96-hour study of FU graft “out-of-body” survival comparing saline to Hypothermosol/ATP solution

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Introduction

The original intention for this study was to repeat Dr. Bobby Limmer’s 1992 study that looked at graft survival over a period of time after harvesting, but, in addition, to add two more days to the study time frame. Dr. Jerry Cooley persuaded me to add parallel study boxes with grafts stored in Hypothermosol solution with ATP added, to go along with the grafts stored in chilled normal saline (as per Limmer’s study). Grafts were placed in the two study boxes at the following time points: 2 hours, 4 hours, 6 hours, 8 hours, 24 hours, 48 hours, 72 hours, and 96 hours out of body. A hair count of all boxes was performed at 11.2 months.

Materials and Methods

A 49-year-old Norwood VI male, who had a few scattered residual hairs on the top of his head, was chosen for the study. He had a heart attack at age 33 with a subsequent bypass procedure. He is currently well, a non-smoker, and not on hair loss medication. Sixteen separate 1.1cm×1.1cm study boxes were marked off (Figure 1). A total of 28 “native” hairs were present in these boxes and were later subtracted when doing the final count. In each box, ten 1-hair FU grafts and twenty 2-hair FU grafts were placed in 0.8mm and 1.0mm slit sites, respectively, by our most experienced technician, who has 18 years of experience (Figure 2). The corners of each box were tattooed and a 1.2mm-wide “moat” of bald skin was left around each box. All grafts were stored at 40°F (4.4°C) until placement into the patient’s scalp. Extremely miniaturized hairs (vellus) were not included in the hair counts. Photos were taken of each box at 5, 8, and 11.2 months.

Results

The final hair counts took more than 4 hours to complete with both “full terminal” hairs and “slightly thin” hairs included. Wispy vellus hairs were not counted. Figure 3 shows the final percentage of growing hairs present at 11.2 months in the 16 study boxes. The results in three of the boxes were unexpected: the saline-stored graft boxes planted at the 2- and 4-hour time points yielded very low hair growth (74% and 64%, respectively) and the 8-hour box with grafts stored in Hypothermosol/ATP revealed a 122% survival. All other counts were somewhat as expected and made sense in light of the amount of time out of body and the storage medium used.

The graft survival in the Hypothermosol/ATP boxes was overwhelmingly superior to that in the saline boxes, except for at the 6-hour time point, where it was essentially the same (Figure 4). The most dramatic difference was at 72 hours, where a meager growth of 20% for the saline grafts contrasted with 76% for the Hypothermosol/ATP.

Figure 1. 16 Study boxes marked off. Figure 2. Close-up of study box with grafts planted.

Figure 3. Final percentage of growing hairs.

Figure 4. Comparison of graft survival over 96 hours.
President’s Message

Jerry E. Cooley, MD Charlotte, North Carolina, USA jcooley@haircenter.com

Although it may seem like we just met in Boston, it is already time to begin making your plans for the next Big One. This year our Annual Scientific Meeting will take place in Anchorage, Alaska, September 14-18. Some might consider this an out of the way location, that attendance will be down, and perhaps even that this might be a good year to skip. Not true!

We have already received higher than expected numbers of abstracts and we expect attendance to be excellent. Many of us have always thought we should one day visit Alaska, and what better plan than to combine a vacation there with attendance at the world’s biggest and best hair restoration surgery conference?!

If you are serious about hair restoration, can you really afford to miss out on the Big One? New ideas, new techniques, and pertinent reviews promise to keep all of us at the top of our game. The opportunity to socialize and network with your peers is another motivating factor. I have found that I often learn as much chatting with my colleagues as I do attending the lectures. Together, the lectures and networking found at our annual meeting create a stabilizing force that keeps my professional career on track. I hope you feel the same.

September should be a nice time to be in Alaska. With the abundance of wildlife and scenic vistas, it will be a memorable trip. Why not plan a cruise before or after the conference to make it a truly unforgettable experience? We are working to provide members guidance in planning their trips so let us know if you need more information about tourism in the area. There is certainly a lot to choose from so everyone should find something to their liking.

I look forward to seeing you in Anchorage!◆
Co-editors’ Messages

Nilofer P. Farjo, MBChB, Manchester, United Kingdom editors@ISHRS.org

The Forum has now been going for more than 20 years with the leaders in our field at its helm. So it is a great honor to be asked to co-edit the publication but also a big responsibility to live up to the great job done so far. I would like to extend my congratulations and thanks to our recently retired editors, Bernie and Paco, for doing such a fantastic job. Like all the past editors, they will be a hard act to follow. Bill and I hope that all members will help us to make the next three years as successful as previous ones, and with that in mind we have asked many of the columnists to stay on in their current positions. We have added a few new faces that include those who have either volunteered to get involved or those we have asked to join because they have made significant contributions to past issues. Some of the section headings have changed in order to broaden their scope.

When we started thinking of ideas for the upcoming issues, we looked at feedback from the recent practice survey and there were some suggestions that we become a peer reviewed journal or at least add some peer reviewed articles. While looking through past issues to get inspiration for my message, I was reminded that this is not a new concept. Dr. Richard Shiell made the following statement regarding the Forum back in 2001:

Hair Transplant Forum International is a privately published newsletter of the International Society of Hair Restoration Surgeons. Its contents are solely the opinions of the authors and are not formally “peer reviewed” before publication. The standard of proof required for letters and articles is not to be compared with that of formal medical journals. The newsletter was designed and continues to be a printed forum where specialists and beginners in hair restoration techniques can exchange thoughts, experiences, and pilot studies on all matters relating to hair restoration.

(Hair Transplant Forum Int’l. 2001; 11(1):14)

He certainly made the point that it is a “forum,” a place to share ideas and debate issues. There are peer reviewed journals in abundance—and most of us subscribe to several—so our ISHRS newsletter allows for a different type of exchange that is topical and allows for the quick exchange of information. This does not mean, however, that we publish anything without consideration or review because the articles do have to be suitable for the general education of our members and cannot be self-promoting nor libelous. Unfortunately, there have been times when opinions expressed in the Forum have been quoted as fact or have been used to promote a product or service. Non-medical people have also used the Forum for their own promotional purposes.

With these aims in mind, I encourage those of you who haven’t participated in the past to get involved whether it’s with new ideas, a surgical tip, a full article, or a criticism. Please make yourselves known to us and send in your ideas as this is your journal.

William H. Reed, MD, La Jolla, California, USA editors@ISHRS.org

What an honor and opportunity to be asked to co-edit Hair Transplant Forum International! It is a somewhat intimidating request because it has been this journal and its former editors who have taught me much of the art and science of hair transplantation. Nevertheless, I look forward to tackling the challenge.

In considering how to proceed, then, a fundamental question is: “What do we want the Forum to do for us?” I propose it assist its parent organization, the ISHRS, in pursing the goal of its mission statement: to promote education and Fellowship. The Forum has and should continue to achieve this by being a platform for expression of issues that affect us personally as well as professionally.

We are quite unique in that we come from a wide variety of medical and cultural backgrounds and the refinement of our art has irrefutably grown from this diversity. Patients come to us seeking an “expert’s opinion” with a common complaint: hair loss. The Forum and the ISHRS exist to create the highest level of expertise for our members, a homogeneity of excellence from our rich diversity. We will try to identify and publish in areas that may not be uniformly strong within our diversity with the goal of making each of us confident that we are the expert opinion that the patient seeks and that the patient need seek no further. Such areas would include the investigation of female hair loss and other non-androgenetic alopecias, the frontiers of alternative therapies for hair loss, and innovative aspects and refinements of the surgical technique.

We will not always be publishing peer-review quality studies; there are other journals for that purpose. However, we will try with editorial comments to commend the studies’ strengths and render caution about their shortcomings. Many are the times that the progress in our field has come from ideas based upon small studies or anecdotal observations. The Forum should be the venue for these ideas to be shared.

Drs. Dow Stough and O’Tar Norwood and the close group of founding fathers of the ISHRS founded our Society as much for fellowship as for the sharing of ideas and the refining of our specialty. (This value carries on today in the extravagant parties at the meetings.) So, collegial fellowship goes hand-in-hand with the education and exchange of ideas that the Forum will continue to foster. I hope that each of us will want to share ideas and thereby continue the unique tradition of how our specialty has evolved from its medical and cultural diversity. I hope each of us will contribute and can do so with the assurance that the topic will be discussed respectfully. Criticism will be constructive and, hopefully, might help the contributor further evolve the contribution by the collaborative effort.

It is a pleasure be co-editor with Nilofer Farjo. I know we will all work together in the spirit of education and fellowship. Please contact us with your ideas on how to make the Forum serve our members as well as how to further the evolution of our unusual and diverse specialty.
Editorial Guidelines for Submission and Acceptance of Articles for the Forum Publication

1. 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.
2. If results are presented, the medical regimen or surgical techniques that were used to obtain the results should be disclosed in detail.
3. Articles submitted with the sole purpose of promotion or marketing will not be accepted.
4. Authors should acknowledge all funding sources that supported their work as well as any relevant corporate affiliation.
5. Trademarked names should not be used to refer to devices or techniques, when possible.
6. 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.
7. Once the manuscript is accepted, it will be published as soon as possible, depending on space availability.
8. All manuscripts should be submitted to editors@ISHRS.org.
9. 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.
10. 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).
11. We CANNOT accept photos taken on cell phones.
12. Please include a contact email address to be published with your article.

Submission deadlines:
April 5 for May/June 2011 issue
June 5 for July/August 2011 issue
Hair Transplant Forum International March/April 2011

FU graft out-of-body survival

Almost more striking than the numerical differences in survival between the two groups was the across-the-board qualitative differences in the grafts (Figures 5 through 8). I divided all hairs that were counted into two categories: 1) full, terminal hairs, and 2) thin hairs. As noted earlier, the almost-invisible, fine, vellus hairs were not counted at all. These “thin” hairs were of various diameters, ranging from just beyond vellus and up to those that were just slightly thinner than a terminal hair. I noted that the saline boxes at time points beyond 24 hours featured a greater number of “thin” hairs, whereas the corresponding Hypothermasol/ATP boxes still produced a high percentage of terminal hairs.

The saline study boxes for the 2- to 24-hour time points grew 203 hairs, of which 177, or 87%, were terminal. In contrast, the Hypothermasol/ATP grafts for those earlier time points grew 243 hairs, of which 235, or 96.7%, were terminal. If we look at the grafts that were planted at the three longest time points (48, 72, and 96 hours), 32 (55%) of the 58 hairs that grew out in the saline boxes were terminal, while in the Hypothermasol/ATP boxes for those later time points, 79 (73%) of the 108 hairs that grew out were full, terminal hairs.

Figure 9 shows a “Hair Mass Score” graph in which each terminal hair that grew was assigned 1 point and each “slightly thin” hair was arbitrarily assigned 0.5 points. The graph reveals that, except for the 6-hour time point, the grafts stored in Hypothermasol/ATP had significantly more hair mass than the saline grafts, especially at the further time points.

Figure 10 compares the results at the six various time points the studies shared. As noted earlier, I cannot account for the low growth rates at 2 and 4 hours, but the other four shared time points gave remarkably similar results between the two studies. It certainly appears, as before, that the 8-hour point is probably the maximum for keeping grafts out of the body, and before one begins to suffer some loss of graft survival.

In addition, the combination of ATP added to the Hypothermasol storage solution definitely helped increase graft survival and graft quality (diameter and length) at the 48-, 72-, and 96-hour time points, as compared to using the old standby of chilled normal saline. It was somewhat superior at the earlier time points also, but not quite as dramatically or statistically so.

Photos and hair counts will be repeated at the 18-month time point before a final closure of this study. Bear in mind that these grafts were placed in study boxes that were in the midst of a large transplant session of 2,165 FU grafts (4,547 hairs), so as to better simulate the “real-world” results that most of our grafts go through every day in our practices.

Conclusion

Reviewing my results against the earlier results obtained by Dr. Limmer, Figure 10 compares the results at the six various time points the studies shared. As noted earlier, I cannot account for the low growth rates at 2 and 4 hours, but the other four shared time points gave remarkably similar results between the two studies. It certainly appears, as before, that the 8-hour point is probably the maximum for keeping grafts out of the body, and before one begins to suffer some loss of graft survival.

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Reference

How to manage intra-operative slippery grafts

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Introduction

Hair transplant procedures can last many hours, starting from the preoperative assessment, hairline placement, careful donor harvesting, slivering, graft cutting, and, finally, insertion. In the era of mega sessions and giga sessions, a procedure can last 8-11 hours. Most hair transplant physicians feel that the speed and duration of surgery is determined by the speed of inserting the grafts.

During a procedure, the hair surgeon might encounter slippery grafts. These grafts are not only difficult and time-consuming to manage while slivering and graft cutting, but they can also slow down the insertion process markedly—sometimes by close to 50%. Slippery grafts often “slip off” when held with the jeweler’s forceps (Figures 1 and 2). Other commonly associated problems, for example, popping, may frustrate both the surgeon and the team technicians.1,2

Because assistants tend to use more than the usual force on forceps, repeated graft handling and rough handling may decrease the percentage of graft survival because of H or X factors.3 We studied 35 such cases in the past three years at our clinic in which we observed this finding. In the literature there is discussion about slippery grafts,1,2 but, to the best of our knowledge, this may be the first article reporting a review on these cases.

Objective

Our objective was to review the features common among patients with slippery grafts and to propose a couple of modified jeweler’s forceps that may help in such cases.

Material and Methods

A prospective and retrospective study was performed for all the cases of slippery grafts at DHT Clinic, Bangkok, Thailand since 2008. From April 2010 prospectively, all patients with the finding of slippery grafts were carefully assessed for possible pre-operative and intra-operative findings and clues. The retrospective search was performed for all the new surgery cases from January 2008 to December 2009. A total of 1,014 new patients’ hair surgery records were searched: 308 cases in 2008; 417 cases in 2009; and 289 cases in 2010. All cases with this intra-operative finding were segregated for data analysis and clinical and intra-operative findings were recorded. We incidentally found the record of 4 more patients in whom surgeries were being performed in the years 2005 (1 patient), 2006 (2 patients), and 2007 (1 patient). We also included them in the study data.

Following are the findings recorded for the assessment:

- Demographic data (Surgery date, age, sex, and race)
- Clinical examination (Alopecia classification and skin type, texture, and color)
- Intra-operative findings:
  - Slippery feel while donor harvesting, slivering, and graft cutting
  - Oily coating over the normal saline in slivering tray and graft holding cups (Figure 3)
  - Turbidity of the saline fluid (Figure 3)
  - Mucus consistency of the saline of graft holding trays (Figures 3, 4, and 5)
  - Difficulty while insertion
  - Popping of grafts (Figure 10)
- Assistants’ remarks
- Extra time spent compared to the average for the same size session
- Immediate and next day post-operative findings
- Post-surgery follow-up at 1 year

We modified the routine jeweler’s graft holding forceps into two different designs. The first design (Figure 6) has a ½mm diameter notch on both the edges of the forceps ½mm away from the distal tip of the forceps for holding the graft. The second design (Figure 7) has very fine serrations on both of the graft-holding edges of the jeweler’s forceps. Lastly, we also studied the extra fine pointed tip forceps either straight or right angled. These forceps were used in 6 of the prospective cases; benefits and limitations with these forceps in comparison to the regular forceps along with assistants’ satisfaction were also recorded.

The record of both the prospective and retrospective patients was put together and analyzed, and the results were prepared.

Figure 1. Thin layer of mucus sludge (black arrows).
Figure 2. Original photograph digitally enhanced to make the “slipping mucus or sludge” more evident.
Figure 3. Turbid oily coating layer on the surface of the normal saline in slivering tray and graft holding cup.
Figure 4. Grafts after repeated rinsing with normal saline.
Figure 5. Hair grafts slip off when held with conventional jeweler’s forceps after rinsing.

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Results

A total of 35 patients were found to have slippery grafts in the 3-year duration. Seven patients in 2008, 11 patients in 2009, 1 patient in both 2005 and 2007, and 2 patients in 2006 were assessed retrospectively. Thirteen patients were assessed prospectively from January 2010 through November 2010. Annual incidence was 2.27% in 2008, 2.63% in 2009, and 4.49% in 2010.

The study included 32 males and 3 females ranging in age from 23 to 48 years. The cases were from a wide range of races: Asian (6 patients), Oriental (15 patients), Caucasian (10 patients), African (1 patient), and Middle Eastern (3 patients).

On examination, skin color was yellow in 15 patients, white in 10, brown in 9, and black in 1. Skin type was “normal” in 12 patients, “oily” in 19, “oily with severe flaking” in 3, “signs of seborrheic dermatitis” in 1, and “dry skin” in 1 (African). These patients had various patterns of androgenetic alopecia: Norwood II (4 patients), Norwood III (11 patients), Norwood IV (11 patients), Norwood V (3 patients), Norwood VI (2 patients), and Ludwig pattern (2 patients), and 2 male patients were planned for female pattern hairline design.

Intra-operative findings were also recorded. The slippery feel of the tissue and oily layer coating over the normal saline surface was observed in 32 of 35 patients. The mucus-like consistency of the normal saline of graft holding trays was observed in 35 of 35 patients, and among 33 of 35 patients, it persisted even after repeated rinsing. The turbidity of saline was seen among 14 of 34 patients. Difficult insertion was observed in 32 of 35 patients, and among 3 of 35 patients insertion was average. Graft popping was observed in 30 of 35 patients, and among 7 patients was also observed the next post-operative day (Figure 10). Two patients also lost grafts (2 and 6 grafts) due to popping. The extra time spent during the surgery compared to the routine session of the same number of grafts varied from 0 to 3.25 hours. More time was spent on patients with very difficult insertion and severe popping during surgery.

The assistants evaluated the case for ease while holding and inserting the grafts with minimal trauma. The data suggests that they felt disappointment in 16 of 35 cases, average in 13 of 35 cases, and comfort in 6 of 13 prospective cases in which the modified forceps were used. Popping of grafts, however, remains the major problem among all patients.

At 1-year post-surgery follow-up, good hair growth was observed in 9 of 35 patients (13 patients did not attend follow-up after the surgery and 13 are yet to attend their 1-year assessment).

Modified Placing Forceps

The first design was found to be effective in holding the grafts securely, without crushing them. The insertion was faster than normal and the assistants were more satisfied. The downside was that after insertion the assistants had to be very careful that the graft did not come out because of the notch grasping the graft. They had to either use the two-hand technique and support the graft with another forceps while taking the notched forceps out of the slit, or they had to use gauze to press on the graft before removing the forceps. However, once the inserter was familiar with the forceps, the insertion was markedley improved (Figure 8).

With the second design, the graft holding was better than with the regular pointed jeweler’s forceps, but in comparison to the first design, it was less secure and slightly more force was used for holding the grafts. Other inserters seemed to stick with extra fine pointed tip forceps (Figure 9).

The amount of graft handling and pressure in these cases was much less in comparison to the use of regular jeweler’s forceps, but the problem of graft popping was the same as with the use of standard forceps.

Discussion

Tissue is described as “slippery” when it has an oily, viscous substance floating in graft-holding normal saline. This substance makes the grafts very difficult to control with standard jeweler’s forceps. Repeated rinsing of grafts may cause mechanical injury and each graft has to have a slight pressure held over it longer than usual until it “settles in” and stays in place.

In our study we observed the incidence of this problem varying from 2.27-4.49%, which indicates the need for emphasis on this problem during hair surgery.

Unger et al. mention the observation of “beading” of blood on nylon, non-absorbable sutures during closure of the donor site as an important indicator. The author also mentions this is due...
to oil, a relatively dense liquid, whose resultant cohesive forces manifest themselves as “beading” when placed on a flat surface and is “slippery” to touch.¹

We have routinely observed that many cases with very oily scalp and severe dandruff have no signs of slippery grafts during surgery. So, even though we observed that most of the patients in our study have oily scalp, this appears not to be a very consistent finding.

Most of our surgery cases come for follow-up at 1 year by personal visit or email communication. In our study, none of the follow-up cases showed poor growth (9 of 35 patients); however, a large number of cases (13 of 35) did not return for follow up at 1 year, and we are not sure if these cases did not follow up because of their busy schedules or because they were disappointed with their surgery results due to poor growth. Thus, the percentage of growth among the cases is yet to be assessed.

Unger et al. also propose communication between surgeon and technicians, which could influence the surgery plan and trigger subtle adjustments in graft tissue handling and recipient site creation.¹ They further propose to create smaller sites to maximize the lateral force of friction on each graft within the recipient site and to effectively lodge it securely within the site and to minimize the popping up of grafts and repeated handling¹ (Figure 10).

Both of the modified designs of the jeweler’s forceps were found to be effective in holding grafts more securely and with minimal trauma to the graft. The extra fine point forceps also worked well in very experienced hands.

Stock storage solutions such as Hypothermasol, Custodiol, and Moser’s solution, which limit dehydration, have been found to make grafts more slippery. This results in technical difficulty during planting and prolonged hair transplant sessions, thus limiting their clinical usage.⁴

Managing slippery grafts

The patients should always be counseled for less than the expected results of the surgery.¹ We feel a lot of research is still required to assess the biochemical basis of this condition and why the mucus returns even after repeated rinsing with normal saline. This could help in early identification of these cases.

Conclusion

Hair transplant surgery in patients with slippery grafts should be limited to small sessions with no dense packing. Careful handling may reduce the chances of poor yield. More research is required to find the cause of this mucoid liquid and to identify these patients prior to the surgery session.

References

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An update on the pathophysiology of female pattern hair loss

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Introduction

There is an ontological and hormonal sensitivity hierarchy within a follicular unit that is observed in certain mammals. In general terms, ontology is the hierarchical organisation of knowledge about beings and things by subcategorising them according to their essential qualities.

The concept of the follicular unit in humans was first described by Headington in 1984 with the observation that in-utero central primary follicles are surrounded by smaller secondary follicles. The follicular unit, rather than single-hair transplantation, has become the dominant hair transplant method due to higher survival rates of grafted hairs with such a technique. Hair transplant surgeons have long observed that women commonly lack adequate donor tissue and indeed miniaturization is also observed in occipital scalp of females affected with androgenetic alopecia. Recently it has been suggested that the Ludwig pattern of androgenetic alopecia is due to a hierarchy of androgen sensitivity within follicular units that leads to selective miniaturization and a reduction in the terminal hairs per follicular unit. The concept of primary and secondary follicles and hierarchy within a follicular unit observed in the animal kingdom deserves further attention in humans. It appears to be relevant both from a pathophysiological and a therapeutic point of view.

Discussion

Androgenetic alopecia is the most prevalent form of hair loss affecting men and women. The presentation of this condition differs in males and females with diffuse hair thinning over the crown, widening of the central part and preservation of the frontal hairline in the latter. Lack of involvement of occipital scalp is considered to be one of the clinical signs that characterises this condition. The role of androgens in the pathogenesis is clearly established in male androgenetic alopecia but not fully understood in female pattern hair loss (FPHL). Factors other than androgens may also play a role in its pathogenesis.1,2

Ontological Hierarchy in Mammals

Ontological hierarchy of follicles and hormonal influences other than androgens on seasonal growth patterns of fibre follicles in animal species have been extensively studied.3,4 Investigations on small seasonal species such as ferrets5 and mink6 have revealed that seasonal variation in pelage density is attributed to developmental and regression of compound follicles. A compound follicle is the single original follicle that develops first from which smaller, derived follicles are formed by branching morphogenesis. Variations in pelage density are due to variations in the numbers of these derived follicles that grow finer, shorter fibres.1

Development of wool follicles is similar in sheep.5 First to develop are the primary follicles, followed by the secondary follicles and the secondary derived follicles that form by branching off from the secondary follicles. The primary follicle has a typical trio pattern with a central primary follicle and two lateral primaries. The identifiable features of the trio include attachment of arrector pili muscle to the outer root sheath and presence of characteristically large sebaceous glands. A distinguishable cluster forms with development of secondary follicles in close association with the primary follicle. Ovine follicle population density is determined by the secondary derived follicles, which are essentially branches of the secondary follicle and form the bulk of the fleece.

Role of Melatonin and Prolactin on Pelage Growth Cycles

Cyclical activities of the hair follicle are the way by which mammals modify their coat of hair to meet seasonal and environmental changes. Seasonal variations in the pelage growth cycles of small mammals have been studied in a number of different species. It is believed that the timing of the fibre growth cycles is sensitive to the length of the photoperiod, thought to be mediated by melatonin secreted from the pineal gland. It is the detection of decreasing day length via the retina rather than temperature changes that controls the pelage growth. In ferrets, interference with photoperiodic and hormonal control mechanisms have been shown to affect the pelage growth cycles, inducing earlier winter fibre growth in response to exogenously administered melatonin.3 Similar findings have also been described in the winter fur growth in mink.4

Another important hormone regulating pelage growth cycles in mammals is prolactin.8 Animal models, especially studies performed on seasonal breeds of sheep, have demonstrated that increased levels of prolactin in the spring is associated with induction of telogen follicles and a declining level of prolactin in autumn induces regrowth of winter pelage. Prolactin surges may also be linked to entry of follicles into catagen, as seen in Wiltshire sheep breeds in late spring. This means that prolactin has multiple effects on follicle growth, which could be explained by the observation that prolactin receptors are present in the dermal papilla, matrix, and outer root sheath, and that these cycle-dependent prolactin actions could be controlled by the different follicular cell populations where the prolactin receptors are located.

This concept of seasonal variation in hair growth and shedding has also been observed in humans.7 Kunz et al. suggested through their large retrospective case study of over 800 healthy women with hair loss (with or without FPHL) that annual periodicity in the human hair growth and shedding does exist, with maximal proportion of telogen hairs in summer and lowest proportion in winter. The role of hormones in the seasonal variations in human hair growth is unclear at this stage. These findings indicate a potential to complicate the assessment of pharmacological effects.

Selective Miniaturization of Follicles in FPHL

In humans, hair follicle organisation resembles the ontological hierarchy of follicles seen in sheep and other small mammals. Human hair follicles exist within follicular units (Figure 1). A follicular unit typically consists of a larger, central primary follicle surrounded by smaller secondary follicles.8 A single arrector pili muscle is predominantly attached to the primary follicle with variable attachment to secondary follicles (Figure 2). Yazdabadi et al. provide an additional explanation for the diffuse
hair loss pattern seen in females with the Ludwig pattern of androgenetic alopecia, which is not observed in male pattern baldness. They suspect an increased susceptibility of secondary follicles to androgen-sensitive miniaturization to vellus hairs and demonstrate that in these patients the diffuse hair thinning is due to reduction in the number of terminal hairs per follicular unit rather than miniaturization of entire follicular units. Also, it is thought that not all hair follicles within a follicular unit have the same susceptibility to androgen-induced hair follicle miniaturization, with secondary follicles changed to vellus hair follicles first. Indeed, it is the experience of the authors that females may present much earlier to a dermatologist complaining of reduction of the volume of the ponytail with no other clear signs of androgenetic alopecia. With further progression, the primary follicle may be miniaturized and this would lead to the development of bald patches as in male androgenetic alopecia.

The traditional concept of sparing of the occipital region in FPHL can also be challenged. Contrast-enhanced phototrichogram techniques have demonstrated that physiologically there is reduced hair density at occipital sites compared to the top of the head. Although FPHL is thought to be confined to the top of the scalp, histopathology and phototrichogram findings suggest that occipital scalp may also be affected. Because of poor donor hair density over the occipital scalp, many women are not suitable for hair transplantation.

Summary
The concept of primary and secondary follicles and hierarchy within a follicular unit observed in the animal kingdom appears relevant to clinicians from the pathophysiological point of view. It may explain differences in clinical patterns in females versus males with androgenetic alopecia, and it provides additional explanation for the earlier presentation to a dermatologist of female patients. It may also explain why contrary to the previous notion there is also involvement of the occipital scalp and why women are less suitable candidates for hair transplantation due to poor donor areas. The mechanism for this selective miniaturization deserves further attention. In androgenetic alopecia, there is progressive shortening of the duration of anagen phase leading to progressive shortening of terminal hairs and decrease in the total size of the follicle; together both processes combine to replace the long terminal hairs with short, fine vellus hairs. The vellus hairs lack an associated arrector pili muscle. Further understanding of the relationship between primary follicle and the arrector pili muscle may provide clues to this selective and potentially irreversible miniaturization.

References

Editors’ note: Several years ago at an ISHRS meeting, Dr. O’Tar Norwood first controversially raised the debate on female pattern hair loss as a different entity to male pattern hair loss. In the intervening years it has become more or less accepted that this is in fact the case. The article above proposes a new theory behind female genetic hair loss that may help to explain the difference in patterns that we see in women, and perhaps this understanding will help us in our strategy of treating these patients. The article also demonstrates some of the potential benefits that can be derived from hair follicle research in different animal species. The Hair and Wool Research Society is particularly prominent in Australia and New Zealand, and here we see how this has benefited our understanding of some of the mechanisms involved in hair follicle behaviour. In July 2010, Dr. Sinclair presented this research in his keynote address at the International Hair Research Society meeting in Cairns, Australia.
Cyberspace Chat
Sharon A. Keene, MD Tucson, Arizona, USA drkeene@hairrestore.com

The following case report of scalp necrosis and subsequent scarring alopecia caused by a hair highlighting procedure illustrates a serious complication of this commonly performed hair salon process. In discussing this case, several other members shared their experiences with similar injuries caused by hair highlighting. What follows is an online discussion about this case, and a review of the pathophysiology of this injury as it has been previously reported in the medical literature.

Scalp necrosis and scarring alopecia caused by chemical burns from hair highlighting procedures

**Bill Parsley** began the discussion:

I just had a 16-year-old girl come into my office today. Eighteen months ago she went into a beauty school to have her hair highlighted. They put strands of her hair in aluminum foil and painted them with a bleach. She then was placed under a hot hair dryer. After about 15 minutes she developed severe pain in the vertex area. She pulled the hair dryer away and they shampooed her hair. That night she noticed a swelling in the vertex. Over the next few days the pain diminished. After a little over a week, she got the nerve to brush her hair. A several centimeter piece of her scalp came out, containing all of her hair. The area is scarred and has never grown back (Figure 1).

After reviewing the photo, **Russell Knudsen** commented:

I have seen this a few times now (almost every year actually). Nobody in the salon notices until the client starts to complain and, even then, the client is often not believed for a few further minutes. Graft whenever you are ready. She will do very well as the scar is not hypertrophic. The ones I have done have turned out very well with very grateful patients.

Following this commentary, **Nilofer Farjo** had a similar experience to share:

I agree with Russell. We too see these cases usually as part of a lawsuit. They are very straightforward and do very well with transplants and are very happy afterwards. We usually do two sessions as the scarring prevents placing the grafts at high enough density.

Next, **Tony Mangubat** reported his experience and a different approach involving excision of the scar:

I’ve seen two cases that were much worse than this one requiring expanders. They usually do well.

**Shelly Kabaker**, who performs flap surgery, has also used scar excision as a primary treatment:

I’ve seen four such cases, all in curly haired women (three of whom were African American) who were having some sort of process done to straighten and style their hair. I treated these (much larger defects) with scalp expansion and skin excision and noted that the skin always had good thickness and would have supported grafts as an alternative treatment. In Bill’s case, because of the location and the varying directions of the hair, I would graft this patient. The skin looks well healed so as to support transplants.

**Paul Rose** had a case report, too, which has not yet been treated:

I have a patient with a similar situation involved in a lawsuit. She had a chemical burn extending to the dermis and developed a MRSA (Methicillin-resistant Staphylococcus aureus) infection. The area has healed with scarring and we are about 4 months out. I told her she may get some regrowth but I could not be certain.

In response to these cases, **Eric Eisenberg** provided important scientific insights with two articles from the medical literature that shed light on the pathophysiology of the problem:

I, too, have seen this type of reaction. I did a quick search and found two good references that comment in detail on the mechanisms of scalp damage and the potential for scarring alopecia following highlights. Both the heat conduction and the chemical-induced necrosis can play a part in the development of scalp damage. I think the repair can be reasonably undertaken, whether by expansion and scar revision or grafting.

Following a review of the articles, **Paco Jiménez-Acosta** added:

These articles show that the caustic nature of the highlighting mixture is the main cause of the problem: a “full thickness skin chemical burn.” Thermal injury may be a cofactor but seems it is not always the case. What cannot be explained is why these types of reactions are not reported more commonly, since thousands of these highlighting procedures are done everyday worldwide.…. If the cause was simply the direct contact with the highlighting mixture, it should be expected these burns would occur quite often…. Maybe the majority of cases only develop a superficial chemical burn with no clinical consequences, or perhaps there has to be an associated cofactor. It is also very interesting to note that 5 out of the 8 patients described in Chan’s article are in the pediatric age group (girls younger than 16 years old).
I had to agree that there must be additional factors that lead to a chemical burn and responded:

I think Paco makes valid observations about the possibility for associated cofactors since we don’t see this problem with the frequency commensurate with the procedure. I wonder if some of these cofactors might be hair color, hair caliber, and skin characteristics. I suspect people with greater hair pigment, seeking lighter highlights, are at greater risk for chemical irritation because it requires a longer chemical application to bleach out the pigment. I also speculate a thicker caliber hair takes a longer processing time—during which patients sit under a hair dryer and, again, experience longer chemical and heat exposure times. Furthermore, I wonder if there are some people who are more prone to chemical irritation from a particular combination of chemicals. I suspect the hair follicles were destroyed almost immediately. I also agree with Paco’s observation in the second article that most of the cases were young girls. Are younger ages more prone to sunburn? Is there an age-related skin vulnerability to chemical irritants or thermal injury? Is aging skin more resistant?

Bill Parsley, who presented this case, drew these conclusions from the cyberchat:

I agree with Paco that if similar treatment is done to many clients, there should be more ulcers and burns. Unlike allergic contact dermatitis, irritant dermatitis would be very common if the treatments were all the same. I think that the differences may lie in the patient’s hair color and hairstylist mistakes. There are big differences in the bleach concentration used as well as time on the scalp, and both would be higher in women with dark hair. Mistakes also may play a part. For example, lye (sodium hydroxide) hair relaxers are the most caustic solutions used in hair salons requiring protective gloves. If it was inadvertently mistaken as bleach, when applied to the scalp, the scalp would have no protection and the heat would have been doubly bad. Lye relaxers can come in pH levels of 10-14, with 14 being the most caustic. A mistake like this could explain the rarity of this hair styling injury and hopefully this type of mistake would be very rare.

It seems that most of these cases may be multifactorial with combinations of ingredient concentrations, ingredient volume, ingredient types, ingredient mistakes, air heat, foil heat, and length of heat. Secondary infection could also play a role, but I think a secondary role.

I agree that there is undoubtedly a spectrum of injury and that probably most cases are mild and therefore don’t get reported. It’s only when severe cases “make the headlines” that we become tuned in. I suspect the salons that do a lot of these procedures are well aware of this potential problem, and they probably see a lot more of it than we do.

Conclusion

Chemical burns of the scalp have been known to occur as a consequence of permanent wave and straightening products.1 In reviewing the three published articles referenced below, there were 8 case reports of scalp burns and ulcerations following hair highlighting procedures. These highlighting procedures involve an oxidation reaction between the active ingredients, which include hydrogen peroxide (concentrations up to 6% in the United States, 12% in Europe and other areas of the world), persulfates, and alkalizers. The mixture apparently breaks down upon contact with hair keratin, which results in the activation and release of oxygen. The hydrogen peroxide in concentrations greater than 10% can cause blistering and burns. The persulfates, especially in alkaline conditions, facilitate hair dye absorption by making the hair porous. They are themselves acidic. In 2001, the Cosmetic Ingredient Review Expert Panel published a report on the safety of ammonium, potassium, and sodium persulfates and reviewed their toxicity. Each can cause allergic and irritant contact dermatitis. The conclusion was that these persulfate agents are “safe as used as oxidizing agents in hair colorants and lighteners for brief discontinuous use followed by thorough rinsing from hair and skin.” The alkalizer used is sodium metasilicate, which is highly water soluble and has a pH of 13 in a 1% aqueous solution.2

Although each of the references referred to the possibility of either thermal or chemical burns, stemming from the ingredients and techniques used in hair highlighting procedures, in the case that was biopsied during the healing phase, there was no evidence of the type of coagulation necrosis and loose collagen bundles that are expected histologic changes seen in a thermal burn. Instead, the collagen was normal, with the presence of granulation tissue in the ulcerated areas, and occasional foreign body type reaction, consistent with a chemical burn.3 In most of the reports, patients experienced discomfort within minutes of application of the solution and being placed under a hair dryer, and the scalp was initially intact but sloughed off later. It appears that onset of pain is usually quite acute with either a thermal or chemical burn, but may be slightly delayed in some chemical burns. In these reported cases, while many were treated with antibiotics, most did not show overt infection and the authors concluded adequate treatment occurs with applications of white petrolatum gauze or similar dressing over the ulcerated areas, to maintain a moist environment during the granulation phase. It can take many weeks before re-epithelialization of the ulcerated area occurs. In examination of the final wound in the case presented by Bill Parsley, there is no thermal burn keloid or hypertrophic scar. Like the case reported by Lund, the appearance and history support that of a granulated wound that has re-epithelialized with the appearance of normal skin, devoid of hair follicles. The latter is consistent with a chemical burn injury, which others have concluded as well.

In the article by Chan, it was reported that complications of hair dyes and straighteners are among the leading consumer complaints to the Food and Drug Administrator’s office of Cosmetics and Colors.2 This suggests a higher frequency of complications than the 8 cases currently reported in the literature, or the additional dozen or so mentioned by our colleagues. It seems there may be merit and value to the public health in pooling and reporting the case experiences among our ranks to provide a larger study population of this event in order to illustrate a problem that may be avoided with greater education of this risk both to customers and hair stylists.

Given the apparent higher frequency of reported cases in younger patients and amongst patients with darker hair, the possibility of cofactors predisposing to this complication exists and may be further elucidated by sharing of information. To that end, we are requesting that all hair restoration doctors who have documented cases of scarring alopecia or wound ulcerations following a hair highlighting procedure submit your case to the Forum. In the second part of this report, we will ask members...
of the salon/hair care industry to weigh in with their expertise and recommendations for avoiding this unfortunate complication and for methods and acute maneuvers to address or reduce the burn injury when it is suspected.

Finally, among those doctors who have seen these patients, it appears that excellent resolution of the cosmetic issue can be achieved with either grafting or primary excision or flaps. A further discussion of these approaches will be addressed in this column.

Please send your case reports to editors@ISHRS.org.

References
Dear Colleagues:

2010: Despite the ongoing state of the world economy, the ISHRS Annual Giving Fund continues to stay the course. Our goal was to earn $69,500 in donations in 2010. We surpassed our donation goal with a positive variance of $4,000. Thank you to all who contributed so generously. THANK YOU! Each of you has helped the ISHRS to realize its goals and provide valuable member benefits. Your kindness and ongoing support of the Society through your AGF donation has exceeded my expectations and that of the leadership.

After direct costs and expenses were accounted for, the proceeds from the past year’s Annual Giving Fund were used to support several projects from the target list of priority projects, including increasing international public awareness through website improvements, the purchase of the Audience Response System (ARS) (to be expensed over several years), and further support of OPERATION RESTORE.

2011: In 2011, we have earmarked a total of $48,000 for various ISHRS efforts including the following: $30,000 to improve the ISHRS website and to add a part-time Social Media Manager to oversee our social media campaign, and for marketing initiatives to better position www.ISHRS.org on search engines; $10,000 toward other educational programs including the next installment of the Audience Response System that was purchased in 2010; and we’ve allocated $8,000 of continued support for OPERATION RESTORE to help more pro bono patients with travel and hotel expenses.

We look forward to another successful year and welcome those who are not yet donors to join in! For those who have not yet contributed, it’s easy to support the Society. Go to: www.ISHRS.org/ishrs-giving-fund.htm. New donors will receive a lapel pin, and we ask you to wear it proudly at the ISHRS meetings.

2011 AGF Reception: Due to a scheduling conflict between the reception and a popular excursion, and difficulty finding a viable venue to accommodate the size of our group, at this time there will not be an AGF Reception in Anchorage.

2011 New AGF Chair: In 2007, the Strategic Task Force on Financial Security Initiative started the ISHRS Annual Giving Fund to help contribute to the growth of the Society. Since then, I have had the honor of being the Chair of the AGF during which time we have raised almost $300,000. I am so proud of the financial contributions that so many of you have made over the years. It is, however, time for me to pass the AGF torch to a new Chair. I am excited that my friend and colleague, Dr. John Gillespie, will be assuming the role as Chair. I am looking forward to working with him and the rest of the ISHRS leadership to ensure the financial security and growth of the ISHRS.

Your generosity in giving makes a concrete statement that you support the ISHRS and its initiatives. Thank you for your consideration of a gift to the Annual Giving Fund. All gifts are tax-deductible within the provisions of your national income tax laws. Should you need additional information, please contact ISHRS Headquarters at 630-262-5399.

Matt L. Leavitt, DO, Chair, Annual Giving Fund
Controversies

Russell Knudsen, MBBS Sydney, Australia drknudsen@hair-surgeon.com

Thinking that some subjects are best discussed by their principles rather than occluded by personalities, the editors welcome anonymous submissions such as the below, and, at their discretion, will publish them in “Controversies.” Our hope is that by so doing a wide range of opinions and lively discussions will ensue.

Controversy

I recently renewed my paid membership with the ISHRS and was surprised to find a pledge of ethics, almost concealed, on the back of one of the pages. It was very well written and all-inclusive. As striking as the pledge’s inclusiveness of how to behave, however, was its lack of requiring a signature of affirmation and its lack of including any consequences for failing to live up to these standards. It seems as if the leaders of our organization at some point knew the desirability of representing ethical behavior but only a consensus could be reached on its definition and not on its enforcement. It is truly a paper tiger.

Prior discussions of the ISHRS having a code of ethics seem to have concluded that holding members accountable for their behavior is not its mission, but rather its purpose is education of its members to the most current concepts of our specialty. Fine. Then why the pledge on the back of the page?

The same question should be posed to the American Board of Hair Restoration Surgery: What is your purpose? Do you expect diplomats to have a minimum level of ethical behavior? If so, what is the mechanism for assuring its diplomats and the public that deviations from acceptable behavior have consequences?

Dr. Knudsen’s Response

The points raised in this submission from one of our members are important and I will address them from my perspective. My views are formed from both my previous positions as a Founding member of the Board of Governors of the ISHRS and as a former Trustee of the ABHRS.

The Code of Ethics of ISHRS was written by Paul Straub at the same time as our Bylaws and implemented in 1994 at the first meeting of the ISHRS in Dallas. They have remained unchanged since then. They should be viewed as an expected minimum standard of Ethics agreed to by physicians at the time of joining the ISHRS and being re-affirmed by maintenance of membership on a yearly basis.

The role of the ISHRS, a Society of members, has been repeatedly affirmed by the leaders of the ISHRS as an international educational body that promotes minimum standards, encourages continuing education to current state-of-the-art practice, and promotes patient welfare through these practices. The crucial words here are Society and international.

In the United States, educational bodies for physicians CAN’T also be certifying bodies. This explains the crucial difference between the ISHRS (formed in 1994) and the ABHRS (formed in 1997). Certifying bodies are called Boards and are given the responsibility of certifying physicians for specialty status. Some Boards are recognized by the American Board of Medical Specialties (ABMS) but many, such as the ABHRS, are not. Boards have no role in the education of physicians. These Boards should not be confused with State Medical Boards, which are involved in annual licensing of physicians and also deal with complaints against physicians.

The mechanism need not be a slur to a member’s reputation. It needs only to quietly drop a member from the Society’s (the Board’s) rolls. I would think none of us wants the responsibility or the power for ruining another’s reputation in the wake of our decisions.

Another reason leaving discipline of unethical behavior to others that I’ve heard in the past is that inaction results from fear of litigation (i.e., both individual physicians and the Society being sued by the accused). This would seem easily managed by having members sign a waiver to that right to sue should action be taken against them. It seems reasonable that individual physicians cooperate with a group that brings him or her the benefits of membership in the ISHRS or ABHRS bestows.

It represents progress that a description has been created defining our ethics, but without some signed affirmation by the individual member and some mechanism of dealing with unethical behavior, the code of ethics is more a reminder of what we are not but could be rather than what we are. Issues such as this should be brought to meaningfulness as described above or quietly swept under the rug. Perhaps some representative of the ABHRS and ISHRS will comment upon this issue.

In other countries such as Canada, the United Kingdom, and Australia (and many others), there is no statutory separation of these roles. Learned Colleges, for example, both educate and certify. In these countries, government Medical Councils (the equivalent of the ABMS) may provide official status to the Colleges so as to recognize their qualifications.

Because of the international scope of the ISHRS, and given the differing regulations in different countries, it was felt that an attempt to set a minimum standard of expected behavior across all jurisdictions was best achieved by the Code of Ethics. A process to deal with complaints was detailed and has in the past resulted in a hearing before the Board of Governors. This, however, proved difficult, time consuming, and legalistic, and it duplicated what is already a function of State Medical Boards. The Board of Governors felt it was not appropriate to continue a policy of attempted enforcement of the Code. This does NOT represent a “sweep under the rug” because complaints can best be referred to the appropriate local jurisdiction, such as a State Medical Board.

The ISHRS does require a signature each year agreeing to abide by the Code. It is on page 2 of the dues statement at the bottom for those who mail in payments. The online dues renewal has a required text box to enter one’s name with date, attesting that they will adhere to the Bylaws & Code of Ethics, and it includes the Code of Ethics typed out on the page (online) as well as a PDF link to a full copy of the Bylaws. Members cannot complete their online renewal without getting past this page and typing in their name and date.

I do not believe it is realistic for ISHRS members to sign a waiver of their rights to take legal action against what they may perceive, in their local jurisdiction, to be acceptable behavior. A
How I Do It

Bert Ram Ng, MD  Hong Kong, China  ngbertram@yahoo.com.hk

Suture removal can be difficult and painful at times. One of my patients dropped to the floor afterward due to a vasovagal attack. Attention to detail, however, can make a difference.

Sutures can be removed more easily when they are not embedded in the tissue and when they do not have to be forcefully picked up by forceps. In this issue, Dr. Marino Rios offers tips for his “zipper” technique along with a link to a YouTube video of his demonstration.

Zipper suture technique

Marino A. Rios, MD  El Paso, Texas USA  drrios@elpbizclass.com

A simple technique that I have used for years to alleviate a patient’s discomfort during suture removal is the “zipper” technique—a technique we use in all of our hair restoration procedures to close the donor sites.

This technique can actually be used in all types of incisions with running or interrupted absorbable or non-absorbable sutures. It takes just a few minutes to execute, and can even be performed by a well-trained assistant.

The first step is to suture the donor site using any suture of choice. We utilize running 4-0 Prolene. Any white, non-absorbable suture material with a fairly large needle can then be used as the zipper suture. We use 3-0 Mersilene with an FFS/1 needle. The blunt end of this needle is used to pass the white zipper suture under every fourth or fifth loop of the running suture. At the end of the passes, the needle is cut off and the loose end tied so it ends up in a closed loop or loops close to the running suture. Keeping the loop from being too long will help ensure it does not get trapped by a comb or by a patient’s fingers (Figures 1, 2, and 3).

This technique can be viewed at the following link:  www.youtube.com/watch?v=VzRMdlQ-Iqk.

1. The type of suture should be anything pliable (e.g., white silk). The type of needle should be small, we use a PS-2. Pass the head of the needle every 4 to 5 stitches including knots.

2. When you are done, cut the needle off, and tie both ends. Do not leave the loop hanging as this may allow a comb or fingers to become entangled.

3. Use a fine suture cutting scissors or a No. 12 surgical knife. You then easily pull all the remaining suture pieces using forceps.

© continued from page 48

hearing of any complaint, in person by the ISHRS member, may indeed be difficult to arrange as not all members attend the annual scientific meeting. To do so in their absence would seem to deny natural justice. The ISHRS did look into this in the past and the attorney advised that, at least in the United States, a waiver such as this would not hold up in a court of law if a member decided to pursue legal action anyway.

The ABHRS has a different role and has in the past taken action against Diplomates that have demonstrably failed to live up to ABHRS rules. This has included loss of Diplomate status.

In summary, members of the ISHRS and Diplomates of the ABHRS are expected to observe certain standards of behaviour such as those codified in the ISHRS Code of Ethics and ABHRS rules. Failure to do so may result in a complaint to the appropriate local jurisdiction that enforces acceptable behavior.

Editors’ note: We appreciate both the member’s remarks as well as the response prepared by Dr. Knudsen, whose considerable experience is of value to us all. The key differences in the two viewpoints seems highlighted in Dr. Knudsen’s concluding paragraphs. Perhaps other readers, including the current leadership of the ISHRS and the ABHRS, and the member who began this thread, can share their thoughts in letters to the editors in future issues of the Forum.
Letters to the Editors

Akaki Tsilosani, MD, PhD Tbilisi, Georgia clinic@talizi.ge
Re: Dr. Unger’s comments on combining strip and FUE

I would like to thank Walter Unger on his interest in my article (Hair Transplant Forum Int’l. 2010; 20(4):121) and his comments. Like him, we are also equally worried about serious long-term drawbacks for our patients. The question is what is the border of safe donor area? If we think about what will be the final borders of balding by age of 65 to 70, then it would be impossible to do any routine FUE procedures of more than 2,000 grafts. I would like to clarify that patients in whom we harvested FUE from higher border near the crown area were all above 40 years of age and of Norwood class IIIa or IVa. We do not use this combination method routinely; however, we consider it for patients who have poor skin laxity and who need a large amount of grafting. This commonly happens for long-distance traveling patients with whom we have no prior examination done before treatment. This method reflects slit grafting of the skin to increase laxity and so it is a good option in helping closure of tight scalps. I would like to add that this method can be a savior in a difficult situation like a “parachute,” and Dr. Unger may see this compromise.

David Perez-Meza, MD Mexico City, Mexico
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Re: Use of 2-Octyl-Cyanocrylate

I would like to comment on the use of tissue adhesives in hair transplant surgery. Dr. Luiz Pimentel brought to our attention a case with two important issues: popping and the use of tissue adhesives (Hair Transplant Forum Int’l. 2010; 20(6):186-187).

Unfortunately, the popping effect is a real challenge for the surgery team and it may impact hair growth and long-term survival of the follicles. The popping issue—how to prevent it, how to treat it, and as a complication—has been addressed in many articles in the Forum and elsewhere.1-6

After reviewing Dr. Pimentel’s case and pictures, it is clear that the surgical plan wasn’t accomplished due to the popping issue. The patient only received 1,300 transplanted grafts, just 65-70% of the original 1,800 grafts planned. Dr. Pimentel’s Figure 2 shows more swelling, especially in the hairline and central scalp. Figure 3 shows the scalp two weeks post-op, and I noticed more swelling in the recipient area than the five-day post-op picture, with most of the scabs still in place.

Obviously, this is an abnormal post-operative issue because it may be related to the tissue adhesive inflammatory reaction. According to Dr. Pimentel, Figure 4 shows normal seven-month hair growth except there is insufficient growth in the areas where the grafts were manipulated due to the popping. So, was the poor growth in those areas related to graft manipulation or the tissue adhesive?

Tissue adhesives have gained popularity in some specialties during the past 9-10 years. Dr. Robert Haber at the 1999 ISHRS Annual Scientific Meeting mentioned good results when using tissue adhesives (2-Octyl-Cyanoacrylate) for the closure of the donor site.7 Also in 1999, Dr. Matt Leavitt and I started using Dermabond (2-Octyl-Cyanoacrylate) in the donor and recipient areas during hair transplant surgery.

Tissue adhesives have gained popularity in some specialties during the past 9-10 years. Dr. Robert Haber at the 1999 ISHRS Annual Scientific Meeting mentioned good results when using tissue adhesives (2-Octyl-Cyanoacrylate) for the closure of the donor site.7 Also in 1999, Dr. Matt Leavitt and I started using Dermabond (2-Octyl-Cyanoacrylate) in the donor and recipient areas during hair transplant surgery.

Our experience included a few hair transplant patients that I presented at the Orlando Live Surgery Workshops in 2000 and 2001.8-9 For the donor area, we used deep-absorbable suture (3-0 Vicryl) then one layer of Dermabond for the skin (Figure 1). The patients had minimum to no tension at closure. We noticed sticky hair for 2 weeks post-operatively. The patient was advised to wash the donor area very carefully using a small amount of water. The donor area healed well without any complications and a good scar was observed at 1-year follow-up.

For the recipient area, the Dermabond was used for popping. The graft was placed followed by a single, thin layer of the tissue adhesive. The grafted area with the tissue adhesive showed more post-op inflammatory reaction (redness and swelling) as compared to the grafted areas with no tissue adhesives, and the hair was sticky. Figure 2 shows the scabs still in place after 2 weeks. We also noticed delayed and slightly decreased hair growth in the long-term where the Dermabond was used.

As a result of those preliminary studies, we decided not to use the tissue adhesives on the scalp. At the same time (1999), I began using Vicryl Rapide as an absorbable suture for closing of the donor area and it produced excellent results.

It is interesting to mention that the Dermabond label mentions contraindications: “Do not use in skin which may be regularly exposed to body fluids or with dense natural hair (e.g. scalp).”

In summary, I would not recommend the use of tissue adhesives in the recipient area until further research is conducted. It is critical to find the primary cause of popping of Dr. Pimentel’s patient to increase the hair growth and survival for the second surgery. Also, I will wait 12-15 months for the final post-operative evaluation and growth after the initial surgery before planning a second session.

This article by Garza et al. tested the hypothesis that the number of adult somatic stem cells decreased in individuals with androgenetic alopecia (AGA).

The hypothesis was based on the knowledge that somatic stem cells are the source of new cells in self-renewing epithelia after injury and homeostasis. Hair physiology and cytology inform us that a small number of quiescent stem cells are present in the bulge of each hair follicle. During each hair cycle, these stem cells divide and generate populations of progenitor cells, which subsequently cause hair growth. Under normal circumstances, each new anagen phase will produce a terminal hair follicle similar to the same follicle before the initiation of the last catagen and telogen phase. In AGA, due to the effects of dihydrotestosterone (DHT), each subsequent anagen follicle becomes smaller, eventually leading to microscopic hairs and the clinical occurrence of baldness.

To test the hypothesis, the investigators utilized samples of hair-bearing and bald scalps obtained from 54 males between the ages of 40 and 65 years of age undergoing hair transplantation. None of the subjects were using finasteride, and 1 subject was using minoxidil. Tissue samples were subject to immunohistochemistry, flow cytometry, and quantitative real-time PCR techniques to quantify the expression of Cytokeratin15 (KRT15), which represented the stem cells, and CD200, CD34, and Integrin α6 (ITGA6), which represented the progenitor cells.

Surprisingly and contrary to the initial hypothesis, the quantification techniques revealed that KRT15 cells were present in both bald and hair-bearing scalp samples. However, the progenitor cell populations were markedly diminished in quantity in the bald scalp samples, in contrast with their presence in the hair-bearing scalp.

In summary, the study results infer, for the first time, that the hair follicle miniaturization in AGA results from the diminished conversion of hair follicles stem cells to progenitor cells. An important point made in the article is that in other types of non-scarring alopecias, such as alopecia areata, where the inflammation affects progenitor cells but not the bulge stem cells, the hair loss is reversible when the inflammation affecting these cells is removed allowing non-affected stem cells to regenerate hair follicles.

From this study, certainly more research on cell therapy for AGA will likely be generated, as well as more research in other types of alopecia.

References

Meetings and Studies

We’d like to take this opportunity to welcome readers to the new Meetings and Studies section. We hope to bring greater awareness to the progress and ideas generated by our colleagues in academically oriented professional societies around the globe, as well as focus on individual studies, both research and clinical, felt to be of specific interest to practicing physicians and their staff, all in the interest of raising the bar in providing academic excellence to the forefront of our designs for patient care.

This issue we present an overview of the British Association of Hair Restoration Surgeons (BAHRS) business meeting held in early February 2011.

British Association of Hair Restoration Surgeons 2011 business meeting

Bessam K. Farjo, MBChB Manchester, United Kingdom bessam@farjo.com

The British Association of Hair Restoration Surgeons (BAHRS) was founded in 1997 with its main aim being to provide a platform for U.K. hair restoration doctors to network and share issues and concerns. Once a year business meetings quickly led to an additional annual educational one-day meeting where at least one speaker from a related field was invited to lecture our members. A most enjoyable benefit of the association was the opportunity for everyone to socialise and get to know one another as colleagues and friends. The BAHRS is a founding member of the ISHRS’s Global Council.

The meetings have not been as regular in recent years, but we hope the increasing interest in the field from colleagues, media, and the public has kick-started renewed enthusiasm and determination for the BAHRS to retake a leading role.

The BAHRS held its annual business meeting on February 6, 2011. Current president, Dr. Michael May, chaired proceedings and kicked off the agenda by welcoming the encouraging number of newcomers to the field who were invited to attend as guests. Dr. Bessam Farjo went through the history of the association, past formats of the meetings, and suggestions for moving forward by taking advantage of the current positive media exposure of hair transplantation.

Vice President Dr. Greg Williams summarized the highlights of the ISHRS meeting in Boston last year and a discussion ensued amongst attendees on various topics of interest including implanters, FUE automation, ACE inhibitors in keloid scar treatment, Inflammasone, topical FPHL treatment, poor growth and prolactin levels, and, of course, ACell.

Dr. May discussed the ongoing “revalidation” saga concerning U.K. doctors and how it will affect private practice and hair transplant physicians in particular. This is a project the licensing body has been talking of bringing into practice for almost 12 years now and it involves auditing doctors in order for them to maintain license to practice.

Overall, existing members as well as the potential new members were very enthusiastic to push the association into a more active role. A new website along with social media and press release activities were proposed. Attendees were also interested in an online forum for members to interact and exchange knowledge and opinions. Other avenues that will be looked into include more interaction with dermatology, plastic surgery, and general practice events and future organization of seminars and workshops.
Hair Transplant Forum International

THE NEXT BIG THING

Advanced Live Surgery Workshop in Istanbul

May 13-15, 2011

Hair Research and Advanced Live Surgery with a focus on FUE Method

ISHRS Regional Workshop
Hosted by Melike Kulahci, MD
Transmed Medical Director
Istanbul, Turkey

Faculty List:
Ilker Apaydin, MD
Jerry Cooley, MD
Bessam Farjo, MBChB
Nilofer Farjo, MBChB
Robert Haber, MD
Gerd Lindner, PhD
Jennifer Martinick, MBBS
Val Randall, PhD
Ron Shapiro, MD
Jerry Wong, MD
Melike Kulahci, MD

Join world’s leading hair researchers and hair restoration surgeons for a workshop in Istanbul, where East meets West and the old blends in with the new. Discussion will be on The Next Big Thing in Hair: Advanced FUE Live Surgery demonstrations, the latest techniques, cutting-edge research on hair biology, and much more.

Register today! www.thenextbigthing2011.com
For questions, please contact Nells Abacioglu at thenextbigthing2011@transmed.com.tr or 0090 532 725 5500 & 0090 212 281 1900.

Date: May 13-15, 2011 Location: Istanbul, TURKEY
**ISHRS Products for Sale**

**2010 Basics in Hair Restoration Surgery Lecture Series**
- Online Format, enduring material
- 9.5 hours CME
- **MEMBER PRICE** $300

**Female Hair Loss Diagnosis and Treatment DVD Set**
- 4 disc set, professional recorded and produced
- **MEMBER PRICE** $397

**High Definition Surgical Video – Female Case and FUE Case**
- Professionally filmed and edited (both surgeries on the same disc)
- **MEMBER PRICE** $225

**Hair Transplant Forum International**

- **Forum:** The Bound Collection, 2001-2005
  - **MEMBER PRICE** $125
- **Forum:** The Next Five Years, 1996-2000
  - **MEMBER PRICE** $100
- **Forum:** The First Five Years, 1991-1995
  - **SOLD OUT**
- **Forum:** Past Single Issues
  - **MEMBER PRICE** $1 per issue

**Operation Restore Apparel**

- **ISHRS’s pro bono program – “Restoring self-image, self-esteem, and hair”**
- Denim Shirt (L or XL only) $40
- T-Shirt (XL only) $5
- Cap/Hat (one size fits all/most) $15

Please note that shipping charges will be added at time of purchase.

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*At this time certain anti-androgen therapies are not approved by the U.S. FDA for women. This test does not endorse the use of off-label prescription medication.*
Get Your Patient’s Hair Score
With HairCheck

HairCheck® is based on published hair bundle cross-section technology. It displays your patient’s combined hair density and diameter as a single score (from 1-100) on an LED screen. Discuss the score with your patient and compare it to the previous score. A change in the score indicates a change in density and/or diameter — the anatomic hallmarks of hair loss and growth. Photographs are imprecise. Hair counts measure density alone. HairCheck® is the fast and easy alternative. Not a single hair is cut. Your technicians can easily learn the technique with the enclosed instructional DVD. With HairCheck®, you’ll be able to diagnose and treat thinning, shedding and breakage with confidence, like never before.

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How can you detect early thinning — when the diameter is reduced, the density is still unchanged and the patient has no visible hair loss? How often have you seen a patient with hair loss and recommended Minoxidil, Finasteride or Laser... only to discover on the patient’s return, you’re unable to measure the response? It's a frustrating way to practice medicine, and quite simply it’s the reason that HairCheck was created.

With HairCheck You Will Be Able To:

- Identify thinning in its earliest stages, years before it’s visible to the naked eye.
- Quantify how much hair is in a localized area of scalp (hair mass).
- Measure your patient’s response to any and all hair “growth” products.
- Measure your patient’s percent of hair loss and speed of progression.

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www.HairCheck.com

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800-233-7453 www.HairCheck.com

HairCheck will forever change the way you think and talk about hair loss.
MESSAGE FROM MELVIN L. MAYER, MD, PROGRAM CHAIR OF THE 2011 ANNUAL MEETING

Dear colleagues:

Excitement is building for the 19th Annual Scientific Meeting of the International Society of Hair Restoration Surgery. Already we have received 136 abstracts for consideration. Excellent cutting-edge science with presentations from surgeons around the world will be presented. A big “thank you” to all of our ISHRS members who have put so much effort into making our scientific meetings so worthwhile.

This year’s theme is **New Vistas & Trusted Techniques in Hair Transplantation**. Our 2011 keynote speakers will cover the following:

- **Dr. Marty Sawaya** will be updating us on the effects of inflammasome in androgenetic alopecia and inflammatory diseases of the scalp.
- **Dr. Bill Ehringer** will be discussing the latest information on storage solutions and additive agents in organ transplantation.
- **Dr. Vera Price**, founder of CARF (Cicatricial Alopecia Research Foundation), will be discussing new treatments for scarring alopecias.

The Workshop Directors are already busy organizing excellent morning WORKSHOPS that cover the following topics:

- Recipient Sites
- FUE: Different Technical Approaches
- Understanding Cell Therapy
- How to Compile a Patient Record and Proper Patient Photographs

In addition to scores of excellent topics at Breakfast with the Experts (offered on two days), we will offer 3 LUNCH SYMPOSIA on Friday afternoon from which you may choose. Topics include:

- Hairline Design
- Top Clinical Pearls to Achieve Best Results and Happy Patients
- Hair Duplication and Other Uses of Extracellular Matrix

We are going to be expanding the session on “Difficult and Atypical Cases,” so be sure to think about a case from your practice that you could share to enlighten our members.

Having grown up in the mountains of Utah, the vast wilderness of Alaska is going to be an exhilarating place for all of us to explore.

Warmest regards,

*Melvin L. Mayer, MD*, 2011 Program Chair
Two popular sessions from the 2010 Boston Annual Meeting were recorded and are now available ONLINE exclusively to ISHRS Members at no charge until May 1, 2011.

**Powered Systems for Follicular Unit Extraction** – 59:17 running time  
*Faculty:* James A. Harris, MD, Robert T. Leonard, Jr., DO, Robert H. True, MD, Jean Devroye, MD

**Complications Panel: Correction of Spread Scars** – 36:22 running time  
*Faculty:* Mario Marzola, MBBS; Sharon A. Keene, MD; James A. Harris, MD; James E. Vogel, MD

Go to: [www.ISHRS.org](http://www.ISHRS.org), Members Only section, to watch these streaming videos.

**Then please tell us what you think.**

Recording these two sessions is part of test project to help us determine the best way to meet members’ educational needs. We will decide whether to proceed with additional recording projects such as this based on the number of members who view the links and the feedback they provide.

For example, we are interested to know:
- Did you find value in the ISHRS providing this video recording to the membership?
- Which link did you view? Did you attend the same live session in Boston?
- Should the ISHRS provide more recorded sessions from the annual meeting, such as this?
- How can we improve?

Please send your feedback to [info@ISHRS.org](mailto:info@ISHRS.org).

---

**Proposals for 2012 Regional Workshops**

**Applications Due: June 1, 2011**

- Are you an educator?
- Do you have a good idea for a workshop?
- Can your surgery center host a live surgery workshop?

If you would like to partner with the ISHRS and host a local, live surgery workshop in 2012 or first quarter 2013, please submit your completed application to info@ishrs.org by June 1, 2011. Direct questions to CME Chair, Dr. Paul Cotterill or CME Director, Victoria Ceh at: [paul@drcotterill.com](mailto:paul@drcotterill.com) or [vceh@ISHRS.org](mailto:vceh@ISHRS.org).

Application materials may be obtained on the ISHRS website: [www.ISHRS.org](http://www.ISHRS.org).

Login to the Members Only section, then in the right column, under “ISHRS Programs,” click on “Regional Workshops Program.”

Note: The following topics were the most popular for regional workshops as reported from the 2011 member needs assessment survey—FUE and non-scalp techniques. Regional Workshops focused on a specialty topic or audience level are usually the most successful. One goal of this program is to bring education to various parts of the world, and as such, to target physicians in your geographic region.
Research Grants Available

The annual ISHRS research grants with amounts in the range of $1,200 to $2,400USD per grant.

The deadline for grant applications is

June 30, 2011

Further information and a full application can be obtained on the ISHRS website at www.ISHRS.org/member-grants.htm

CALL FOR NOMINATIONS

2011 Follicle Awards

GOLDEN FOLLICLE AWARD — Presented for outstanding and significant clinical contributions related to hair restoration surgery.

PLATINUM FOLLICLE AWARD — Presented for outstanding achievement in basic scientific or clinically-related research in hair pathophysiology or anatomy as it relates to hair restoration.

DISTINGUISHED ASSISTANT AWARD — Presented to a surgical assistant for exemplary service and outstanding accomplishments in the field of hair restoration surgery.

How to Submit a Nomination:
Include the following information in an e-mail to: info@ISHRS.org
• Your name,
• The person you are nominating,
• The award you are nominating the person for, and
• An explanation of why the person is deserving; include specific information and accomplishments.

Nominating deadline: July 1, 2011

See the Member home page on the ISHRS website at www.ISHRS.org for further nomination criteria. All awards will be presented during the Gala at the ISHRS 19th Annual Scientific Meeting, September 14-18, 2011, in Anchorage, Alaska, USA.
3rd Annual
Hair Restoration Workshop

An offering through Practical Anatomy & Surgical Education
Saint Louis University School of Medicine

Course Director
Samuel Lam, MD

Physician Faculty
Paul Cotterill, MD
Vance Elliott, MD
Robert Haber, MD
James Harris, MD
Paul McAndrews, MD
Robert Niedbalski, MD
Lawrence Samuels, MD
Ronald Shapiro, MD
James Vogel, MD

Assistant Director
Emina Karamanovski, MD

Assistant Faculty
Tina Lardner
Kathryn Morgan
Kasia Muzyka
Charlene Smith
Janna Shafer
Carol Wade

October 14 - 16, 2011
St. Louis, MO, USA

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New, Expanded and Tailored Hands-On Lab Experience
3D Live Cadaver Demonstrations
MESSAGE FROM MARGARET DIETA, SURGICAL ASSISTANTS CHAIR OF THE 2011 ANNUAL MEETING

Hello Surgical Assistant Members:

It is with sincere excitement and honor that I serve as your Surgical Assistants Program Chair for the 2011 ISHRS meeting in Anchorage, Alaska, USA at the Dena’ina Civic and Convention Center from September 14-18, 2011.

I began working in the Hair Restoration industry in 1996. I have primarily worked with (and still do) Dr. Carlos Puig during this time. I have had the opportunity to travel all over our great nation to work with and learn from world-renowned hair restoration physicians. The ISHRS and the Orlando Workshops gave me the opportunity to teach in the Doctors Basic Courses and Surgical Assistants programs over the years as well. I absolutely enjoy what I do for a living!

I will put forth my best efforts along with our highly experienced Surgical Assistants Executive Faculty in making the 2011 meeting an exciting and educational adventure for all levels of assisting and front office staff. This meeting will present new and innovative developments in our field, as well as provide an opportunity to learn from and share knowledge with each other. I encourage assistants from around the world to come together and share their expertise. There are ample ways we invite you to participate and contribute. You may prefer speaking on a topic you are passionate about in the hair industry, write an article submission for the Forum and the Surgical Assistants Manual, teaching in or attending our Surgical Assistants Cadaver Workshop: Implanting & Dissecting, or serve on our Surgical Assistants Executive Committee.

Any and all suggestions are encouraged and welcome or if you want to be a part of the program, please contact me: Margaret@HairRestorationHouston.com. If you would like to submit pictures for the manual, please e-mail them with a brief explanation as well. I’m looking forward to hearing ideas and suggestions from each of you!

Margaret Dieta

“New Vistas and Trusted Techniques in Hair Transplant Surgery”

Surgical Assistants: Get Involved in the ISHRS

We would love to hear from you. There are many ways you can contribute:

- Write an article or present an idea to the Forum
- Serve on the Surgical Assistants Executive Committee
- Help in the planning of our educational events
- Teach at our meetings and workshops

Contact info@ISHRS.org today!
Greetings from Orlando, the site of the 17th Annual ISHRS Orlando Live Surgery Workshop! By the time you receive this issue, the workshop will already be over, but I guarantee everyone had a great time. This year we increased the cutting/placing workshop by adding presentations and practice sessions for beginners utilizing silicone strips with hair for dissection and silicone scalps for placing before applying their knowledge on cadaver tissue. In the next issue, we hope to have a review article written by one of the attendees of the Assistant’s Workshop.

Please keep the great articles coming in!

Patrick Tafoya
Orlando, Florida, USA
patrickatafoya@yahoo.com

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Is it possible to accurately assess donor yield?

Sara Roberts, RN Manchester, United Kingdom sara@farjo.com

When assessing donor yield, the current practice within our clinic is for two experienced assistants to examine the harvested donor strip to make an estimate of the graft numbers. The surgeon makes an assessment of the donor before any removal takes place. This is calculated under the assumption that in the patient with average density you will yield 500 grafts from a strip of 6cm×1cm. Usually the surgeon is able to remove 1.2cm width in the supraauricular and occipital regions while reducing this to 1cm in the post-auricular scalp. Therefore, a strip of 28cm should yield about 2,500 grafts.

The donor strip is removed in sections to allow the assistants the opportunity to make a calculation of number of grafts before taking subsequent sections. For staff training and development, we decided to compile a study to examine more closely how we estimate the total graft numbers and to compare this to both the actual numbers obtained and to the surgeon’s original estimate of expected numbers. This would then allow us to evaluate our current methods for accuracy as obviously having too few or too many grafts is not in the patient’s interest and impacts on the smooth running of the procedure.

Our method in carrying out the study was slightly modified from the outline above to include up to 3 less experienced assistants in the assessment process. Again each section was examined by the assistants by using one of two methods—either purely a visual estimate or by estimating the total number of slivers within the strip and multiplying this by the estimated number of follicular units per sliver. Each assistant documented their assessment prior to the commencement of cutting.

All the estimates were then tabulated to compare estimates from the cutters against the actual numbers obtained. The following table and graph correlate the results and highlight the closest estimate to the furthest estimate where “–” illustrates an underestimate and “+” an over estimate.

After looking at the results from the initial 7 patients, certain patterns began to emerge. It became apparent that in the majority of cases we were underestimating the total numbers. We were also much more accurate when estimating smaller sections of donor and also more accurate once we estimated the 3rd and 4th sections. This could be that the cutting of the first strips had begun and the assistants were influenced in their assessments by the number of grafts per sliver already cut. Patients with scarring and white hair also influenced the efficiency of donor evaluation. More accurate estimations were consistently made by the most experienced assistants and as their assessment of yield was the one used during the procedure, in the majority of cases the patient received the required number of grafts.

It soon became apparent that the information being gathered was very useful in using a team approach toward estimating donor. It allowed for greater input from less experienced members and promoted an environment of much closer monitoring of what each individual was cutting. Following discussions we will be continuing with this form of yield assessment but agree that we require further statistical information to precisely answer the question whether it is entirely possible to accurately estimate donor yield.

<table>
<thead>
<tr>
<th>Patient</th>
<th>Best Est.</th>
<th>Worst Est.</th>
<th>Actual Total</th>
<th>Best Difference</th>
<th>Worst Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>–19</td>
<td>–259</td>
<td>2,419</td>
<td>2,400 –</td>
<td>2,160 –</td>
</tr>
<tr>
<td>2</td>
<td>–93</td>
<td>–293</td>
<td>2,793</td>
<td>2,700 –</td>
<td>2,500 –</td>
</tr>
<tr>
<td>3</td>
<td>–8</td>
<td>–358</td>
<td>2,758</td>
<td>2,750 –</td>
<td>2,400 –</td>
</tr>
<tr>
<td>4</td>
<td>–16</td>
<td>–490</td>
<td>2,746</td>
<td>2,730 –</td>
<td>2,256 –</td>
</tr>
<tr>
<td>5</td>
<td>+48</td>
<td>+68</td>
<td>1,682</td>
<td>1,738 +</td>
<td>1,758 +</td>
</tr>
<tr>
<td>6</td>
<td>–133</td>
<td>–228</td>
<td>2,313</td>
<td>2,180 –</td>
<td>2,085 –</td>
</tr>
<tr>
<td>7</td>
<td>+41</td>
<td>–359</td>
<td>3,159</td>
<td>3,200 +</td>
<td>2,800 –</td>
</tr>
</tbody>
</table>

Graft Estimation vs Actual Numbers

www.ISHRS.org
Hair Transplant Physicians Desired

Excellent opportunity for Physicians to join Ziering, an established and expanding international hair restoration practice. Looking for physicians with commitment to quality care and excellent results for opportunities in the UK, Ireland and Spain. Leadership ability and experience a plus.

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To Place a Classified Ad

To place a Classified Ad in the Forum, simply e-mail educkler@ISHRS.org. In your email, please include the text of what you’d like your ad to read—including both a heading, such as “Tech Wanted,” and the specifics of the ad, such as what you offer, the qualities you’re looking for, and how to respond to you. In addition, please include your billing address.

Classified Ads cost $60 plus 60 cents per word per insertion. You will be invoiced for each issue in which your ad runs.

WE NEED YOUR SUBMISSIONS!

ISHRS CICATRICAL ALOPECIA REGISTRY

Nina Otberg, MD, Chair, Ad Hoc Committee on Database of Transplantation Results on Patients with Cicatricial Alopecia

Please contribute to this database for the collection of hair restoration results on patients with cicatricial alopecia and hair diseases other than androgenetic alopecia.

We are asking every ISHRS member to help to create a database of hair restoration results on patients with these difficult scalp disorders. The database will help us to optimize patient selection, treatment outcome, and patient satisfaction. It will help us to create guidelines for the surgical treatment of each scalp disorder and will allow us to be more confident in managing patients with cicatricial alopecia and other rare hair diseases.

You may obtain the details and download the registration form at:

www.ISHRS.org/cicatricial_alopecia_data_collection_form.php

Thank you.
New Vistas & Trusted Techniques in Hair Transplantation

Anchorage, a modern city set amidst the vast expanse of Alaskan wilderness, will host this year’s premier international conference on hair transplant surgery.

SEPTEMBER 14-18, 2011

Surgeons and staff will not want to miss this robust conference of thought leaders on the frontiers of best practices. The refreshing and friendly atmosphere of Alaska will invigorate each day of the conference. Pristine waters and breathtaking views of the Chugach Mountains and Mt. McKinley are the backdrop for up close wildlife adventures and glacier excursions, visionary lectures, hands-on workshops and networking events. Inspired by nature’s wild beauty and the highest caliber of educational presentations, this year’s event promises to be a trip of a lifetime!

Newcomers Are Welcome!

As a result of the positive feedback from the past two annual meetings, we will again offer a “Meeting Newcomers Program” to orient those who are new to the ISHRS annual meeting. Newcomers will be paired with hosts. We want to welcome you, introduce you to other colleagues, and be sure you get the most out of this meeting.

Many exciting formats and topics are being planned for the 19th Annual Scientific Meeting, including a full day, hands-on Basics Course in Hair Restoration Surgery utilizing cadaver scalp, a full day Advanced/Board Review Course, a full day Surgical Assistants Program, several morning workshop on specific topics, a Surgical Assistant Cutting/Placing Workshop utilizing cadaver scalp, lunch symposiums, Breakfast with the Experts table discussion groups, Live Patient Viewing, several controversy panels, a high definition surgical video theater, a hairline design panel, use of an audience response system to keep the sessions exciting and dynamic, a full exhibits program, and many opportunities for socializing and networking.

Plan Your Pre- And Post-Meeting Activities Early!

Wildlife and Glacier Cruises • Flight seeing – glaciers, Denali • Sea kayaking, River rafting, float trips • Dog sledding • Rainforest and alpine hiking, glacier hiking • Bear viewing • ATV tours • Fishing • Canyoneering, rock climbing, ice climbing
## Upcoming Events

<table>
<thead>
<tr>
<th>Date(s)</th>
<th>Event/Venue</th>
<th>Sponsoring Organization(s)</th>
<th>Contact Information</th>
</tr>
</thead>
<tbody>
<tr>
<td>DIPLOMAS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Academic Year</td>
<td>Diploma of Scalp Pathology &amp; Surgery</td>
<td>Coordinator: P. Goudot, Directors: P. Bouhanna, MD, and M. Divaris, MD</td>
<td>Tel: 33 +01 42 16 13 09 Fax: 33 +0 (0) 1 45 86 20 44</td>
</tr>
<tr>
<td>January 2011</td>
<td>International European Diploma for Hair Restoration Surgery</td>
<td>Coordinator: Y. Crassas, MD, University Claude Bernard of Lyon, Paris, Dijon (France), Torino (Italy), Barcelona (Spain), Department of Plastic Surgery <a href="http://www.univ-lyon1.fr">www.univ-lyon1.fr</a></td>
<td>For instructions to make an inscription or for questions: Yves Crassas, MD <a href="mailto:yves.crassas@wanadoo.fr">yves.crassas@wanadoo.fr</a></td>
</tr>
<tr>
<td>March 16-19, 2011</td>
<td>ISHRS Regional Workshop</td>
<td>International Society of Hair Restoration Surgery Hosted by Matt L. Leavitt, DO</td>
<td>Tel: 630-262-5399 Fax: 630-262-1520</td>
</tr>
<tr>
<td>May 13-15, 2011</td>
<td>ISHRS Regional Workshop</td>
<td>International Society of Hair Restoration Surgery Hosted by Melike Kulahci, MD</td>
<td>Valarie Montalbano, Coordinator 407-373-0700 ext. 103 <a href="mailto:HValarieM@leavittmg.com">HValarieM@leavittmg.com</a></td>
</tr>
<tr>
<td>June 24-26, 2011</td>
<td>1st Annual Asian Association of Hair Restoration Surgeons Scientific Meeting</td>
<td>Asian Association of Hair Restoration Surgeons</td>
<td>Sungjoo “Tommy” Hwang, MD, PhD <a href="mailto:hairhwang@gmail.com">hairhwang@gmail.com</a></td>
</tr>
<tr>
<td>November 12-13, 2011</td>
<td>3rd Annual Meeting of the Association of Hair Restoration Surgeons of India (HAIRCON-2011)</td>
<td>Association of Hair Restoration Surgeons of India</td>
<td>Tel: +91-9821308411 <a href="mailto:droajesh@rediffmail.com">droajesh@rediffmail.com</a></td>
</tr>
</tbody>
</table>

### HAIR TRANSPLANT FORUM INTERNATIONAL

**International Society of Hair Restoration Surgery**

303 West State Street
Geneva, IL 60134 USA

Forwarding and Return Postage Guaranteed

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**Dates and locations for future ISHRS Annual Scientific Meetings (ASMs)**

2011: 19th ASM, September 14-18, 2011
   *Anchorage, Alaska, USA*

2012: 20th ASM, October 17-21, 2012
   *Paradise Island, Bahamas*

2013: 21st ASM, October 23-27, 2013
   *San Francisco, California, USA*