic donor wound scar.

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