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FORUM

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IN THIS ISSUE

At the time of releasing this issue for publication, we learned of the passing of ISHRS co-founder, founder of the ISHRS *Forum* publication, and hair transplant icon Dr. O'Tar Norwood. We are deeply saddened and wanted to acknowledge this news. The next issue will include a tribute to Dr. Norwood.

Shaved FUE vs Long Hair FUE: A Comparative Study During Excision, Extraction, and Placement

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ABSTRACT

Introduction: Long hair follicular unit excision (FUE) is a challenging technique that requires advanced surgical skill. As this procedure becomes more well known, patients frequently ask for it and surgeons offer it more. Still, we have little information on the effects of this technique on the grafts and the overall result of the procedure. The objective of this study was to compare the surgical and graft quality in shaved and long hair FUE by evaluating different parameters during excision, extraction, and placement.

Methods: Excision, extraction, and placement processes were compared between long hair and shaved hair FUE. For the excision comparison, two parallel boxes were marked and measured on each patient at the level of the center of the occipital area within the safe donor area. One box was shaved and the other was left with long hair. Grafts excised and extracted were counted under a microscope and inspected for partial or total transections; the time elapsed for the excision and extraction was also noted. For the placing comparison of long hair versus shaved hair FUE, two parallel boxes of 1 square centimeter were measured and marked on each patient at the level of the frontal hairline on either side. One box was for dense packing with 50 shaved follicular units (FUs) and the other box was for placement of long hair grafts in a great enough density to achieve desirable coverage. Time was also calculated during all placement processes.

Results: A total of 10 male patients (n=10) were recruited (mean age of 44) and classified with the Norwood Scale between 3 and 5 (with an average of 4.2) regardless of location whether it was anterior, central, or vertex. During the excision and extraction phase of the procedure, we observed that in the long hair box, we could extract an average of 20% more grafts compared to the maximum calculated by the Hair Density Index (HDI) for that specific area $t(18)=12.5$, $p<0.001$. We did not see a significant difference in the total transection rate (TTR) between the two boxes ($t(18)= 2.277$, $p<0.017$), but we did see a significant difference in the partial transection rate (PTR), with an 8% higher partial transection rate in long hair excision and extractions compared to shaved excisions and extractions $t(18)=-4.11$, $p<0.001$. Additionally, excision and extraction of long hair FUs takes almost twice the time to perform than shaved ones. When placing grafts, we observed that an average of 24% fewer grafts from the long hair batch were needed to achieve the ideal coverage $t(18)=-22.13$, $p<0.001$.

Discussion: Long hair FUE is a slow process that can cause a slight increase in partial transections, but stretches the boundaries in regards of maximum donor availability and minimum density needed for recipient area coverage.

Key words: follicular unit excision, long hair FUE, shaved FUE, coverage, maximum density, limited donor availability

INTRODUCTION

Follicular Unit Excision (FUE) has developed immensely since Australian physician Dr. Ray Woods started performing this technique in 2001 and since Dr. William Rassman's publication of the 2002 paper, "Follicular Unit Extraction: Minimally Invasive Surgery for Hair Transplantation."[1] Over the years, huge advancements in technology have been made as new devices, punches, and excision methods have been created.

In 2006, Dr. Marcelo Pitchon published the paper "Preview Long Hair Transplantation," in which he described his surgical technique previewing results in patients who had strip surgery, leaving all his grafts with long hair shafts during placement to preview a possible final outcome immediately post-surgery.[2] Long Hair Preview Follicular Unit Excision (LHP-FUE) is an innovative hair transplant technique that is reserved for

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President's Message

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Dear Colleagues,

I hope you have all had a safe re-entry in the opening of your practices.

We recently analyzed the results of the 2019 Practice Census, which revealed that the hair restoration industry is growing, with an estimated worldwide market for surgical hair restoration of around $4.6 billion USD. When comparing the number of surgical procedures performed around the world in 2019, Asia led the way with 196,630 procedures, followed by the Middle East/Africa with 188,360 and the United States/Canada with 182,025. Europe experienced the largest growth in the number of surgical hair restoration procedures in 2019, with 106,949 procedures representing a 35% increase from 2016.

Since the global market of hair restoration surgery is growing and new hair surgeons are continually entering our field, the ISHRS more than ever has to offer guidance and serve as a model of ethical and good medical practice.

This year we are proud to announce the launch of two fantastic online courses, Basic and Advanced. The program for the Basic course has been planned by Dr. Humayun Mohmand (Pakistan) and Dr. Shady El-Maghraby (Egypt). A tremendous amount of organizational effort has been required to put together the total of 20 lectures and 35 short 5-minute videos that comprise the course. More than 30 ISHRS members have contributed to its contents and the vast amount of information it provides. The superb advantage of the online nature of this course is that the attendees can review the lectures at any time, indeed several times and up to 3 months after the event itself. The course will be held on Saturday & Sunday over the two weekends of August 22-23 and 29-30.

This year's Advanced/Board Review Course offers the most comprehensive and targeted curriculum aimed at two audiences: the practitioner who wants to do well on the written and oral American Board of Hair Restoration Surgery (ABHRS) exams and the intermediate/advanced hair surgeon who wants to learn sophisticated and new techniques to improve his/her surgical expertise and understanding. The program has been developed by Dr. Jerzy Kolasinski (Poland) and Dr. Sam Lam (USA) and will be held on Saturday, September 26 and on Saturday, October 3.

As you are aware, due to the COVID-19 pandemic the World Congress of 2020 will be a virtual event. The scientific program is being developed by Dr. Brad Wolf and his Scientific Committee. It will be a unique and real technical challenge to put so many oral communications and posters together but we are up to the task. Although they can obviously not be handed over in person, we have nevertheless decided to celebrate the Golden and Follicle Awards ceremony as usual. However, it will have a different format and a few surprises. Please email your nominations for for these awards following the guidelines found on page 135.

Finally, we announced a call for volunteers to participate and work on the various committees of the ISHRS. This recruitment for committee volunteers is intended to encourage more members to participate and assist in the important work of the ISRHS. It is an excellent way to become more involved in our society, and the recruitment process allows us to know more about those members who wish to participate in the leadership of the ISHRS. I hope to see many applications.

Looking forward to "seeing" everyone in October! ■

Call for Committee Volunteers

We are inviting ISHRS members to apply for openings in several committees. We are seeking dedicated individuals with knowledge and experience within the field of hair restoration surgery and a desire to contribute.

Terms will begin at the conclusion of the World Congress (October 26) and typically run for 3 years.

Call closes: **September 1, 2020**

To apply, go to
https://registrationreports.com/ishrs/committees/

Co-Editors' Messages

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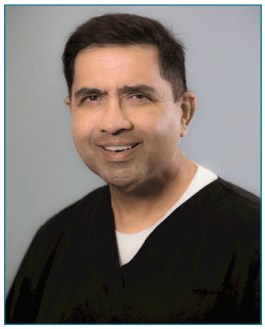
Watching my daughter cranking away at med school, I ask myself: Did I really do as much studying 30 years ago, or is there that much more information to learn in medicine? Learning is something we think of as primarily taking place during our years of formal education and training, but the reality is learning to become or remain a relevant physician never really ends. As established practitioners, the learning we undertake requires more of a purposeful investment of our time, for it needs to be sought out. Staying relevant also calls on our ability to be willing to modify existing (comfortable) techniques, a process that may at times provoke mental or even (in the case of large FUE cases) physical discomfort. Right at this very moment, your sitting down to read this *Forum* demonstrates a commendable commitment to learning, rewarding you not just by enhancing the care you provide, but by allowing your mind to grow and even create fresh neuronal pathways. The upcoming annual meeting, to be held virtually this October, will require a similar commitment and will invoke a change in habit, avoiding the need to travel and instead allow for learning from the comfort of our homes or offices.

The articles you submit to the *Forum* (and you will submit an article, right?) take effort but provide a sense of accomplishment, intellectual stimulation, and enhancement of one's professional reputation. You can be sure of having your contribution read and enhancing the quality of care provided by your colleagues. After a bit of spirited debate, Aditya and I, under the guidance of the ISHRS Board of Governors, have come up with a pathway for the *Forum* to enhance its scientific merit so that it meets the stringent requirements of FORUM ePUB while managing to maintain its unique informal component that permits for "how I do it" and "this is what I think" submissions. This will involve one or two articles every issue following strict editorial guidelines including sound statistical analysis and format that will be entered into ePUB (such as this issue's lead article by Dr. Marie Shambach), joined with our regular columns, communications, and other contributions that in this issue include an insightful and practical review of PRP systems, a relevant literature review on COVID-19 and hair loss, and several on managing or preventing complications. One column that provides particularly valuable "pearls" is "Notes from the Editor Emeritus," and Dr. Mike Beehner's contribution in this issue is no exception. Placed toward the front of the journal for good reason, the contributions from our Editors Emeriti dispel not just knowledge but wisdom earned from many years of practice. Whether or not the columnist is utilizing the latest surgical techniques, what he/she offers in terms of experience is perhaps the most valuable from which to learn.

Looking forward to "seeing" you in October at our Virtual 2020 World Congress. Also, in early September, Aditya and I will join Dow Stough and Bob Haber, who are *Forum* Editor Emeriti, for a webinar entitled, "30 Years of the *Forum*—A Review and Discussion of Pivotal Research and Concepts." Keep your eyes open for the announcement. ■



Aditya K. Gupta, MD, PhD, FISHRS ❙ *London, Ontario, Canada* ❙ forumeditors@ishrs.org

Another impressive issue of the *Forum* is here! Our members have truly shown that COVID-19 will not slow them down. Jeff and I would like to say a big THANK YOU to all contributors—your support is invaluable to keep the *Forum* moving forward and minimize the impact of the pandemic on our society. On page 154, you will see that we have fine-tuned the article submission and acceptance guidelines to help expedite the editing process. Keep those articles coming! Jeff and I also wish to thank the editorial team, especially Cheryl, Victoria, and Helen for their support through the pandemic.

A subject touched on throughout this issue is the doctor-patient relationship. As many of us are re-opening our practices, it is important to be aware of the changing landscape of patient attitudes and mental health as a result of the pandemic, which can ultimately affect the doctor-patient relationship. COVID-19 has added an element of anxiety to everyone's lives, and we need to consider this aspect when providing advice and evaluating patient candidacy in order to establish an appropriate and trusting doctor-patient relationship.

Our lead article presents an interesting comparison between shaved and long-hair FUE. Since the long-hair FUE technique presents a solution to the short-term cosmetic problem of shaved FUE, it is gaining in popularity among patients and physicians. However, limited data are available on transection rates and other aspects of this technique, causing hesitation among surgeons to adopt long-hair FUE into their practices. This well-conducted study helps us further understand the pros and cons of this technique. Long-hair FUE is certainly a more time-consuming technique, but it allows immediate visual identification of hair density in both the donor and recipient area, enabling the surgeon to make real-time decisions on the number of grafts that can be safely excised as well as the number needed to achieve ideal coverage. Thus, this technique allows a customized approach to FUE hair transplants, and if the procedure time can be reduced, I wouldn't be surprised if it becomes a more popular technique with FUE hair transplants.

On page 137, Dr. James Harris presents a study commissioned by the ISHRS COVID-19 Task Force that reassures us that reopening our hair transplant clinics and performing FUE procedures is safe for the staff and our patients. For me, it is a relief to be able to tell my staff and patients that the FUE technique does not produce detectable bioaerosolized blood or skin fluids. I commend Dr. Harris and the task force for working so diligently to establish timely guidelines and provide data that have allowed us to safely navigate through reopening our practices.

It is times like these that our appreciation for the community and support of the ISHRS grows. We are a steadfast society committed to patient safety and advancing the field of surgical hair restoration. Reading the *Forum* and being a part of this community certainly provides me with an element of calm during these tumultuous times, and I hope you can find that too. ■

Notes from the Editor Emeritus, 2014–2016

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The Art of Managing Patient Expectations

If you are like me, there is nothing that can ruin your day more than the patient who returns and complains that you failed to fulfill his or her expectations in some way. This confrontation can happen 3 hours after the surgery, the next day, or several months later when the hair is starting to emerge. Over the course of my 31 years of performing hair replacement surgery, I have certainly had my share of these types of patients, and I have tried to learn from those experiences. Here, I thought I would pass along some tips and guideposts that might help surgeons getting started in our field.

DOCTOR-PATIENT RELATIONSHIP

The first and most important pointer I can give is to be sure that you establish a good doctor-patient relationship. It's very hard to bring a malpractice suit against a trusted friend. This bonding occurs at the initial consultation. An important goal of that first meeting is to create an atmosphere of mutual respect and trust. Make an effort to learn something about a patient's life and allow plenty of time for the patient to express their needs and what bothers them most regarding their hair loss. Being entirely honest and making the patient feel that you are sincerely trying to do what is best for them will be a big help for you, should a difference of opinion occur later on. If, at some time in the future, you become aware that the patient has a complaint concerning the surgery, you must always bend over backwards to make that patient happy. Often, this is accomplished simply by offering to place a couple hundred free grafts in a given area of the scalp. Frequently, the problem is simply that the patient is jumping the gun and for some reason is expecting results that realistically won't appear for another three or four months. They either failed to hear what you most likely told them in your initial meetings, or possibly you just didn't communicate this very clearly before the surgery. Simply explaining this to the patient and having them come back in a few months to reassess things is all it takes to preserve a good relationship with that patient.

COMMUNICATION AT INITIAL CONSULTATION

At the initial consultation, after hearing the patient out and getting a good understanding of their concerns and desires, I perform a detailed examination of the scalp. In doing so, I check for degree of miniaturization, scalp laxity, and density of the native hair bundles in the donor area. Using my 30× magnification camera, I turn the video screen on my desk toward the patient and point out to them what we are seeing. I explain how these findings may impact the hair transplant plant we will come to agree on later. If there is a spouse or trusted friend with the patient, I have them view the screen also. For my male patients, I then actually draw on the patient's head my proposed hairline contour and location, along with the various zones behind it that would be filled in. I use a dry-erase marker to accomplish this, which readily comes off with baby wipes. Before wiping these marks off, I take high-quality photos from several views, which I give to the patient. These "before" photos will be your best friend should that patient return in 6 months and claim that "none of the hair took." Comparing these previous photos with what the patient sees when you hold a couple of mirrors up to show them their results usually convinces the patient that you have indeed made an improvement.

There are certain guiding principles that I try to always follow. For example, a patient must be at least 23 years old for a first hair transplant, staying out of the vertex area until their 30s. For men in their 20s and for those with wide biparietal widths of l2cm or more of thinning, I will use a "frontal forelock" grid design. I have many other parameters I follow; the advantages of sticking by these guidelines is that I can later repeat that same recommendation without fear of having contradicted what I might have said at an earlier time.

Most of our "great" results occur in patients with coarse, full-bodied hair, who also have great donor density along with plenty of 2-hair and 3-hair bundles. Showing these photos on our websites and in our advertising may bring more potential patients in the door, but doing so may backfire later on when your patient's results don't match up with the photos from your top 5% all-time-great photos they saw earlier. Those near-miraculous results are not going to happen for patients with low donor density and fine hair, so be sure to show them before and after photos of patients who have similar hair characteristics to theirs.

I tell my patients that the first transplant session will make a "big difference," but add that at least two sessions will probably be required to give them the density they would likely be happy with for the rest of their life. And for those patients with fine hair, I will propose that three sessions may be needed to reach that same level of satisfaction. In our office, we have albums filled with various subtypes of patients, so that we can show them results from patients with similar hair characteristics. To give a few examples, we have albums that exclusively show results for patients with fine hair, Indian-Pakistani patients, transgender patients, patients with deep temporal recessions, temple restorations, repair of old patients with poor results, temples, eyebrows, etc.

One great tip I would pass along is as follows: At the conclusion of the surgical procedure, put the patient in the supine position and make a row of dots the full length of the front hairline, placing the dots around ¼ inch in front of the anterior-most grafts. Check it for symmetry. This is your final chance to make it perfect and avoid the patient returning the

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next day after looking in the mirror at home and telling you the hairline is crooked.

FEMALE PATIENTS

For my female patients, who have comprised around 20% of my practice over the years, I usually communicate that two sessions are probably going to be needed. I also mention the possibility of some "shocking" of the recipient area "native" hairs, which in my experience occurs in around 20% of cases. I impress upon them that it won't be until around 18 months that they will see the "full flowering" of the hair we transplanted. I point out on the magnified screen that the hair density in the occipital region is far superior to that seen in the lateral donor areas. Again, having good "before" photos allows you to show them the pictorial evidence of the improvement that was achieved, when compared with the initial presentation.

TRANSPLANTING THE VERTEX

Another frequent source of contention is transplanting the vertex area. If the male patient is young (in their 20s), I stay out of this zone and point out to the patient that the square area of thinning they have now will almost certainly increase as they grow older. I use the metaphor that the result of our filling in the vertex at this time could lead to the freakish appearance of a "bull's-eye" later in life, with a wide rim of bald skin encircling the grafts. As males approach their mid-30s, I become a little more comfortable with my ability to predict their eventual vertex size. For the middle aged and older age group of male patients, it's even easier to accurately predict where the vertex zone will eventually end up. I try to make patients feel comfortable with the goal of our creating what I term "light coverage." I underscore that the primary goal is for the final result to look natural, since the area in the back is so visible to others. I also avoid the use of 3-hair follicular units in the back, as they can sometimes become detectable later on.

Another problem with the vertex is that most patients think of the area as being relatively small. To counter this assumption, I take both of my hands and make a large circle with my opposing thumbs and middle fingers and place them on the circumference of the vertex. After showing them how large that area is, I then place my hands in the same manner around the combined mid-scalp and frontal areas. More often than not, the two large circles are nearly equal in square area. This makes the patient more receptive to my more modest and stated goal of creating "light coverage." I also remind them of the primacy of the frontal and mid-scalp area in the order of importance for the whole project. This means that the vertex can only be filled in if there are sufficient donor stores for all three zones of the scalp. Because the grafts placed in the vertex must be placed in a "whorl" arrangement, there will almost always be a degree of "see through" in the final result. Obviously, there are many men in their 40s or older with relatively small vertex areas for whom a more aggressive plan with dense-packing is a reasonable option.

DONOR SCARS

Another occasional area of patient dissatisfaction involves the donor scar that results from a strip-harvest procedure. In my practice, since we are fairly conservative in the widths we harvest, these complaints have become more infrequent in recent years. I tell most patients that having their barber keep the length of hair in back to a minimum of one-half inch should camouflage most scars. If there is a problem with a wide hyperelastic donor scar, I often propose a single attempt at excising a portion of the scar's width. I generally don't like to take out more than 8mm of scar width at a time. Being modest in the width of the scar reduction and also leaving the nylon sutures in for a minimum of two weeks have made a huge difference in minimizing stretch-back. If a patient with a wide scar plans to have another full hair transplant session, I will encourage them to postpone any donor scar removal until a year after the final planned transplant. If, for any reason, I believe I might make the donor scar worse with another strip harvest, then I propose switching to an FUE harvest. If a single attempt at narrowing the scar doesn't succeed, then I won't perform anymore excisions and instead will steer the patient toward placing FUE grafts into the scar along with making tattoo dots into the scar for camouflage.

FINANCIAL PRESSURES

The patient's financial situation is another factor that can lower the threshold for the patient being unhappy. If they are really strapped just coming up with the funds for the first procedure—or, even worse, have to finance the procedure—then they may have very unreasonable expectations for the session's resultant density; basically, they are paying for one session and expecting the results that come with two procedures. When a patient finances their procedure, the high interest rate often charged can put additional pressure and stress on them.

DIFFICULT PATIENT

We all see the occasional patient who is over-controlling and difficult personality-wise. They come in with a long list of agenda items and very often will call you by your first name—in order to put you on an equal (or lower) footing with them. When I sense that such a patient isn't going to be happy, no matter what I do for them, I tell them that I am uncomfortable with being their transplant surgeon. On one occasion a few years ago, I told this one obnoxious fellow: "I don't think I'm the right surgeon for you. I don't think you'd be happy with my results."

CLOSING REMARKS

One more important point: have a very low threshold for when to perform a scalp biopsy. You are definitely in for a rocky relationship if you perform a large transplant session on a patient with LPP and you didn't know that at the time.

Another important way to ensure your patient remains satisfied with your transplant skills is to prescribe oral finasteride or minoxidil. This can make a huge difference in the fullness of the final results.

The bottom line is that you have to make your patient happy. If they disagree with your plan or recommendation, they should at least respect you and your message. Today, with the internet being the "Wild West" that it is, you cannot afford to have a single unhappy patient. That one unhappy patient can ruin your reputation. Make your patients your friends, practice with integrity, and you will have a very satisfying career. ■

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those who consider themselves advanced in the art of hair restoration surgery. This technique is time consuming, it requires a lot of patience and precision, and above all, it requires good hand-eye coordination.

Dr. Pierre Bouhanna described performing long hair FUT where the long hair graft technique achieved an aesthetic natural look of hairs. This was due to 1) a fine implantation on the balding area with surgical needles and jewelers forceps allowing the good choice of hair emergence angle, hair orientation, and obliquity; 2) the performance of a fine and irregular "one-by-one" frontal hairline; 3) a good implantation of 2,000–3,000 hairs in each session; and 4) a homogeneous distribution of many more micrografts and follicular units grafts.[3]

In 2016, Dr. Otavio Boaventura described the technique of long hair FUE and a novel punch for manual extractions.[4] Since then, there have been many different punch proposals to execute such a technique. However, questions arise in regards to the quality of the grafts and the difficulty of this technique, which results in a single question: is it worth the effort? It has made us ask what the real tangible indications are to perform such surgery. Among the obvious indications, such as creating an emotional factor by coming out of the surgery with fuller, thicker hair, there are some other more subtle reasons to become proficient in this technique as well.

With the LHP-FUE technique, we haven't reached the excision speed necessary to make it a standard choice for hair transplantation, nevertheless, it provides an ideal solution for some specific cases. These indications may include the following:

- ***No shave:*** There are patients who do not want a post-surgical shaved look for any given reason. These reasons may include any type of scarring from previous scalp surgeries or trauma, the need to return to work immediately after surgery without any sign that a procedure has been done, being at the center of the public eye and not wanting anyone to know they had surgery done, not a nice head shape, etc. That is why some doctors call it "Celebrity FUE."
- ***Limited donor:*** Another indication for its use is when there are doubts about donor area availability. In a recent study performed in Guatemala, it was shown that one can visually analyze the amount of grafts per square centimeter to excise and extract by watching the coverage left form the surrounding hair.
- ***Curvature control:*** This technique is beautiful and ideal for those types of surgeries that require long hair grafts for better curvature control (e.g., eyebrows or eyelashes).

Hair Density Index (HDI) is a mathematical assumption that allows the surgeon to determine the minimum number of FUs needed to be present in order to achieve enough coverage.

OBJECTIVE

The objective of this study was to compare the graft quality from both shaved and long hair FUE by evaluating the following parameters during excision, extraction, and placement:

- Hair per FU coefficient or rate
- Total FUs extracted per square centimeter
- Total transection and partial transection rates
- Number of FUs placed in a square centimeter
- Excision time
- Placing time
- Ease of curvature control

MATERIALS AND METHOD

The materials we used, included the following:

- Trivellini system device
- Flared punch – 0.9mm
- Long hair punch – 0.9mm
- Micropore
- Forester forceps
- Comb
- Tricoscope
- Chronometer
- Lion Implanters

To perform this study, we recruited 10 male patients between the ages of 34 and 47 (mean age of 44). Inclusion criteria were patients with male pattern alopecia Norwood scale between 3 and 5 either anterior, central, or vertex. In addition, patients desired to have hair restoration surgery with the FUE technique, they had no previous hair restoration surgery of any kind, and they had no scars of any type in the study area.

For the EXCISION comparison, two parallel boxes were marked and measured on each patient at the level of the center of the occipital area within the safe donor area. One box was shaved and the other was left with long hair (Figure 1). HDI and the maximum number of FUs to be extracted for a minimum of coverage was measured in both areas. For the shaved box, excision was performed with a rotation motion for 200 milliseconds and at 60% force, followed by asynchronous roto-oscillation for 200 milliseconds, aspiration assisted initiation and a flare out punch of 0.9mm diameter. For the long hair box, excision was performed with an oscillation motion of 240 degrees, at 60% force for 400 milliseconds. It was pedal initiated and used a long hair 0.9mm Trivellini punch (Figure 2). Parameters to be compared were the following:

FIGURE 1. Two parallel boxes were marked and measured on each patient at the level of the center of the occipital area within the safe donor area. One box was left with long hair (left) and the other (*right*) was shaved.

FIGURE 2. Two parallel boxes were marked and measured on each patient at the level of the frontal hair line. One box is intended for dense packing, the other box is intended to achieve enough density for desirable coverage.

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- Total number of FUs extracted per square centimeter
- Total hair count extracted per square centimeter
- Total hair per FU coefficient.
- Time taken to excise and extract all FUs
- Total transection and partial transection rates

For the PLACEMENT comparison of long hair versus shaved hair FUE, two parallel boxes were marked and measured on each patient at the level of the frontal hairline on either side (Figure 2). One box was intended for dense packing with shaved FUs consisting of the frontal-most 2mm with 1-hair FUs and the next 8mm with 2- and 3-hair FUs. The other box was intended to place long hair grafts at a density sufficient to achieve desirable coverage by observing the density preview. Parameters compared were the following:

- Total number of FUs placed per square centimeter
- Placing time
- Curvature control during loading (scale from 1 to 3 where 1 is the easiest and 3 the hardest)
- Curvature control during placing (scale from 1 to 3 where 1 is the easiest and 3 the hardest)
- Incidence of popping (scale from 1 to 3 where 1 is the fewest and 3 the most frequent)

Statistics

The best mathematical statistic option to use to compare when there is significant difference in both groups with a small population (n=10) is the T-test or Student's T-test statistic. The t-test can be used to determine if the means of two sets of data are significantly different from each other.

RESULTS

A total of 10 male patients (n=10) were recruited between the ages of 34 and 47 (mean age of 44). They were all classified within the Norwood Scale in the range between 3 and 5 (with an average of 4.2) regardless of whether location was anterior, central, or vertex. Excision and extraction comparison parameters were averaged and are shown in Table 1.

The number of FUs extracted in the long hair box was significantly higher than the shaved one. The number of follicles per unit extracted was significantly higher in the long hair box than the shaved box. The hairs per FU coefficient in the long hair box demonstrated a significantly lower coefficient of hairs per FU. It took significantly more time to excise and extract all grafts with long hair using the long hair technique. There were no significant differences in total graft transection between long hair and shaved hair FUE procedure.

Regarding the number of FUs extracted in the 10 long hair boxes (M=34.9, SD=1.8) compared to the 10 shaved boxes (M=23.9, SD=2.13), there was a significantly higher number of grafts excised per square centimeter in the long hair box $t(18)=12.5$, $p<0.001$. The number of follicles per unit extracted in the 10 long hair boxes (M=68.9, SD=2.23) compared to the 10 shaved boxes (M=51.8, SD=2.39) demonstrated significantly higher number of hairs per graft excised per square centimeter evaluated $t(18)=16.5$, $p<0.001$. The hairs per FU coefficient in the 10 long hair boxes (M=1.98, SD=0.05) compared to the 10 shaved boxes (M=2.18, SD=0.16) demonstrated a significantly lower coefficient of hairs per FU, $t(18)=-4.11$, $p<0.001$.

The time chronometered to excise and extract all grafts in the 10 long hair boxes (M=13.3, SD=0.67) compared to the 10 shaved boxes (M=7, SD=0.47) demonstrated significantly more time required to excise grafts using the long hair technique $t(18)=26.75$, $p<0.001$.

The total transection rate calculated in the 10 long hair boxes (M=4.9, SD=0.73) compared to the 10 shaved boxes (M=4.2, SD=0.63) demonstrated no significant difference $t(18)=2.277$, $p<0.017$. The partial transection rate calculated in the 10 long hair boxes (M=21.3, SD=2.54) compared to the 10 shaved boxes (M=17.1, SD=1.96) demonstrated a significantly higher rate for the long hair technique $t(18)=4.13$, $p<0.001$.

A comparison of placement parameters is shown in Table 2. The number of long hair follicular units placed per square centimeter demonstrated a significantly lower number of grafts used to achieve coverage compared to shaved dense packing. There was no significant difference in the time taken to place all grafts whether long or shaved. During loading implanters and placing, a significantly higher control of curvature using the long hair technique compared to shaved grafts was demonstrated. Graft popping showed a significantly lower rate during graft placement with the long hair technique compared to the shaved grafts.

TABLE 1. Comparison of Excision and Extraction Parameters

Table No. 1. Comparison of Excision and Extraction parameters.	LONG HAIR BOX	SHAVED HAIR BOX	T-value	P-value
HDI (Hair Density Index)	95	95	—	
Max. FU to extract	28	28	—	
# of Follicular Units extracted	34.9	23.9	12.49	0.00001
Hair Count of extracted grafts	68.9	51.8	16.51	0.00001
Hair/Follicular Unit	1.98	2.18	-4.11	0.00026
Total Time (minutes)	13.33	7	26.75	0.00001
Total Transection rate	5.16%	4.03%	2.277	0.0175
Partial Transection rate	21%	17%	4.13	0.00031

TABLE 2. Comparison of Placement Parameters

Table No. 2. Comparison of Placing Parameters.	LONG HAIR BOX	SHAVED HAIR BOX	T-value	P-value
Follicular Units placed per cm^2	37.9	50	-22.13	0.00001
Total Time	4.57	4.33	1.587	0.0644
Curvature Control Load	1.1	1.9	-2.717	0.007
Curvature Contro Place	1	1.9	-2.717	0.007
Popping rate	1	1.6	-2.6117	0.00884

The number of FUs placed in the 10 long hair boxes (M=37.9, SD=1.66) compared to the 10 shaved boxes (M=50, SD=0.47) demonstrated a significantly lower number of grafts used to achieve coverage using the long hair technique, $t(18)=-22.13$, $p<0.001$.

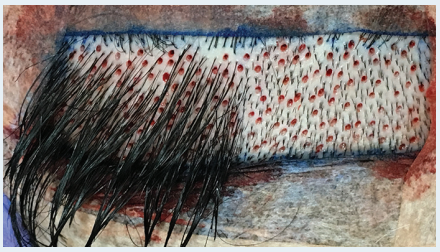
The time chronometered to place all grafts in the 10 long hair boxes (M=4.57, SD=0.38) compared to the 10 shaved boxes (M=4.33, SD=0.32) demonstrated no significant difference in the time taken to place all grafts $t(18)=1.587$, $p=0.064$.

Curvature control during the loading of implanters and placing of grafts in the 10 long hair boxes (M=1.1, SD=0.31) compared to the 10 shaved boxes (M=1.9, SD=0.87) demonstrated significantly higher control of curvature using the long hair technique, $t(18)=-2.71$, $p=0.007$.

Popping rate during placing of all grafts in the 10 long hair boxes (M=1, SD=0.31) compared to the 10 shaved boxes (M=1.6, SD=0.51) demonstrated significantly higher control using the long hair technique, t(18)=–2.611, p=0.008.

DISCUSSION

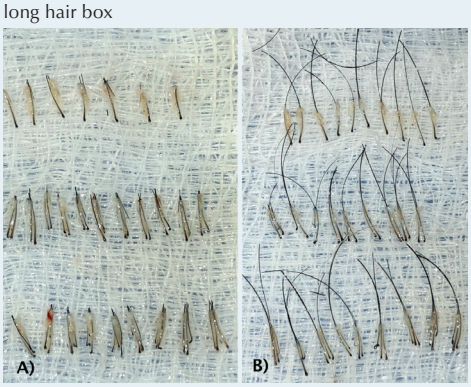
FIGURE 3. Long hair box with excised and extracted follicular units (left) and shaved hair box (right) with excised and extracted follicular units



During the excision and extraction phase of the procedure, we observed that in the long hair boxes, we could extract an average of 20% more grafts compared to the maximum calculated by the HDI for that specific area (Figure 3). This led us to believe that a surgeon could be a little more aggressive (or less, if necessary) than a mathematical assumption. Since HDI depends on the width only and doesn't take into account the color, length, curl, etc., we can conclude that long hair excision and extraction would be a safer method to avoid depleting the donor area.

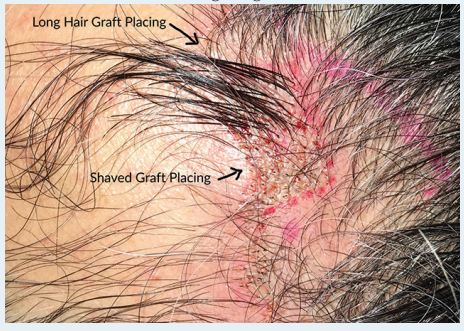
We did see significant difference between the partial transection rates with an 8% higher rate in long hair excision and extractions than shaved; these correlate linearly with the slight 8% fewer hairs per follicular unit calculated in the same group. This means we are "hurting" more grafts in the long hair box than the shaved one, but if we compare with the 20% more grafts extracted in this same box, then we could state that even though we partially transect more, at the end we do get more follicles to the receiving area by extracting long hair FUs. Evaluating total transections in both boxes (long and shaved) showed there was no statistically significant difference between the two techniques (Figure 4).

FIGURE 4. A) FUs from the shaved box; B) FUs from the long hair box



One of the most impressive differences relates to time, as we found that it takes almost twice the time to excise and extract all long hair FUs than shaved ones. The reason this occurs is visibility, as long hair shafts tend to cover the surgical field of view, so jumping from one FU to another to perform excisions and then shifting hair shafts from side to side to extract them usually takes time.

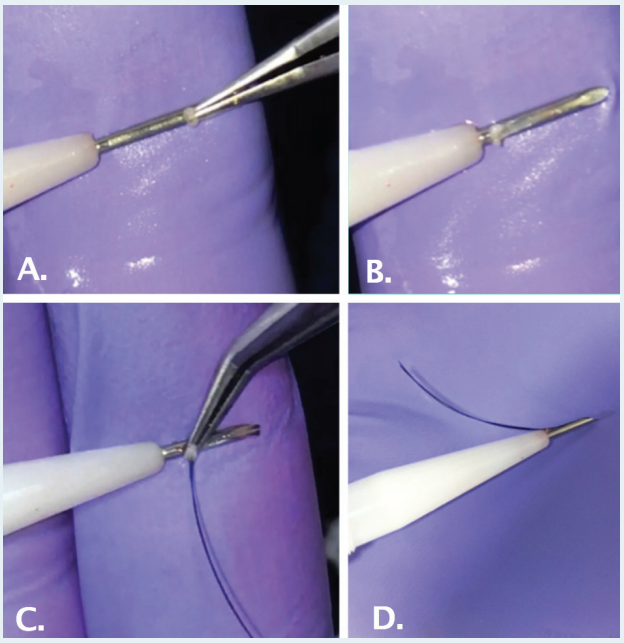
FIGURE 5. Boxes showing long hair and shaved FUs



During placing, there were significantly fewer grafts placed in the long hair box than the shaved (Figure 5). The objective was to dense pack the square centimeter with 50 FUs in the shaved box and see if in the long hair box we would need more or fewer than this number of grafts to achieve the ideal coverage for the area. We needed an average of 24% fewer grafts to achieve the ideal coverage. We still need to understand the specific reasons for this, but we believe the curvature control contributed to this difference. Since we are "pre-viewing" immediately the empty spaces or the wrong curvatures, the long hair technique allows the surgeon on the spot to correct and fill spaces as needed. This immediate preview allows for the saving on grafts that may be redundant to place since a hair shaft is already doing the work. And the time spent to do the placing showed no significant difference between both boxes.

Concerning the curvature control, loading and placing were qualified as easier for the long hair grafts compared to the shaved grafts. The reason it was perceived as easier is that curvature is actually visible in long hair grafts compared to shaved hair grafts where, while loading or placing, one is assuming that the curvature is convex to the sebaceous gland, and one is also assuming that the sebaceous gland was left facing ventrally on the incision. These assumptions were qualified as semi-difficult curves to control (Figure 6).

FIGURE 6. A) Loading shaved hair grafts in implanters; B) assuming curvature control by observing sebaceous gland; C) loading long hair grafts in implanters; D) observing hair curvature for better control



Popping was significantly lower in the long hair box than the shaved box, and we can assume a logical reason for this: there are fewer grafts per square centimeter, which means less tissue pressure from the surrounding tissue.

On a long-term basis, we observed the same rate of growth, the same post-operative effluvium, and same final result (Figures 7 and 8) (which at this point are not a part of this study, pending results to come).

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FIGURE 7. Before and day after long hair FUE

FIGURE 8. Before and day after long hair FUE

Thoughts and Pearls

- Long hair FUE is a challenging technique that requires advanced skill.
- Although shaved FUE is the standard technique, there are clear indications to perform long hair FUE: when there is a desire to not shave the patient, when there are doubts of donor availability, or when extra control of the hair shaft curvature is required. Note that in patients who are unwilling to undergo shaving of the donor area, the alternative to using long hair FUE is a no-shave FUE technique that some surgeons utilize whereby only the hairs from the individual FUs that are to be extracted are trimmed.
- Long hair FUE is still a slow process that causes a slight increase in partial transections, but it stretches the boundaries in regards to maximum donor availability and minimum density needed for coverage in the recipient area.
- I strongly suggest to continue this study in a larger scale with proficient surgeons in this technique.

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Repairing Widened FUT Donor Scars

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ABSTRACT

Introduction: Hair transplants are on the rise worldwide. There are two methods for donor harvesting: FUT (linear excision) and FUE (follicular unit excision). Both methods result in scars; FUT results in a linear scar, and FUE results in diffused small scars.

Objective: How to treat widened donor scars that result from FUT.

Material and Methods: Different methods of repair, such as scalp micropigmentation (SMP), scar revision, and hair grafts, are discussed showing how to improve the widened donor scar.

Results: Using FUE and placing grafts inside the widened donor scar is the best method in my hands for achieving good results.

Conclusion: If the patient keeps their hair long enough, it will cover the hairless widened scar. When done properly, SMP can also achieve good results and camouflage the scar. However, the result of scar revision is unpredictable.

Key words: donor scar, scar revision/repair, widened scar, hypertrophic scar, keloidal scar, atrophic scar, follicular unit transplantation (FUT)

INTRODUCTION

A widened donor scar as a result of strip excision surgery is of concern to patients since they are unable to wear their hair short due to visibility of the hairless, widened donor scar.

There are many factors that may lead to a widened donor scar. Characteristics that put an individual at higher risk include age (younger patients), patients with Ehlers-Danlos syndrome type II, or those with loose scalps. Physician factors include using an overly aggressive surgical technique (the surgeon excises the strip too wide), performing multiple surgical strip excisions on a single patient, and poor closure technique. Additionally, Asian and African skin types may tend to scar more than their Caucasian counterparts.

What can a surgeon do to avoid creating a widened scar? First, we have to assess the patient conditions noted above. The strip should not be taken too wide, especially at the mastoid area. More than 10 years ago, Patrick Frechet noted that if the strip is excised with a width of 1cm utilizing a lower trichophytic closure while undermining upper and lower incisions, this will result in an invisible scar.[1] However, since that time, historically, the average surgical case has been tasked with obtaining a higher and higher number of grafts per session, and the strip obviously has become wider and longer, thus resulting in widening of the donor scar in many patients. In subsequent sessions, if the strip is excised from within the old scar (but the entire width of old scar is not removed), the subsequent scar will usually be wider than the initial scar. In addition, the graft yields are less due to the presence of the initial widened scar and lower density close to the scar.

How wide of a donor scar should be considered in need of revision/repair? Unless the patient wants to wear their hair very short, I believe that a scar less than 3mm in width may not need to be repaired, since it is still cosmetically acceptable.

Types of Scars

There are many types of scars: hypertrophic, keloidal, atrophic, normal. Hypertrophic and keloidal scars are generally treated medically with intralesional steroid injections.

If intralesional steroid injection in keloid fails, we might consider intralesional injection of 5% fluorouracil. Excision of the keloid will usually result in the same keloidal scars or sometimes it will be even wider; in other words, the result is unpredictable. Silicone gel sheet can be used, but it is difficult to apply on the scalp.

If the patient does not benefit from injection, surgical excision of the scar should be considered. However, the patient needs to be informed that the result might be the same. Intralesional steroids can be injected post-op monthly for at least 3 months. It usually requires several injections to minimize the scar. Donor scars between 5mm and 2cm can usually be repaired by simple scar excision/revision. However, a scar wider than 2cm might need serial excision or tissue expansion.

Timing of the Repair

Scars usually mature within 6-12 months.[2] In timing the repair, it is best to wait "the longer the better" so that the scar has completely matured. If the patient does not require further hair transplantation by follicular unit transplantation (FUT), a minimum of one year after surgery is an appropriate period of time to entertain subsequent scar revision. However, if the patient requires subsequent hair transplantation, the scar can be included in the strip excision in those surgeries.

METHODS

There are many methods to address the scar's appearance:

1. ***Do nothing:*** Don't do anything but keep the hair long to cover the scar.
2. ***Scalp micropigmentation (SMP):*** SMP is my first choice for improving scar appearance. A few sessions of SMP are usually needed. However, some religions prohibit tattoos on the body. For these patients, we select another method for reducing the visibility, such as either using follicular unit excision (FUE) and placing grafts inside the scar or by performing a full scar revision. Figure 1 shows before and after photos following

FIGURE 1. The widened donor scar *(left)* and after 1 session of SMP *(right)*

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one session of SMP with improvement (the patient will return for touch up at a later time).

3. ***FUE grafts:*** The length and the width of the scar is measured in centimeters, and the number of grafts is calculated accordingly. Donor hair can come from body hair or, if still available, scalp hair. In my experience, achieving 20% (of normal) density is an appropriate cosmetic goal to decrease the appearance of the scar in the majority of patients. If this density is not sufficient, some SMP may be added instead of "wasting" more donor hairs to place inside the scar. This density requirement must be assessed and designed individually. Figure 2 shows a widened donor scar before and 6 months after placing 316 FUE grafts (584 hairs) into the donor scar. This patient also had SMP previously, but it faded away. I am still using a needle instead of a punch (the method recommended by Dr. Jennifer Martinick[3]) with no problems with graft survival.

FIGURE 2. The widened donor scar *(left)* and 6 months after FUE grafts *(right)*

4. ***Scar revision:*** Scalp laxity is very important when considering scar revision. If the scalp is too tight, utilizing scar revision will likely fail. If the patient has average laxity, they are advised to perform pre-operative scalp stretching exercises for at least 4-6 weeks before scar revision. A clinical reassessment after that time, using LaserLax or the finger glide method recommended by Dr. Jerry Wong,[4,5] will determine whether the laxity is sufficient for scar revision The patient must be informed that the result of scar revision might be an improved appearance, might be the same, and, in the worst-case scenario, might even appear wider. It is helpful to partially excise a smaller length of scar and observe the results; however, most patients want to have the entire scar removed in one procedure. Figure 3A shows pre-op widened donor scar one year after 2 "mega" FUT sessions. Figure 3B shows the intra-operative excision with placement of subcuticular sutures comprising the first part of a two-layer closure. Figure 3C shows the skin closure using an absorbable running suture. Figure 4 shows before and 4 months after a w-plasty procedure with no improvement; however, the patient was happy with the result.

The key to successful revision is to try to minimize follicular transection during incision, since transected hairs result in healing without hair. The dissection must be meticulous, and an open technique would be best to use in dissecting out the scar.[6] The excision should include the entire scar. The hair can be teased during dissection to leave the hair intact along the side wall on both sides of the incisions

FIGURE 3. *A:* pre-op; *B:* scar excision and subcuticular closure; *C:* completed closure of the skin

FIGURE 4. The before *(left)* and 4 months post-operative *(right)*

without performing a trichophytic closure. The extra hair left in the excised scar can be dissected into grafts then placed between the suture after the initial closure is completed. The closure must have minimal or no tension, whether a one- or two-layer closure is used.

I do not undermine the skin surrounding the incision as I used to do in the past, since it does not help cosmetically and creates neurovascular damage and increased operative time.

There were a total of 9 patients who underwent revision of widened donor scars in my practice from 2010-2019: 3 cases by scar revision, 7 by FUE graft placement into the scars (one of the grafting procedures was performed on a patient who first underwent a scar revision with some improvement but requested further refinement to hide the scar through FUE grafting). It would be appropriate to wait at least 1 year before placing the grafts after scar repair or strip excision. (See "Timing of the Repair" above).

CONCLUSION

In my experience, FUE graft placement into widened donor scars resulted in the best overall cosmetic appearance compared to full scar revision or SMP. However, we have to assess whether it is worthwhile to utilize the limited supply of donor hair available that might be needed in the future, both to repair the donor scar (should further strip excisions be performed) as well as to address ongoing male pattern hair loss. In addition, body hair might be an alternative to using scalp hair.

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Invited Commentary

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Dr. Pathomvanich's article is very well done and updates donor strip scar treatment. Also, Mike Beehner's comments about donor closure on page 122 should be read.

My experience (from around 1994-2015 with wide donor strip scars) comes mostly from about a dozen cases of prior multiple donor harvests and or unsatisfactory scar revisions. So, these strip scars were up to 4cm in height and the scalps were very tight. My solution was tissue expansion, which would take 6-8 weeks as the scalps were very tight and subgaleal insertion of an expander often was difficult. It had to be inserted through incisions in the posterior parietal areas and the subgaleal dissection across the scalp to the scar under sterile operating conditions.

To create a pocket for a large 15cm round or semicircular expander was often difficult. Undermining had to be done almost to the front hairline. Using an expander with tabs made the insertion easier because a clamp could be inserted across the dissected area and the expander pulled in across the scalp vertex. The injection port often was best to be externalized. The definitive repair involved complete excision of scar tissue and a two-layered closure with minimal tension. Usually, the lower edge of the subsequent repair was minimally undermined neck skin containing some subcutaneous scar tissue but no galea.

It was my experience with Juri flaps, dating back to the late 1970s, that the galea-to-galea repair rarely gave a widened scar whereas upper neck skin did.

My experience with primary and secondary donor scars parallels that of Damkerng's. However, I believe that a donor site trichophytic donor strip closure can, at least in my hands, be a wasted effort. A trichophytic closure works best when a hair-bearing flap edge is meeting a non-hair-bearing skin edge, such as with a hairline incision, different than the case of donor site scar closures where both edges are hair-bearing. ■

Oral Nitroglycerin and Hair Transplant Surgery

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ABSTRACT

Hair restoration surgery is performed under local anesthesia. The use of epinephrine reduces blood loss during the procedure. However, a few cases of scalp necrosis related to the use of local anesthetics with epinephrine have been reported, especially in smokers. We present a case report in which the area of early necrosis was prevented from advancing by using nitroglycerin (sublingual).

Key words: epinephrine, nitroglycerin, scalp necrosis

INTRODUCTION

Hair restoration surgery is one of the most commonly performed cosmetic surgery procedures in men. The procedure is normally performed under local anesthesia. The use of epinephrine reduces blood loss. However, a few cases of scalp necrosis related to the use of local anesthetics with epinephrine have been reported.[1,2] Of further concern are populations with compromised circulations, particularly smokers.

We hereby report a case in which the reversal of compromised skin circulation is likely attributed to the use of nitroglycerin immediately after hair transplant surgery.

CASE REPORT

A 40-year-old male, Norwood VI, underwent hair restoration surgery by strip harvest (Figure 1). Tumescent anesthesia using 1% xylocaine with 1:100,000 dilution of adrenaline was used to anaesthetize the donor and recipient areas. The removal of the strip and the stitching of the wound took about 30 minutes. After creating the slits in the recipient area, a few patches of pale colour appeared in the frontal area, which were monitored during graft placement. At the end of the surgery, the patient was given 6.5mg of oral, sublingual nitroglycerin, which was continued for another 3 days along with 150mg oral aspirin. The patient was called the next day and he reported that there were a few bluish-colored patches in the recipient area (Figure 2). The patient was followed up on regularly, and the bluish patches turned into necrotic patches. After about 3 weeks, the patches fell off spontaneously and did not require any debridement or surgical excision. The skin healed nicely, forming a scar. The growth of the transplanted hair was also visible in those patches (Figures 3 and 4).

FIGURE 1. Pre-operative phots of the patient

IGURE 2. Post-operative photo after 24 hours

FIGURE 3. Patch of healed areas of necrosis on right side

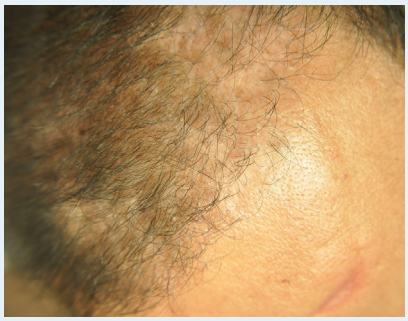
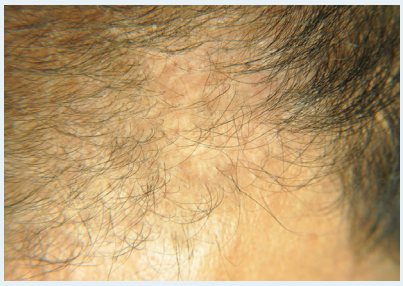


FIGURE 4. Patch of healed areas of necrosis on left side



DISCUSSION

Tumescent anesthesia is a mainstay in hair restoration surgery. It results in less bleeding, hence helps in hemostasis. The use of adrenaline, often contained in the tumescent solution, has potential to cause tissue necrosis in "non-end" arteries in locations such as the upper lip, scalp, and scrotum.[1] Although rare, a few cases of skin necrosis have been reported after hair restoration procedures.[1,2] Because smoking results in decreased blood flow to the areas, the use of adrenaline in these patients can be potentially dangerous. Although the concentration of adrenaline is very low and the action is short lived, the potential insult may cause irreversible damage to the affected area.

The use of nitroglycerin is not new. It is used to increase blood flow for compromised flap circulation.[3] It is also used in management of ischemic complications resulting from soft tissue augmentation with filler in aesthetic practice.[4] The nitroglycerin increases mean blood flow and is available in the form of tablets, ointment, sprays, capsules, patches, and solution, with the onset of action, when given transdermally, topically, or sublingually, within 30 minutes. The quick reperfusion of compromised vascular supply decreases the chances of tissue necrosis.

As tumescent anesthesia is used in hair restoration surgery, the chances of skin necrosis are increased and likely more so in patients with diabetes or who smoke. In such cases, prolonged ischemia may be irreversible. Nitroglycerin in oral (sublingual) form was used in the patient presented

here because it was not possible to use ointment or spray on the newly grafted area. Moreover, the duration of action of topical nitroglycerin is shorter as compared to the oral dose. The oral (sublingual) dose increases blood flow uniformly, hence decreasing the risk of ischemia-related injury to occur. The prolonged duration of action also helps to decrease the total dosage of the drug. The use of an anticoagulant, such as aspirin, is also indicated to treat cutaneous tissue ischemia. The prompt management in this case theoretically resulted in early removal of necrotic skin and subsequent epithelialization of the wounds. The affected area also exhibited hair growth, which suggests that there was increased blood flow in the affected area.

In the current case, the patient developed signs of tissue ischemia as patches of skin necrosis (Figures 3 and 4). We speculate that the immediate use of nitroglycerin resulted in vasodilatation of the vessels, which reduced tissue damage. Improvements in skin color and hair regrowth were also seen in the affected areas at the follow-up visit.

An interesting method to minimize vascular compromise to the recipient area of the scalp was described by Feily et al in which the hairs are transplanted 24 hours after recipient site creation.[5] But this method has a few limitations. First, the recipient sites need to be created one day before the harvesting of follicular units by strip harvest or by follicular unit excision (FUE). Second, it increases the cost and morbidity of the surgery. With an increase in surgeries transplanting large numbers of grafts, there have been reports of necrotic areas developing after hair transplantation. The initial necrotic areas should be managed conservatively. Removing the necrotic area results in a larger wound and increases the morbidity. The larger number of skin incisions (slits) result in vascular compromise in potential patients, especially smokers. The size of incision and the angle of inclination with the skin are very important.[6,7] The more acute the angle of insertion, the larger the wound will be. The authors recommend that although skin necrosis is very rare, because it poses a potential danger to the patient with compromised blood flow, immediate and vigilant use of vasodilators like nitroglycerin can reduce morbidity and can prevent potential skin necrosis. The cardiologist and anesthetist must be consulted when prescribing aspirin and nitroglycerin.

CONCLUSION

The hair restoration surgeon must be vigilant for any immediate complication arising in the hair restoration procedure and be prepared to address this complication. In our case, the use of oral (sublingual) nitroglycerin immediately after hair transplant surgery most likely resulted in vasodilatation of the vessels, which reduced tissue damage.

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Hair Transplantation in a Patient with a Renal Transplant

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ABSTRACT

Introduction: Necessary precautions should be taken to reduce the risk of infection and compromised wound healing that can be occur in patients, such as organ transplant recipients, who take immunosuppressives or corticosteroids. We report on Follicular Unit Transplantation (FUT) in a patient with a prior renal transplant.

Objective: This case study looks at preventive measures to minimize the risk of infection, poor wound healing, poor growth, and failure in hair transplant outcome for patients who have had an organ transplant.

Methods and Materials: A 26-year-old, Ludwig's grade II female came to our office with history of a renal transplant 11 years previously. Her medications were CellCept® 750mg/d, Sandimmune (cyclosporine) 125mg/d, prednisolone 5mg/d, aspirin 80mg/d, diltiazem 120mg/d, ranitidine 150mg/d and folic acid 1/d. The patient needed 2,000 grafts and the decision was made to perform a single FUT surgery. According to the consultation, aspirin and folic acid intake were discontinued two weeks and 10 days before surgery, respectively. Prednisolone intake was converted to stress dose 3 days before surgery and continued 3 days after surgery. It was then tapered to 10mg/d for 3 days and returned to normal daily dose on post-surgical day 7. In addition, oral cephalexin was started 2g/d 3 days prior to surgery. Other medicines were continued at the previous doses.

The patient was operated on under sterile conditions using tumescence on both the donor and recipient areas. Hyalase and trichophytic closure was used for strip harvesting. The Making Incisions First (MIF) method with custom blades was utilized to make recipient sites. Antibiotic intake was discontinued one week after surgery, at which time aspirin and folic acid were restarted.

Results: The patient was examined daily for two weeks after surgery. She had no signs of bleeding or infection. She was followed monthly up to one year. The outcome of hair transplantation and also wound healing was satisfactory.

Conclusion: We achieved very good results from hair transplantation in an immune deficient patient by choosing the proper technique and taking preventive measures against infection and poor wound healing. In addition, we consulted with the patient's appropriate medical specialists to change or stop some medication doses.

Key words: follicular unit transplantation (FUT), making incisions first (MIF) method

INTRODUCTION

Although infection in the donor and recipient sites after hair transplantation is rare, it is more likely to occur in patients who take immunosuppressives or corticosteroids for any indication such as for organ transplant. Therefore, necessary precautions should be taken to reduce the risk of infection as well as compromised wound healing that can also occur in these patients. We report on FUT hair transplant surgery in a patient with a renal transplant.

CASE REPORT

In 2017, a 26-year-old Iranian female came to our office. She had history of a renal transplant 11 years previously. The patient was classified as Ludwig's grade II pattern hair loss. Her weight was 63Kg; she had black hair color, moderately thick caliber and wavy. The patient had no history of hospitalization due to infection or any other causes in the 11 years following her kidney transplant. She had been treated in the past with minoxidil 2% and 5% and low level laser therapy, as well as supplements to control hair loss. She discontinued these therapies, and upon return to our clinic four years later for hair restoration (Figure 1), her only medications were those required because of the kidney transplantation and with the dose are listed below:

CellCept	750mg/d
Sandimmune(cyclosporine)	125mg/d
Prednisolone	5mg/d
Aspirin	80mg/d
Diltiazem	120mg/d
Ranitidine	150mg/d
Folic acid	1/d

Nephrology, internal, and cardiovascular consultations were obtained, as well as consultation with Dr. Ron Shapiro. All agreed that surgery could proceed on the condition that the dosage of some medicines was stopped or changed temporarily. The most common risk factors were presented to the patient, which included infection and delayed healing in the donor and recipient areas and poor hair regrowth, and informed consent was obtained.

FIGURE1. Patient before hair transplant surgery

The patient needed 2,000 grafts on the frontal and midscalp areas, and the decision was made to perform a single FUT surgery to minimize trauma and stress and reduce the duration of surgery.

Aspirin and folic acid intake were discontinued 2 weeks and 10 days before surgery, respectively. Prednisolone intake was converted to stress dose (15mg/day) 3 days before surgery and continued 3 days after surgery, tapered to 10mg/day for 3 days, and then returned to normal daily dose on the seventh day. Immunosuppressives (CellCept and Sandimmune) along with diltiazem and ranitidine were continued at the previous doses. Antibiotic prophylaxis of oral cephalexin was started 2g/d 3 days prior to surgery.

CLINICAL COURSE

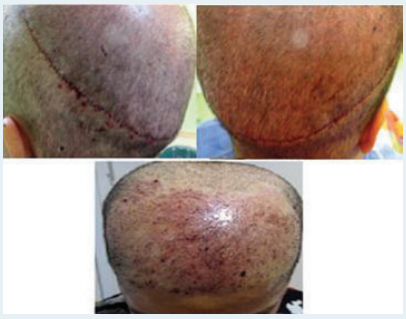
The patient was given 5mg of oral diazepam one hour before surgery. Surgery was started under sterile conditions, the patient's pulse rate was 97/min and blood pressure was 135/80mmHg. Next, 20cc of tumescence consisting of epinephrine 1/100,000, 2% lidocaine, triamcinolone acetonide 40/100,000, and 2cc of 7.5% sodium bicarbonate was injected in the strip of donor area. Also, 3cc of Hyalase was injected into the upper margin of the strip (32cm length to 13mm width) and the strip was harvested.

Trichophytic closure was performed in both upper and lower margins. Subcutaneous layer and skin were sutured with 2-0 cutting Vicryl and 3-0 cutting Nylon without tension, respectively. After prep and drape of recipient area, supraorbital block was performed by using 5cc of adrenalized 2% lidocaine and the tumescent fluid was injected in the frontal and mid-scalp areas. The Making Incisions First (MIF) method was used to make recipient sites using custom blades with widths of 1mm, 1.3mm, and 1.4mm and length of 3.8mm.

A total of 1,940 incisions were created in the frontal and mid-scalp areas, and 2,040 grafts were transplanted in these areas. The length of the transplanted area was 10.5cm from the hairline, and the width was 19cm. The duration of surgery was 4.5 hours. The patient was discharged in good general condition, with medical orders prescribed (drug/dose) as per below:

Prednisolone	15mg for the first 3days
Taper to	10mg for next 3 days
Taper to	5mg from 7thday
Diltiazem	120mg/d
Sandimmune	125mg/d
CellCept	750mg/day
Acetaminophen w/codeine	PRN
Ranitidine	150mg/d
Cetirizine	10mg/d
Topical ointment tetracycline	3 times/d

FIGURE 2. Donor (*top*) and recipient (*bottom*) areas first day following hair transplant surgery



The patient's dressing was removed the next day (Figure 2) with no signs of bleeding or infection. She was examined daily for two weeks after surgery. Antibiotic intake was discontinued one week after surgery, at which time aspirin and folic acid were restarted. Sutures were removed on post-surgical day 14. The patient was advised to lubricate the scar twice daily with tetracycline ointment for 1 month after surgery. "Shock loss" commenced at day 11.

Figure 3 shows the status of the donor and recipient areas on post-surgical day 14; Figures 4 through 6 show the status 3 months, 6 months, and 1 year post-operatively.

CONCLUSION

Hair transplantation for immune deficient patients such as organ transplant recipients should be accompanied by preventive measures against infection as well as attention paid to the prescribed medications; consultation with a cardiologist, internist, and other appropriate specialists also should be undertaken. Prophylactic antibiotics should be considered. The surgical time should be kept to a minimum with as much work done in a single procedure to minimize the need for further work. We decided to perform this procedure using the FUT technique due to the shorter surgical time. Consideration of all of the above factors led to an excellent outcome.

FIGURE 3. Donor (*top*) and recipient (*bottom*) areas after 2 weeks

FIGURE 4. Donor (*top*) and recipient (*bottom*) areas after 3 months

FIGURE 5. Donor (*top*) and recipient (*bottom*) areas after 6 months

FIGURE 6. Donor (*left*) and recipient (*right*) areas after 1 year

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Call for Nominations for Awards

Deadline for nominations: July 31, 2020

This is your chance to nominate a deserving peer for one of these prestigious ISHRS awards:

Golden Follicle Award • Platinum Follicle Award • Distinguished Assistant Award

Members in good standing may complete an online form, found at https://www.registration123.com/ishrs/NOMINATION2020/, to nominate individuals for the Golden, Platinum, and Distinguished Assistant Awards with an explanation of why the person is deserving of the award (specify which award) by July 31, 2020.

Specific information and accomplishments should be included on the nomination. All nominees will be reviewed and voted upon by the Scientific Research, Grants, & Awards Committee or Surgical Assistants Awards Committee. The awards will be presented on Sunday, October 25, 2020, from 11:30AM to 12:00NOON Central/Chicago time, during the 28th World Congress, which is being held virtually in 2020.

Golden Follicle Award Criteria

- Outstanding and significant clinical contributions related to hair restoration surgery.
- The recipient must have been the principal person involved in clinical research or in developing innovations or made a significant contribution furthering the advancement of hair restoration.
- The work of the recipient must have resulted in demonstrated improved patient outcomes.
- The recipient may not have been awarded the Golden or Platinum Follicle Awards within the previous 5 years. (Exceptions may be made in the event of extraordinary circumstances regarding new work conducted by the nominee.)
- The recipient will preferably be a member of the ISHRS, however, non-members whose work has been significant may be considered.

Platinum Follicle Award Criteria

- Outstanding achievement in basic scientific or clinically-related research in hair pathophysiology or anatomy as it relates to hair restoration.
- The recipient must have been the principal investigator involved in basic scientific or clinically-related research related to hair restoration.
- The results of the research must represent significant advancement the science of hair restoration.
- The recipient may not have been awarded the Golden or Platinum Follicle Awards within the previous 5 years. (Exceptions may be made in the event of extraordinary circumstances regarding new work conducted by the nominee.)
- The recipient will preferably be a member of the ISHRS, however, non-members whose work has been significant may be considered.

Distinguished Assistant Award

- Presented to a surgical assistant for exemplary service and outstanding accomplishments in the field of hair restoration surgery. Examples of exemplary service may include, but are not limited to, extending superior patient care, developing new protocols (related to clinical care or office management), actively participating in ISHRS events and projects, assisting in research or contributing to the advancement of the science of hair restoration surgery, implementing new tools or techniques, maintaining the highest standards, and showing dedication to the field of hair restoration surgery.

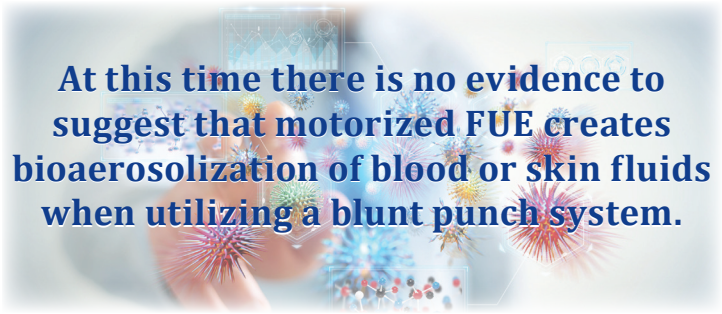
COVID-19 Task Force Updates

The ISHRS COVID-19 Task Force commissioned the FUE Advancement Committee to investigate the question of whether motorized FUE would produce aerosol of blood or skin, as this could be cause for concern in relation to the potential spread of COVID-19. Dr. James Harris, Chair of the FUE Advancement Committee, details the findings to date below.

Air Sampling for Bioaerosolization of Blood and Skin Tissues During Motorized FUE

James A. Harris, MD, FISHRS | *Greenwood Village, Colorado, USA* | jharris@hsccolorado.com

The COVID-19 pandemic and the possibility of airborne transmission of the virus has raised the question of whether or not FUE could create bioaerosols and pose a threat to physicians and staff during these procedures. After discussions with researchers in the department of environmental engineering at the University of Colorado-Boulder, a study was designed to help answer this question.



Briefly, the study protocol utilizes a Dylos Air Quality Monitor (DC 1700-PM) set to sample the number of particles/cubic foot of ambient air. The device can measure particles in the following size ranges: 0.5µm to 2.5µm and >2.5µm. The air is sampled under a 24-inch acrylic dome so that ambient room airflow is minimized. The particle counter was placed 8-10 inches from the surgical site, and air samples were obtained for 3-5 minutes in the following conditions:

- **Baseline:** reading after the patient is in position and prepared for surgery
- **Punch Rotation:** instrument turned on and running, stationary under the dome
- **Simulated Surgery:** instrument operating, surgeon moves the instrument in surgical motions without making contact with the skin.
- **Surgery:** actual FUE surgery using a blunt punch system at a rotation speed of 2,000-3,000 RPM

The preliminary analysis of the differences between the particle counts during the different conditions were analyzed and a t-test revealed that there was no difference in the particle count during a simulated FUE surgery and the actual FUE surgery (p-value = 0.6355).

It is believed that FUE with a blunt punch system would represent the worst-case scenario and if there was to be bioaerosolization during FUE it would be detected during this study. Having said this, we are also planning to conduct the same study using different FUE systems, such as the Mamba and the WAW.

In summary, at this time there is no evidence to suggest that motorized FUE creates bioaerosolization of blood or skin fluids when utilizing a blunt punch system. Additional studies are required to test other systems. It remains the recommendation of the FUE Advancement Committee and the ISHRS to adhere to all safety protocols for the prevention of COVID-19 transmission. ■

ISHRS 2020 VIRTUAL

VIRTUAL 2020

OCTOBER 17-25
ISHRS 28TH WORLD CONGRESS
Connecting Ideas and Surgeons from Around the World

CDT* TIME	FRIDAY 16	SATURDAY 17	SUNDAY 18	MONDAY 19		TUESDAY 20	
	AUDITORIUM	AUDITORIUM	AUDITORIUM	AUDITORIUM	FIRESIDE CHAT	AUDITORIUM	FIRESIDE CHAT
7:00				101 Hairline		201 Scar Optimization & SMP	
7:30		PRELUDE	PRELUDE				
8:00	Welcome Drink & Platform Orientation	GENERAL SESSION 1 *New and Exciting 21st Century Surgery*	GENERAL SESSION 3 *Donor & Recipient*				
8:30					Fireside Chat 101		Fireside Chat 201
9:00				102 Beard, Eyebrows, Body Hair		202 Injectables: PRP, Exosomes, Stem Cells	
9:30		BREAK	BREAK				
10:00		PRELUDE	PRELUDE				
10:30		GENERAL SESSION 2 *Hair Follicle Regeneration I* Norwood Lecture Angela Christiano	GENERAL SESSION 4 *Hair Follicle Regeneration 2 & Implanters* Guest Lecture Alexey Terskikh		Fireside Chat 102		Fireside Chat 202
11:00				103 FUE Basics		203 Advanced Surgical Cases	
11:30							
12:00			ISHRS GENERAL MEMBERSHIP BUSINESS MEETING & AWARDS ZOOM				
12:30					Fireside Chat 103		Fireside Chat 203
13:00							
19:00							
19:30							
20:00							

EXHIBIT HALL • LIVE

Visit 28thannual.org for detailed program outline.

WORLD CONGRESS PROGRAM AT-A-GLANCE

OCTOBER 2020

MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY	SATURDAY	SUNDAY
12 VIRTUAL 2020 OPENS	13	14	15	16 WELCOME DRINK	17 GENERAL SESSIONS	18 GENERAL SESSIONS
19 FOCUSED SESSIONS	20 FOCUSED SESSIONS	21 FOCUSED SESSIONS	22 CSI	23 INDUSTRY SYMPOSIA	24 GENERAL SESSIONS	25 GENERAL SESSIONS

VIRTUAL 2020 Remains On-Demand for 3 Months

WEDNESDAY 21		THURSDAY 22	FRIDAY 23		SATURDAY 24	SUNDAY 25		CDT* TIME
AUDITORIUM	FIRESIDE CHAT	BREAKOUT ROOMS	AUDITORIUM		AUDITORIUM	AUDITORIUM		
301 Long-hair Preview & No-shave FUE		CSI DISCUSSION GROUPS 1 ZOOM	INDUSTRY THOUGHT LEADERS SYMPOSIUM 1					7:00
					PRELUDE	PRELUDE		7:30
				EXHIBIT HALL • LIVE	GENERAL SESSION 5 *Non-Surgical Treatments & Scarring Alopecias*	GENERAL SESSION 7 *Interesting Scientific Papers* **Advances Lecture Maksim Plikus**	EXHIBIT HALL • LIVE	8:00
	Fireside Chat 301		INDUSTRY THOUGHT LEADERS SYMPOSIUM 2					8:30
302 Implanters					BREAK	BREAK		9:00
					PRELUDE	PRELUDE		9:30
					GENERAL SESSION 6 *The Patient* **Stough Lecture Danielle Ofri**	GENERAL SESSION 8 *Open Dialogue: Congress Best Topics*		10:00
	Fireside Chat 302							10:30
303 Designing Research Projects						AWARDS CEREMONY ZOOM		11:00
								11:30
	Fireside Chat 303							12:00
								12:30
		CSI DISCUSSION GROUPS 2 ZOOM						13:00
								19:00
								19:30
								20:00

GENERAL INDICATOR	Los Angeles	CDT TIME Chicago*	São Paulo	London	Rome	Athens	New Delhi	Beijing
	06:00	08:00	10:00	14:00	15:00	16:00	18:30	21:00
	6:00 am	8:00 am	10:00 am	2:00 pm	3:00 pm	4:00 pm	6:30 pm	9:00 pm

*CDT = Central Daylight Savings Time/ Chicago Time
Time zone conversion tool at: https://www.timeanddate.com/

FOCUSED SESSIONS

28TH WORLD CONGRESS VIRTUAL 2020 OCTOBER 17-25

Sara M. Wasserbauer, MD, FISHRS | USA
Workshops Chair

Focused Sessions allow Congress attendees to join sessions specific to their interest and experience level in the field of hair restoration surgery. The program has been designed so attendees can attend all 9 focused sessions if they would like. Each session will be followed by a 30-minute fireside chat to further discuss the content presented in the session.

MONDAY/OCTOBER 19, 2020

7:00AM-8:30AM CDT

***Focused Session 101:* Hairline Design – The Art of Hairline Design: Male, Female, and Transgendered**

Level: All levels
Co-Directors: Jeffrey S. Epstein, MD, FISHRS | USA and Mauro Speranzini, MD | Brazil
Faculty: Russell Knudsen, MBBS, FISHRS | Australia, Jae Hyun Park, MD, PhD | South Korea, Piero Tesauro, MD | Italy
Description: Fluid, artistic hairline design is the key to elevating results for your patients. Knowledge of naturally occurring patterns in all genders can improve any surgeon's outcomes. This session will discuss methods of and tricks for optimal hairline placement, review the state-of-the-art for hairline design, and help to develop the skills needed to consistently deliver aesthetic excellence for your patients.

9:00AM-10:30AM CDT

***Focused Session 102:* Beard, Eyebrows, and Body Hair**

Level: All levels
Director: Henrique N. Radwanski, MD | Brazil
Faculty: Marco N. Barusco, MD, FISHRS | USA, Kapil Dua, MBBS, MS, FISHRS | India, Gorana Kuka Epstein, MD, FISHRS | Serbia, Carlos Eduardo Leão, MD | Brazil, Jose C. Muricy, MD | Brazil, Jose Rogério Régis, MD | Brazil, Pradeep K. Sethi, MD | India, Sara M. Wasserbauer, MD, FISHRS | USA
Description: Hair transplantation on the scalp is only one aspect of our specialty. In the past decade, with the development of FUE, the number of surgeries involving scalp-to-eyebrow, body-to-beard, and beard-to-head hair transplantation, as well as other combinations, have increased our ability to approach other areas besides the scalp. Each of these surgeries has unique technical issues and artistic considerations that beginners and accomplished surgeons need to learn. Join us for an in-depth exploration of body, brow, and beard transplantation from some of the world's most experienced experts using both FUT and FUE techniques.

11:00AM-12:30PM CDT

***Focused Session 103:* FUE Basics – Basics of FUE: Types of Machines and Punches and When to Use Them**

Level: Beginner
Co-Directors: Conradin von Albertini, MD, FISHRS | Switzerland and David S. Josephitis, DO, FISHRS | USA
Faculty: Bruno F. Ferreira, MD | Portugal, Emorane Lupanzula, MD | Belgium
Description: Follicular Unit Excision (FUE) is performed worldwide with as many variations in technique as there are practitioners. With this much variety, how do you incorporate the best and most effective FUE into your practice? This course will review the bare bones of FUE along with the main types of machines and punches, specialized equipment, and the current standards of care in the industry. Even if you have been doing FUE for a while, this session will be an invaluable way to explore other machines, equipment, and techniques to elevate and broaden the capabilities of your practice.

TUESDAY/OCTOBER 20, 2020

7:00AM-8:30AM CDT

***Focused Session 201:* Scar Optimization – Make it disappear! Surgical Scar Optimization and SMP for Any Hair Transplantation Technique**

Level: Intermediate
Co-Directors: Akaki Tsilosani, MD, PhD, FISHRS | Georgia and Robert S. Haber, MD, FISHRS | USA
Faculty: Alex Ginzburg, MD, FISHRS | Israel, Marcelo Pitchon, MD | Brazil, Antonio S. Ruston, MD | Brazil
Description: Modern hair surgeons can confirm that scars in the donor area are one of the primary decision points a patient uses to choose surgical method, and that unsightly scars are one of the most significant sources of patient dissatisfaction. This course will explore intra-operative methods for optimizing surgical scars and techniques for reducing scar visibility or treating suboptimal outcomes. Several methods will be explored including micropigmentation, surgical excision, injections, and wound healing products and protocols.

9:00AM-10:30AM CDT

***Focused Session 202:* PRP, Exosomes, and Stem Cells – Delectable Injectables: PRP, Exosomes, and Stem Cells Scientific Updates**

Level: All levels
Director: Gorana Kuka Epstein, MD, FISHRS | Serbia
Faculty: Peter Everts, PhD | USA, Jiro Kishimoto, PhD | Japan, Ramon Llull, MD, PhD | Spain, Carina Nicu, PhD | USA, Piero Tesauro, MD | Italy, Shadi Zari, MD | Saudi Arabia
Description: Buoyed by popular demand, scalp injections to treat hair loss have experienced a boom across the world. We hear anecdotal reports of positive outcomes from colleagues. But what does the science support? Which treatments have proven efficacious (and by what standards), and what are the (proposed) mechanisms of action? This session offers "small bites" of all the "tastiest" new research and theories for injectable treatments for hair loss. Hear the panelists share information and debate the potential of these new possible therapies.

11:00AM-12:30PM CDT

***Focused Session 203:* Advanced Surgical & Challenging Cases – Advanced FUE, FUT, Hybrid, and Reconstruction**

Level: Advanced

Co-Directors: Emorane Lupanzula, MD | Belgium and Asim Shahmalak, MBBS, FISHRS | United Kingdom

Faculty: Christian Bisanga, MD | Belgium, Márcio Crisóstomo, MD, FISHRS | Brazil, Anil Garg, MBBS, MS, MCh, FISHRS | India, Patrick Mwamba, MD | Belgium, M. Humayun Mohmand, MD, FISHRS | Pakistan, Jae-Hyun Park, MD, PhD | South Korea, Antonio S. Ruston, MD | Brazil

Description: Challenging cases require advanced techniques. This course will explore a range of complex cases including the surgical techniques that can be employed to treat them. A rapid-fire video format will show in detail how these techniques are accomplished interspersed with discussions detailing the advantages and disadvantages of each. Be prepared for intellectual stimulation and to exchange ideas with other surgeons.

WEDNESDAY/OCTOBER 21, 2020

7:00AM-8:30AM CDT

***Focused Session 301:* Preview Long Hair FUE – Ditch the Clippers: Preview Long Hair and No-Shave FUE**

Level: Advanced

Co-Directors: Marcelo Pitchon, MD | Brazil and Ricardo Lemos, MD | Brazil

Faculty: Laura Caicedo Albarello, MD | Spain, Jae-Hyun Park, MD, PhD | South Korea, Marie A. Schambach, MD, FISHRS | Guatemala, Luis Roberto Trivellini, MD | Paraguay, Akaki Tsilosani, MD, PhD, FISHRS | Georgia

Description: Patients have always wanted to see their results immediately and have only reluctantly submitted to having their hair shaved as part of the hair transplantation process. With dedication and a little effort, it is possible to fulfill both of these patient goals and set your practice apart in a dramatic way. Learn the fundamentals of long hair preview from the originator himself and explore the options for "no-shave" FUE in your practice. Emphasis in this course will be placed on practical knowledge to perform these types of surgeries and the technical aspects of converting your surgical processes to accommodate these specialized techniques.

9:00AM-10:30AM CDT

***Focused Session 302:* Implanters – Implanters: Dull, Sharp, Multiple Needle, and How to Get Your Staff to Start Using Them**

Level: All levels

Director: Marie A. Schambach, MD, FISHRS | Guatemala

Faculty: Otavio Boaventura, MD | Brazil, Jean M. Devroye, MD, FISHRS | Belgium, Moonkyu Kim, MD, PhD, FISHRS | South Korea, Parsa Mohebi, MD, FISHRS | USA, Leonocio E. Moncada, MD | Venezuela, Jae-Hyun Park, MD, PhD | South Korea, William R. Rassman, MD | USA, Antonio S. Ruston, MD | Brazil, Mauro Speranzini, MD | Brazil, Luis Roberto Trivellini, MD | Paraguay

Description: Implanter technology is in the process of revolutionizing graft placement. Even those practices that primarily rely on forceps for placing grafts can benefit from the new implanter designs. With all the new variety there is literally "something for everyone" in the hair transplant surgical community. This workshop will explore the specific benefits and drawbacks of each implanter design, including how they can best be integrated into individual practices.

11:00AM-12:30PM CDT

***Focused Session 303:* Research Design – Design Your Own Research Project: Tips on Writing Clinical Trials, Protocols, and Abstracts**

Level: All levels

Co-Directors: Marco N. Barusco, MD, FISHRS | USA and Dow B. Stough, MD | USA

Faculty: Jerry E. Cooley, MD, FISHRS | USA, Aditya Gupta, MD, PhD, FISHRS | Canada, Carlos J. Puig, DO, FISHRS | USA, Greg Williams, MBBS, FISHRS | United Kingdom

Description: Are you "Featured Speaker" material? Do you have interesting observations but lack the know-how to put them into published data form? This workshop will explore the "path to the podium" through sound scientific study design so you can test and prove your ideas in a way that measures up to the most rigorous statistician's T-test. It will also cover how to create clearly written abstracts, so your data is more likely to be chosen for publication or presentation at a medical meeting like the ISHRS World Congress. This is a must-attend for those in a fellowship program or involved in training our next generation of hair medicine specialists.

Medical and Professional Ethics

Gregory Williams, MBBS, FISHRS | *London, England, UK* | dr.greg@farjo.com

Spotlight on Relationships with Patients

In the past, doctors had limited opportunity to interact with their patients other than in a professional environment. However as was discussed in my last column, "Spotlight on Social Media," there are now numerous social media platforms where patients can contact their doctor directly and vice versa.[1]

This can be useful from the point of view of both parties when dealing with important pre- or post-operative issues, and WhatsApp is a particularly good tool to use for overseas patients. The ubiquitous nature of handheld mobile devices, and the fact that many people will respond quicker to messages than emails, makes this an effective form of patient communication. However, it often lacks the formality of an email and is more akin to a conversation than a written part of the patient medical record. In fact, ensuring a transcript of all WhatsApp (or text message) correspondence is kept in a patient's medical file is something few of us would aspire to do in reality.

It has been my experience that once a more informal route of communication is opened up, it then can be difficult to draw boundaries if the patient chooses to take the relationship to a more personal level. For instance, during the recent pandemic I might have received a message as innocent as "How are you doing Dr. Williams?" It would be acceptable to answer this simply and politely. But what about "How is your family doing Dr. Williams?" or "How is your business doing Dr. Williams?" The use of the prefix "Dr" gives the impression of a professional doctor-patient relationship whereas omitting this title might make the same questions a bit more informal. Over time and multiple messages, familiarity creeps in and there can be a temptation to veer away from medical topics of conversation. As hair transplant surgeons, we sometimes operate on our patients several times and see them over a number of years. It is inevitable that during this time a personal relationship will develop. But how can "personal" still be kept appropriate in the context of the doctor-patient relationship?

Is it acceptable to have patients call you by your first name? Do you ask your patients permission to call them by their first name? There will be variations in social norms in different cultures, ages and genders. What might be acceptable to one individual might be seen as offensive to another.

It is natural to get along, or "click," with some patients more than others just as one does in normal social interaction situations. But is it OK to go out for a coffee with a patient? What about an alcoholic drink? A dinner? Does your and the patient's gender, relationship status, or sexual orientation play a part in making these decisions? What about if you and your partner go out to dinner with a patient and their partner? What about inviting a patient to your house for dinner or for a party? What if a patient invites you to a party they are hosting or going to be attending? Where do you draw the line?

Reflective Questions

- Have I ever felt that a friendship with a patient was becoming professionally inappropriate?
- Have I ever had to stop seeing a patient because the doctor-patient relationship had broken down and, if so, did I handle it well?

The College of Physicians and Surgeons of Ontario acknowledges the difficulties around this topic in its document "Advice to the Profession: Maintaining Appropriate Boundaries." It says: *"Self-disclosure can be a challenging area to navigate. It is important for physicians to use their professional judgment when disclosing personal information to patients, considering factors such as the nature of the information being disclosed, the length and nature of the physician-patient relationship, and the purpose of self-disclosure"*[2]

What about having an intimate relationship with a patient? Many medical licensing bodies and medical professional associations will issue guidance to doctors. The guidance regarding sexual relationships is sometimes explicitly clear. For example, in the UK, the General Medical Council guidance "Maintaining a Professional Boundary Between You and Your Patient" says that *"you must not pursue a sexual or improper emotional relationship with a current patient"* and *"you must not end a professional relationship with a patient solely to pursue a personal relationship with them."*[3] Sometimes guidance can be less clear and open to an individual's interpretation. For instance, the same GMC guidance says that *"it is not possible to specify a length of time after which it would be acceptable to begin a relationship with a former patient. However, the more recently a professional relationship with a patient ended, the less likely it is that beginning a personal relationship with that patient would be appropriate"* and *"the duration of the professional relationship may also be relevant. For example, a relationship with a former patient you treated over a number of years is more likely to be inappropriate than a relationship with a patient with whom you had a single consultation."*[3]

Whilst developing an intimate relationship with a patient would be at the far end of the spectrum of a personal relationship with a patient, is it OK to accept a current patient as a "friend" on Facebook? That might depend on the type of Facebook page you have. The answer might be yes if you have a Facebook page that is only about your professional work, but no if your Facebook page is a personal page or a mix of personal and professional content. What about "liking" posts that your patients put on twitter, Facebook, or LinkedIn? Does this constitute a digital relationship?

The reverse situation needs consideration as well. Should you consult or operate on people with whom you already have a personal relationship before they come to see you? Is it OK to operate on friends who come to see you for advice on their hair loss? Where do you draw the line between an acquaintance and a friend? What about family members? The American Medical Association Journal of Ethics clearly states that *"physicians generally should not treat themselves or members of their immediate families"* and goes on to explain the various reasons for this.[4] But what is the definition of "immediate" and is it therefore OK to operate on distant family relations?

Sometimes the doctor-patient professional relationship breaks down and needs to be ended. This can be for a number of reasons. Ending a doctor-patient relationship has different responsibilities to ending a social relationship and can be difficult and upsetting. The GMC document "Ending your Professional Relationship with a Patient" gives advice including 1) warning the patient that you are considering ending the relationship, 2) doing what you can to restore the professional relationship, 3) exploring alternatives to ending the professional relationship, and 4) discussing the situation with an experienced colleague or your employer or contracting body.[5]

Modern doctor-patient relationships are becoming more and more informal. It is not uncommon for patients to call us by our first names without using the prefix of Dr. and to have interaction with us outside the office on social media and via phone messages. As doctors, we hold a very privileged position in the trust that patients put in us, and we should remain wary of blurring the lines between our professional and personal relationships with patients.

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Regenerative Medicine and Hair Loss

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Why Some Platelet-Rich Plasma Therapies Work Better Than Others

HOW PRP WORKS

Platelet-rich plasma (PRP) therapy, which has properties that help with wound closure, increasing new cell growth, and reducing inflammation, has been a well-known treatment for skin rejuvenation. A vial of the patient's own blood is drawn and then centrifuged to separate the components of red blood cells (RBCs), platelet-rich plasma, and platelet-poor plasma. The platelet-rich plasma is then used for the procedure. Over time, PRP has significantly expanded its indications for use to include aiding in the treatment of scars and in surgical wound healing.[1-5] Around 10 years ago, PRP was introduced as a therapy for hair loss. Used for alopecia areata and some scarring alopecias or adjuvant to a hair transplant procedure, PRP seems to promote natural hair growth, faster healing, and better graft survival after a hair transplant procedure.[6-9]

To date, there is no established protocol for preparing and administering PRP for hair restoration. Many questions remain unanswered, such as how often to inject, whether to activate or not to activate, or to what layer in the skin the injection should go: intradermal or subdermal?

The mechanism of action is still being debated. As growth factors from the platelets are released, they promote a differentiation of stem cells into hair follicle cells.[10] Activated PRP induces proliferation of dermal papilla cells and increases dermal papilla growth. Lastly, PRP influences the perifollicular vascular plexus, which is critical in delivering energy to hair follicles.[11] In addition, PRP can generate other cells that play an important role in treating alopecia, such as neutrophils, monocytes, and lymphocytes.

There are a variety of PRP systems on the market; however, some fail to deliver an effective concentration of platelets, while others deliver an unfavorable ratio of other cells, which can worsen alopecia. Therefore, to reap the benefits of this treatment, it is important that physicians and patients alike are educated on and understand the basics of PRP therapy.

DEFINING PRP

Platelet-rich plasma is a minimum of 1,000,000 platelets/microliter in a 5mL volume of plasma.[6] This number is based on scientific evidence of bone and soft tissue healing enhancement beginning at this level of concentration or higher. Normal human platelet counts in peripheral blood are an average of 200,000 platelets/microliter, meaning that PRP has to achieve 5-7 times the concentration over the baseline. Some systems on the market cannot achieve this concentration; most PRP devices achieve a concentration of PRP 2-5 times the baseline concentration. Higher levels of platelet concentration correspond directly to higher levels of growth factors leading to greater tissue regeneration. However, a study by Graziani and colleagues suggested that a concentration of PRP 2.5 times above the baseline could have an inhibitory effect.[12] It has not been determined yet if a higher platelet count with a higher number of growth factors would lead to better results.

OTHER IMPORTANT CELLS

Apart from platelets for treating hair loss, monocytes are the most important cells. These are non-inflammatory white blood cells (WBCs), precursors to macrophages. Macrophages are important cells of the immune system that are formed to fight infection and are found to play an important role in tissue healing, including the release of additional pro-regenerative growth factors that lead to neovascularization and proliferation of myogenic precursor cells. It is believed that the underlying cause of many types of alopecia is mild to moderate inflammation; therefore, an injection of monocytes can minimize it.

On the other hand, red blood cells and neutrophils are unwanted cells in PRP. RBCs can increase inflammation at the injection site, whilst neutrophil delivery can create the potential for persistent inflammation and a progression of tissue damage via the secretion of toxic oxygen metabolites and proteases.

MAINTAINING A STERILE SYSTEM

In medicine, any closed system of processing blood or tissue is advantageous to an open system. Whole blood and processed blood are never exposed to outside air or any other external environment allowing physicians to treat patients with confidence in sterile surgical settings. That is why our office opts for a closed PRP system, thus eliminating dangerous exposure and minimizing infection risk.

PRP IN THE TREATMENT OF HAIR LOSS

Despite the fact that more than 20 studies have been published on PRP in the treatment of hair loss, there is still no definitive protocol on how to apply this therapy. Based on several years of using it in my practice and meticulous observation of our patients, we have developed our own protocol.

The first step is to determine the diagnosis and then to explain to the patient what to expect. We always perform PRP therapy under a local anesthesia ring block, making it pleasant and tolerable for patients. The PRP is transferred to small 1cc syringes and injected in all three skin layers, covering the hypodermis, dermis, and epidermis. Often, it is combined with microneedling, so the penetration into the superficial layer of skin is achieved better. Around 10-12cc of PRP is usually injected into or put on top of the skin after injections or microneedling is completed. Injections are usually half an inch apart. It is an outpatient procedure, and patients can wash their hair the next day. Depending on the indication and its effectiveness, the process is repeated within 4-8 weeks. See Figures 1 and 2.

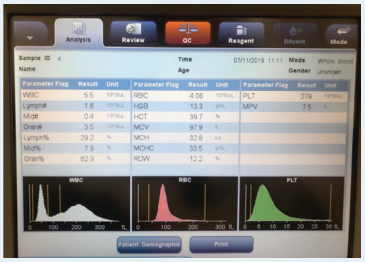
FIGURE 1. Result of a single PRP treatment in a patient with scarring alopecia. Patient before treatment (*left*) and three months after treatment (*right*). This is a result of one treatment using the regimen described.

FIGURE 2. Result of a single PRP treatment in a male patient with androgenic alopecia. Patient before treatment (*left*) and three months after treatment (*right*). This is a result of one treatment using the regimen described.

PRP SYSTEMS

When searched on Google, the term "PRP system" appears over 10,000,000 times. We tested platelet concentration in one commercially available system that has tubes with separation gel used by physicians worldwide. Although very easy to perform—it requires around 12cc of blood drawn—when the hematology count was done, the effective dose of platelets was not achieved. However, anecdotally, we have achieved good results and high patient satisfaction with this system. The results of the study will be available soon where platelet count was obtained for every subject using a hematology counter (Figure 3).

FIGURE 3. Hematology counter Mindray BC-3600



Robert Marx, a maxillofacial surgeon who was considered the pioneer of this therapy, defined PRP as "a volume of autologous plasma that has a platelet concentration above baseline."[13] Manufacturers of devices tried to make systems that were able to compete in obtaining the highest concentrated PRP while at the same time forgetting the other challenge: to remove RBCs and reverse the initial composition of blood (95% of RBCs). Magalon and colleagues suggested the use of DEPA classification for PRP:

- Dose of injected platelets
- Efficiency of the production
- Purity of the PRP obtained
- Activation process

This takes into account the dose of injected platelets and potential contamination of RBCs.[14] The calculation of these parameters is only possible if complete cell counts are performed for both whole blood and the PRP associated with the data of the collected blood volume and injected PRP.

Assessing the relationship between the dose and response of a drug is an essential principle in pharmacology and pharmacodynamics. That is why the dose is more critical than concentration, an idea that has been explored by Kaux and colleagues.[15]

I would suggest that we start quantifying PRP in order to try to determine what the optimal dose is rather than focusing on the concentration of platelets needed for hair rejuvenation. Once studies begin to report the dose of PRP, more consistent results of clinical trials could be obtained and, therefore, more definitive protocols established.

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Literature Review

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The Gabrin Sign and Role of Androgens in COVID-19 Severity: A Look at 3 Studies

Goren, A., et al. A preliminary observation: male pattern hair loss among hospitalized COVID-19 patients in Spain—a potential clue to the role of androgens in COVID-19 severity. *J Cosmet Dermatol.* 2020; 11:1-3.

One interesting observation about the COVID pandemic is the increased number of severe cases in adult males compared with females. In comparison, prepubescent children are found to have very low rates of severe infections. The authors hypothesize that there is an association between androgens and COVID-19 pathogenesis. This is further supported by the fact that the COVID viral spike protein (used for cell entry) undergoes priming by a transmembrane protease, serine 2 (TMPRSS2). This protease has a 15 base pair androgen response element, and in humans, androgens are the only known transcription promoters for the TMPRSS2 gene. The ACE2 receptor, which is also a route of COVID entry, is also mediated by androgens.

To investigate their hypothesis that males with AGA were more likely to be hospitalized with severe COVID-19 symptoms, they followed patients in two Spanish hospitals between March 23 and April 6, 2020. Forty-one Caucasian males with bilateral SARS-Cov-2 pneumonia were analyzed. The average age was 58, and among them 29 (71%) had clinically significant AGA (Hamilton-Norwood scale higher than 2). Twelve (29%) had mild AGA (H-N 1 or 2) and 39% had severe AGA (H-N 4-7). The authors did not have a specific age-matched control for incidence of AGA in this Spanish population but compared it with prevalence data for 31-53% for a Caucasian population.

The authors concluded that treatment of these patients with anti-androgen therapies such as finasteride, dutasteride, spironolactone, enzalutamide, or possibly cannabidiol might help mitigate the severity of COVID-19 illness. It also helps explain why hydroxychloroquine showed early success (chloroquine phosphate, as sister drug, helped reduce testosterone levels in rats). However, because data was not available for whether these patients had history of anti-androgen use, prostate cancer, or history of benign prostatic hypertrophy, the authors pointed out their theory could be disproven altogether with more information.

Wambier, C.G., et al. Androgenetic alopecia present in majority of hospitalized COVID-19 patients—the "Gabrin sign." *J Am Acad Dermatol.* 2020, doi: https://doe.org/10.1016/j.jaad.2020.05.079 (pre-proof).

Working further from their initial results studying 41 patients in Spain as noted above, the team of dermatologists expanded their study to 175 confirmed COVID-positive individuals admitted to three hospitals in Madrid, Spain, between March 23 and April 12, 2020. The 122 males and 53 females were evaluated by dermatologists and graded for their degree of alopecia. Overall, 67% had clinically relevant AGA. The frequency of AGA was 79% in males and 42% in females. They proposed the eponym "Gabrin sign" to honor the first physician to die from COVID-19 in the United States: he suffered from both hair loss and he was a long-term survivor of testicular cancer.

Wambier, C.H., et al. Androgen sensitivity gateway to COVID-19 disease severity. *Drug Dev Res.* 2020; 1-6.

This article delves deeper into the relationship between androgen sensitivity and COVID-19 morbidity. The authors review data from 5,700 cases in New York showing over 6 times more male fatalities in the 40-49 age range and 2 times more admissions in the 30-49 age group. In a series of 487 cases in Wuhan, China, male gender had an odds ratio of 3.68. The Sars-COV-2 virus gains entry by attaching via the transmembrane protease serine 2. Androgen receptors regulate transcription of this protease, thus patients with increased androgen receptor activity appear to be at higher risk of disease severity.

Furthermore, specific polymorphisms of the androgen receptor can affect its activity. For instance, both male and female patients with androgenetic alopecia have been shown to have shorter CAG repeats. African Americans as a group are also known to have shorter CAG repeats, which may help explain the racial disparities seen with COVID-19 disease.

OVERALL COMMENT

The implications of these findings suggest that anti-androgens used in both dermatology (finasteride, dutasteride, spironolactone) and urology (flutamide, bicalutamide) may play a role in the treatment of COVID-19. Currently, data is limited about whether any of the affected COVID patients were already on such treatments, so further study is needed to explore these hypotheses. Could the study of male pattern hair loss help provide the next breakthrough in conquering this deadly virus? One can only hope. ■

Hair's the Question

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*The questions presented by the author are not taken from the ABHRS item pool and accordingly will not be found on the ABHRS Certifying Examination.

Janet Nelson was one of the featured speakers in Bangkok (https://27thannual.org/janet-l-nelson-m-s-acsm/). In our last column, we detailed the musculoskeletal problems that hair surgeons and their staff face given the physicality of our different procedures. Did you take the time to figure out what the solutions might be? I hope you took your own health seriously—especially because this column is all about the solutions. Here is a test of the properties of our surgeries that can cause musculoskeletal problems and the small changes that can reverse the undesirable effects.

Physiology of Hair Transplant Surgery: Part 2

1. Which of the following is a "best ergonomic practice" for any hair restoration surgeon to reduce low back pain?
   A. Do sit-ups to strengthen core muscles
   B. Take stretching "micro breaks" during surgery
   C. Do forward trunk flexion to engage spinal muscles
   D. Avoid alternating sitting and standing too frequently

2. Which of the following is a "best ergonomic practice" for any hair restoration surgeon to reduce chronic upper and lower spine pain?
   A. Use a saddle chair with feet on the floor
   B. Keep head posture (greater than) >20 degrees
   C. Wear a wrist brace during surgery
   D. Work with arms forward from the body

3. Which of the following is a "targeted micro-break" stretch for the upper extremities?
   A. Simple Toe wiggling
   B. Gripping tips of fingers at arms length and gently pulling back
   C. Leaning gently back over a ball or back of chair and holding until you hear a small "pop"
   D. Closing eyes

4. Which of the following is a "targeted micro-break" stretch for the lower extremities?
   A. Lumbar pelvic tilt and torso twist
   B. Scapula and neck retraction
   C. Wrist flexion and extension
   D. Deep knee bends

5. Which of the following would be the best way for a hair technician who is examining grafts to avoid musculo-skeletal problems?
   A. Stretch for 5 minutes daily before surgery
   B. Take "targeted micro-breaks" during surgery
   C. Install work tables with height 4-6 inches below elbows
   D. Use surgical loupes (3×) with a lighted backboard

6. Which of the following would be the best way for a hair surgeon who is performing FUE donor extractions to avoid musculoskeletal problems?
   A. Sit on a saddle chair so that legs can dangle freely
   B. Use an adjustable height table so that the patient can be brought to eye level
   C. Use loupes or other magnifying eyewear
   D. Take "Targeted micro-breaks" during surgery

7. If a surgeon is looking for surgical telescopic lenses (loupes) to relieve neck strain during hair surgery, which of the following characteristics of the equipment would be most useful?
   A. 40° declination angle for the lens on the loupes
   B. Attached digital microscope with long battery life
   C. Frames fitted to nose so the glasses do not slip
   D. Polarized light source mounted to the frame to illuminate the work area

8. Which of the following interventions would reduce static tension (of any sort) to help avoid musculoskeletal strain (of any sort) in hair surgeries (of any sort)?
   A. Use Static Guard
   B. Reduce pinch force on instruments
   C. Adopting sit-stand alternating protocol
   D. Aim for a neutral relationship to gravity

➤ ANSWERS ON PAGE 148

CONTINUED FROM PAGE 147

Answers

1. **B.** I definitely recommend reviewing the videos Janet Nelson has provided or having her out for a targeted evaluation of your practice. Sit-ups mostly use back muscles, unfortunately, and do not work core muscles as much as we would all like! Besides, improving the ergonomics of the surgery AND stretching "micro-breaks" during surgery (answer B) are how we can reduce low back pain. Forward trunk flexion is part of the problem (so C is incorrect), and alternating sitting and standing is part of the solution (so D is incorrect).
2. **A.** A saddle chair with feet on the floor will help correct the positioning. Head posture should be < 20 (less than) degrees, and arms should be at your sides during surgery when possible (i.e., NOT with arms forward from the body). A wrist brace may help with hand and wrist pain, but the question asked for neck and shoulder pain.

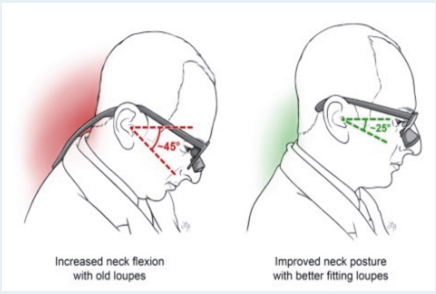

Illustration by Lauren Halligan, Department of Surgery, Duke University

3. **B.** If you did the quiz in the last issue, you have an advantage for this question. A and D might be worthwhile, but they are not "targeted micro-break" stretches. Every time I hear a "pop" in my spine, it is a bad sign, and likely I have been in an awkward torso position, so C is incorrect.
4. **A.** YOU SHOULD DEFINITELY TRY BOTH. Scapula and neck retraction (answer B) and wrist flexion and extension (answer C) are very effective "targeted micro-break" stretches for the upper extremities. The deep knee bends help work your thigh and gluteus muscles but is not a stretch.
5. **B.** Targeted micro-breaks are the way to go. To help you with these, Janet Nelson provided the links below to both upper and lower body exercises. Stretching for 5 minutes before surgery is a good idea in general, but if the ergonomics of the hours-long surgery are not optimized, 5 minutes of stretching will not help you to avoid musculoskeletal problems. Surgical loupes with a lighted backboard will help avoid eye strain.
6. **D.** A saddle chair helps low back strain, but the feet need to be positioned on the floor, NOT dangling freely. Adjustable table heights help when the patient is brought to forearm level just below the elbow (eye level would be too high). Loupes DO help avoid eye and neck strain, but that is not what the question is asking for!
7. **A.** Proper lighting and visual assistance are essential for what we do. If you are still using standard loupes, do yourself a favor and visit your nearest optical distributor. They will measure your working distance and fit the lenses to your PUPILLARY DISTANCE (PD) as well (this measurement is used to determine where you look through the lens of your glasses and should be as accurate as possible). Frames should be fitted, and a polarized light source would be nice, but the 40-degree declination angle is the most useful and helpful. A digital microscope attached to lenses does not currently exist (that I know of) so the battery life would be moot.
8. **C.** Reducing pinch force on instruments and aiming for a neutral relationship with gravity are important to do as well for your overall musculoskeletal health during surgery, but they are not the answer to the question. A is my favorite answer, though.

Resources

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1. Upper extremities micro-break targeted stretches: https://www.dropbox.com/s/zwav15850bnh465/Upper%20Extremities-Micro-Break%20Stretchi_FULL_HD.mp4?dl=0
2. Lower extremities micro-break targeted stretches: https://www.dropbox.com/s/m8v5ggh7jc2kx3m/Lower%20Body-Micro-Break%20Stretchi_FULL_HD-2.mp4?dl=0 ■

ABHRS President's Corner

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I don't know why I looked to poetry to write this month's ABHRS column, but I am glad I did. I found inspiration in an old author, Walt Whitman's "Song of the Open Road":

Here is the test of wisdom,
Wisdom is not finally tested in schools,
Wisdom cannot be pass'd from one having it to another not having it.

In other words, experience is necessary to create wisdom. Experience treating patients has no replacement. Each physician knows this, which is why the ABHRS exam focuses on the judgment of a hair surgeon, not rote memorization. Knowing this, examinees can learn about their learning, before their "test of wisdom."

But the ABHRS as an organization has been doing some learning, too. The experience of this pandemic has been an excellent one for creating new coping strategies and learning to pivot nimbly in a new direction. Without knowing it, the ABHRS was preparing for the impact that the novel coronavirus would have on our specialty. In the past, our exam never would have survived a pandemic. We only conducted it in person, once or twice per year. Examinees flew from around the world to sit in close proximity to one another. Even the recertification exam was held sitting at communal tables. Examiners shook the hands of each examinee as they entered the oral exam room.

Now, with the porting of our test to the electronic database with the help of the NBOME, the world will have changed along with COVID-19. Our question bank is in the process of being ported over to a computer-based test. Our goal is to be able to give this test around the world, regardless of travel restrictions and hand-washing protocols. This year will be the first year that our recertification exam can be taken in the virus bubble of each physician's home or office. This is a paradigm shift for all of us, but a welcome one!

If there is to be a "test of wisdom" for hair, the ABHRS will be striving to trying to create it.

Camerado, I give you my hand!
I give you my love more precious than money,
I give you myself before preaching or law;
Will you give me yourself? will you come travel with me?
Shall we stick by each other as long as we live? ■

Improving Hair Transplant Surgery Safety in the United Kingdom

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The World Health Organization (WHO) released a Surgical Safety Checklist in 2008 that was created in association with the Harvard School of Public Health. The recommendation for use was part of the WHO "Safe Surgery" campaign.[1]

The current version of the checklist (shown below) was launched in 2009 and is used widely around the world.[2,3]

An excellent 10-year review of the use of the WHO checklist "Checking In on the Checklist" was produced by Lifebox and Ariadne Labs to look at the global uptake of the checklist and the impact it has had in improving the safety of surgery.[4] One of the final recommendations is to "tailor and adapt the Checklist to local realities and contexts, including addition, removal, or modification of items; redistribution of responsibilities and tasks per staff practices; and language translation. As the Checklist is not meant to be 'one size fits all,' modification to local practice is encouraged."

In the UK, the National Patient Safety Agency introduced the "5 Steps to Safer Surgery" in December 2010, which drew heavily on work done in the United States on team training and techniques for improving communication in the perioperative period.[5] The Care Quality Commission (CQC) requires all NHS Acute Hospitals in England to use the WHO Surgical Safety Checklist for day-case surgery to demonstrate compliance with the 5 Steps to Safer Surgery.[6] This requirement has been included in recent inspections of private clinics in England that provide hair transplant surgery.

However, many questions in the WHO Surgical Safety Checklist are clearly not applicable to hair transplant surgery. The British Association of Hair Restoration Surgery (BAHRS) has therefore developed the BAHRS Hair Transplant Surgical Safety Checklist, shown on the next page.

Many of the errors that occur in healthcare do so because of miscommunication or a lack of communication. Whilst hair transplant surgeons may view completing a checklist as an unnecessary bureaucratic requirement, there are many aspects that could indeed improve patient safety by ensuring that important information is shared by key members of the surgical team. For example, confirming that the patient has been asked about known LIMED allergies (Latex, Iodine, Metals, Elastoplast or Drugs) will reduce the chances of a preventable anaphylactic reaction.[7] Communicating any patient-specific concerns will ensure that unusual situations specific to an individual patient, such as pressure area care or cervical arthritis, are catered for appropriately. Similarly, need for peri-operative antibiotic prophylaxis should be decided for every patient on a case by case basis. Calcu-

Surgical Safety Checklist

World Health Organization | Patient Safety
A World Alliance for Safer Health Care

Before induction of anaesthesia
(with at least nurse and anaesthetist)

Has the patient confirmed his/her identity, site, procedure, and consent?
- ☐ Yes

Is the site marked?
- ☐ Yes
- ☐ Not applicable

Is the anaesthesia machine and medication check complete?
- ☐ Yes

Is the pulse oximeter on the patient and functioning?
- ☐ Yes

Does the patient have a:

Known allergy?
- ☐ No
- ☐ Yes

Difficult airway or aspiration risk?
- ☐ No
- ☐ Yes, and equipment/assistance available

Risk of >500ml blood loss (7ml/kg in children)?
- ☐ No
- ☐ Yes, and two IVs/central access and fluids planned

Before skin incision
(with nurse, anaesthetist and surgeon)

- ☐ **Confirm all team members have introduced themselves by name and role.**
- ☐ **Confirm the patient's name, procedure, and where the incision will be made.**

Has antibiotic prophylaxis been given within the last 60 minutes?
- ☐ Yes
- ☐ Not applicable

Anticipated Critical Events

To Surgeon:
- ☐ What are the critical or non-routine steps?
- ☐ How long will the case take?
- ☐ What is the anticipated blood loss?

To Anaesthetist:
- ☐ Are there any patient-specific concerns?

To Nursing Team:
- ☐ Has sterility (including indicator results) been confirmed?
- ☐ Are there equipment issues or any concerns?

Is essential imaging displayed?
- ☐ Yes
- ☐ Not applicable

Before patient leaves operating room
(with nurse, anaesthetist and surgeon)

Nurse Verbally Confirms:
- ☐ The name of the procedure
- ☐ Completion of instrument, sponge and needle counts
- ☐ Specimen labelling (read specimen labels aloud, including patient name)
- ☐ Whether there are any equipment problems to be addressed

To Surgeon, Anaesthetist and Nurse:
- ☐ What are the key concerns for recovery and management of this patient?

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

Revised 1 / 2009

lating the maximum safe dose of local anaesthetic that can be used ahead of time based on a patient's weight allows assistants to warn the doctor when administration of this dose has almost been reached. Making sure that pre-op and post-op vital signs have been recorded, are stable, and are within normal limits, will be helpful for medico-legal reasons if the patient becomes unwell subsequently. Ensuring that the patient's emergency contact details are recorded is important in case of an untoward event.

The BAHRS Hair Transplant Surgical Safety Checklist was launched at the BAHRS 2020 Annual General Meeting on 1st March 2020 and members were advised to use it. Other ISHRS Global Council Regional Societies are encouraged to adapt the WHO Surgical Safety Checklist for local use.

Acknowledgments

I am grateful to the members of the BAHRS Executive Committee who contributed to the development of the BAHRS Hair Transplant Surgical Safety Checklist and to Liz de Pass, BAHRS Administrator, who was responsible for the graphic design.

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1. https://www.who.int/patientsafety/topics/safe-surgery/en/
2. https://www.who.int/patientsafety/topics/safe-surgery/checklist/en/
3. https://bjssjournals.onlinelibrary.wiley.com/doi/full/10.1002/bjs.10907
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5. https://www.patientsafetysolutions.com/docs/January_11_2011_NPSA_UK_How_to_Guide_Five_Steps_to_Safer_Surgery.htm
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7. https://www.thepmfajournal.com/features/post/uk-allergy-crisis-deploy-the-limed-mnemonic ■

Hair Transplant Surgical Safety Checklist

British Association of Hair Restoration Surgery (BAHRS)

Name of Patient:

Date of Hair Transplant Surgery Procedure:

Before Hair Transplant Surgery Case Begins:

(with at least surgeon and surgical assistant)

Have the patient's name and emergency contact details been confirmed?
☐ yes ☐ no

Has the patient's method of transport home been confirmed?
☐ yes ☐ no

Has the method of donor hair harvesting been confirmed with the patient?
☐ yes ☐ no

Have the number of follicular unit grafts / follicles to be harvested been confirmed with the patient?
☐ yes ☐ no

Has the recipient site been marked and confirmed with the patient?
☐ yes ☐ no

Has the patient signed the consent form?
☐ yes ☐ no

Have pre-operative photographs been taken?
☐ yes ☐ no

Does the patient have any known allergies to Latex, Iodine, Metals, Elastoplast or Drugs (LIMED)?
☐ yes ☐ no

Before Local Anaesthetic Is Administered:

(with at least surgeon and surgical assistant)

Have all team members have been introduced to the patient by name and role?
☐ yes ☐ no

Have the patient's pre-operative vital signs been recorded?
☐ yes ☐ no

Has the patient's weight been recorded?
☐ yes ☐ no

Has the safe total local anaesthetic dose been calculated?
☐ yes ☐ no

Is any peri-operative antibiotic prophylaxis required?
☐ yes ☐ no

Are there any patient-specific concerns?
☐ yes ☐ no

Is all required surgical and monitoring equipment present and functioning?
☐ yes ☐ no

Have the patient pulse, blood pressure and oxygen saturation monitors been attached?
☐ yes ☐ no

After Hair Transplant Surgery Case Finishes:

(with at least surgeon and surgical assistant)

Have the procedure details been confirmed and an operation note completed?
☐ yes ☐ no

Has an instrument check been done and all needles used been accounted for?
☐ yes ☐ no

Are there any equipment problems to be addressed?
☐ yes ☐ no

Have the patient's post-operative vital signs been recorded?
☐ yes ☐ no

Are there any special follow up requirements?
☐ yes ☐ no

Signature:

Name and designation of person signing:

This checklist is not intended to be comprehensive. Additions and modifications to fit local practice are encouraged.

v1 January2020

Hear from the Assistants

Marwan Noureldin, MSc | *Cairo, Egypt* | marwannoureldin@hotmail.com

If you would like to nominate an assistant from your practice to be interviewed for this column, please email me.

Rizza Averion is a Registered Nurse who has been assisting in the field for 18 years. She joined Dr. Parsa Mohebi four years ago, and after thorough training, is now one of the senior hair techs. She worked closely with Dr. Mohebi to develop the "Mohebi Inserter." Rizza is definitely someone we can all learn a lot from. She explained:

"We needed more efficiency, we needed to get faster, we were committed to minimize the out of the body time for the grafts."

She added: *"We thought of inventing or developing a different kind of implanter, where you don't need a loader, which we think will be more efficient. So, we thought of a device in which each person can load and plant their own grafts and also something that doesn't squeeze the grafts."*

I have known that one of the main reasons Dr. Mohebi invented the implanter is that he wanted his technicians to be able to simultaneously place the grafts while he is extracting them. So, he needed a device that would allow technicians to implant grafts with only one hand in order to minimize the space needed around the patient's head while four people are working together. Rizza explained the evolution of the Mohebi Implanter:

"We started developing the first prototype of the implanter in 2017. Dr. Mohebi asked his good friend to cut the needle according to our design. Once we got a prototype needle, I would try it first and check if the graft could be loaded easily. We let the other techs use it for two weeks and assess the implanter. We ended up with three versions before we had the final design."

Subsequently, I asked Rizza how the Mohebi Implanter was a game changer for them:

"The newest technician with no experience in graft placement can place the grafts as fast as an experienced tech within a month. In contrast, when we used the forceps, it took the new tech five to six months." She added: *"Another thing, the average time to place the grafts was probably cut down to half."*

We then talked about the simultaneous excision-implantation method. Rizza pointed out:

"When Dr. Mohebi first introduced the simultaneous method to us we were mystified, but it turned out to be a beauty, as it reduced the total time of the procedure. Dr. Mohebi makes the incisions first before he excises the grafts from the donor site. While he is extracting the grafts, another tech is pulling them out while the other two techs are placing the grafts. Literally, there are four people working on one head all at the same time."

After knowing about the simultaneous method, I was curious to know how the work was divided up with the team:

"Our team for each procedure consists of three to four hair technicians. Every surgery, we assign one person to be the team leader of the day, so everyone has the chance to show their leadership skills. The team leader will designate a specific role for each team member like who will be the remover, counter/circulating tech and the placers. The team leader and the rest of the technicians make sure that we do not interrupt the placers. If the patient needs anything, the counting technician will help him and the same is true with anything that the doctor may need. We use our counting technician as a rotating tech that will take care of everything while the placers are constantly placing the grafts. Since the extraction is performed in a quicker manner with the current system we use, when the doctor finishes the extraction, we sit the patient up and add the removing technician to the placing team. That helps us to finish placement of the remaining grafts as quickly as possible."

So next I noted that within her team with everyone involved and each having a specific job description, it must be challenging as a senior tech to get everyone on board to do all the right things such as keeping the grafts moist. She responded:

"Though we have different roles inside the surgery room, we have each other's back. For example, if one tech gets a pile of grafts to place, we usually spray it after putting the grafts on our hand and, at the same time, spraying other tech's grafts as well."

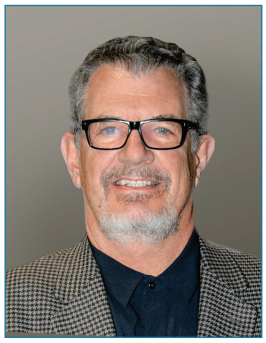
Next, I discussed with Rizza crucial errors made within the surgical procedure that she has witnessed:

"As I explained earlier, we do the chasing method of simultaneous extraction and implantation. We had an occasion where the rate of transected grafts was not communicated with the doctor in time and this increased the overall transection rate. So, the timely report of the partial or total transection with the extracting doctor helps him to adjust his angles or modes of excision of the grafts quickly and also avoids a high transection rate. And the same goes if there is capping or tethering."

She continued: *"We use an FUE system which allows the doctor to excise the grafts very quickly. At times, this creates a gap between the excising doctor and the removing technician that may create the problem that the doctor won't get the feedback promptly, and by the time he knows about it, he has done one to two hundred excisions. When the gaps are large between the excising doctor and removing technician, the tech should always check some of the more recent grafts that the doctor has excised (such as every 15 minutes). In that way, the doctor can make the changes in his angle, depth of incision, or modes of the multiphasic system to correct his extraction right away. This allows us to save the grafts and guarantee a lower overall transection rate."*

Lastly, we talked about patient comfort during the surgery and how she and the team make sure that the patient has a positive and a comfortable experience:

➤ BOTTOM PAGE 153



Message from the ISHRS 2020 World Congress Program Chair

Bradley R. Wolf, MD, FISHRS | *Cincinnati, Ohio, USA* | htwolf@wolfhair.com

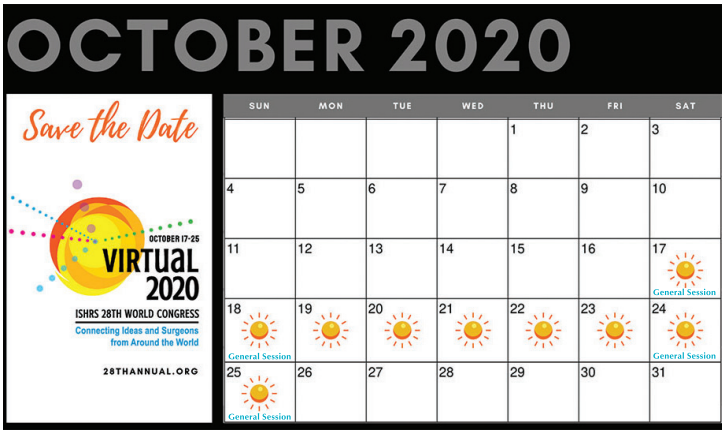
The ISHRS has chosen Scarritt Group (scarrittgroup.com) as the virtual meeting platform provider for the World Congress. We are in the process of customizing a virtual conference center to create our live, interactive meeting. To simulate an in-person meeting, the format includes a lobby, lecture hall, exhibit center, numerous other "rooms," and areas to chat. It is important for all participants to familiarize themselves with this platform prior to the meeting.

All General Session lectures will be prerecorded, followed by live audio and video interaction after lectures. "CSI Presentation" abstracts (Cases, Studies, Innovations that replace poster presentations) that have not been accepted for a General Session lecture can be presented as a PowerPoint lecture, poster, or video (author's choice!) and will be available during the meeting on-demand. The CSI abstracts will also have a dedicated discussion section on Thursday, October 22. Consider using the software Loom (loom.com) to record your talk. It is a free video recording tool that helps you record your lecture by simultaneously capturing your screen, voice, and face and then allowing you to share your video.

The "rules" I use when building a 5-7 minute lecture include the following: 1) use 3-4 slides per minute, 2) plan on making 2-3 solid points during your talk, 3) don't rely on what other experts have said ("…like Dr. XX said in his talk earlier"); have the confidence to present your unique ideas alone, and 4) memorize the key words you will use and rehearse until your talk is within the time limit.

In the 1950s, in the introduction to Harrison's Principles of Internal Medicine, Dr. Tinsley Harrison wrote that a physician needs "technical skill, scientific knowledge, and human understanding" to care for patients. This year's program will be based on these three important principles. After attending 23 of the 27 ISHRS meetings, I have noticed the principle most often overlooked and neglected is human understanding or more specifically, the patient. To that end, we have dedicated one General Session to "The Patient." Our featured speaker in this session is Danielle Ofri MD, PhD, Clinical Professor, Dept. of Medicine New York University. She has written eight books and recorded two TED talks concerning the doctor-patient relationship (https://danielleofri.com). Dr. Ofri is one of the foremost voices in the medical world today, shining an unflinching light on the realities of healthcare and speaking passionately about the doctor-patient relationship. She writes for *The New York Times*, *Slate* magazine, and other publications. Dr. Ofri is co-founder and editor-in-chief of the *Bellevue Literary Review*, the first literary journal to arise from a medical setting. We are fortunate to have her join us on Saturday, October 24, 2020. Certainly, a lecture not to be missed.

We are hard at work firming up the details of the program, which will be available soon. Those who submitted abstracts will be notified shortly as to the status of those abstracts. Please make plans to join us in October for this unique educational experience. ■



➤ CONTINUED FROM PAGE 152

"Initially, Dr. Mohebi will bring the patient to the OR and introduce the team. From the time the patient comes inside our office, we are addressing them by their names. We let the patient choose the kind of music they want to listen to during the day and ask if we can do anything to make them more comfortable such as a cushion, blanket, restroom break, etc., to help them be more relaxed. We make sure we explain to the patient everything we are doing to him and this leads to an open communication. We regularly communicate with the patient to assure they are comfortable at all times with their position, or if they have pain. We offer them a hot meal at lunch and a desert in the afternoon for longer procedures. But essentially, we shouldn't speak excessively with the patient, as this will slow the placement." ■

How to Get Published in the Forum

Did you ever wonder how to get published in the *Hair Transplant Forum International*? Follow the below guidelines and share your studies, research, and ideas with your colleagues. Who knows… maybe your article will end up highlighted in a future "The Notable Articles Project" section of this journal.

Editorial Guidelines for Submission and Acceptance of Articles

1. Articles should be written with the intent of sharing scientific information with the purpose of advancing the art and science of hair restoration and improving 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. If intra-operative or immediate post-operative photos are presented, please submit photos that show results (at least 6 months after surgery) of the procedure being presented.
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 with experience in the area in question for the purpose of obtaining further 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 blind 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 **forumeditors@ishrs.org**.
9. An Author Authorization and Release form must be individually completed by every author listed on the byline and the Word document (not a fax) submitted at the time of article submission. The form can be obtained in the Members Only section of the ISHRS website at **www.ishrs.org**. This release is meant to be signed electronically directly in the Word document. Simply open on your computer, fill in the highlighted fields, and return the Word document with your submission.
10. All figures and tables should be sized down to no greater than 6 inches in width and sent as separate attachments to your email. Figures and tables should also meet the following requirements:
    - They must be in JPEG, png, pdf, or TIFF format.
    - They must be attached to the email; we will NOT accept images embedded in the document (you can, however, include them to show placement within the article).
    - All figures must be referenced in the body of the article and individual captions for each figure must be supplied.
    - If you are using someone else's image, it must be properly referenced and you must have permission.
    - When using full face photographs, identifying characteristics must be blurred or cropped out unless you supply proof of permission at time of submission (see #16).
    - Figure/table images should be named using the lead author's last name and figure number (e.g., TrueFigure1).
11. For the byline (author's information below the article title), please provide each author's name and credentials (e.g., MD, PhD, FISHRS), and the city and country of their residence. The lead author should also provide his/her contact email address to be published with the article.
12. All original research and review articles MUST include a structured abstract at the start of the article. Abstracts should be brief and follow the IMRaD method: Introduction, Materials/Methods, Results, and Discussion/Conclusion (IMRaD). If applicable, the Discussion/Conclusion should state the benefit for the physician and the patient. Also if applicable, if part of an ongoing IRB approved trial the reference number should be included. There are many websites available to help you write a concise scientific abstract following the IMRaD method.
13. All Abstract sections must also include a "Key words" section with up to 6 key words from your article.
14. Article references should be numbered in the order they appear in the text. In text, tables, and legends, identify references with superscript Arabic numerals. For multiple authors, list only the first 3 followed by et al. Example of reference style:
    Authors. Title. Journal. Year; volume(issue):pages.
    Rassman, W.R., R.M. Bernstein, R. McClellan, et al. Follicular unit extraction: minimally invasive surgery for hair transplantation. *Dermatol Surg.* 2002; 28(8):720-728.
15. Articles should be original work and not published in part or in whole elsewhere. Once published in the *Forum*, this work is not to be published elsewhere without referencing the original published article.
16. For articles that include patients, written informed consent must have been obtained as well as IRB approval where appropriate and should be stated in the Methods section. The ISHRS reserves the right to ask for proof of these items.

17. Articles will only undergo editorial review once all of the requirements on the following checklist have been met:

Article submission checklist:

1. Title concisely describes the article.	❑	
2. Author(s) byline(s) information provided.	❑	
3. Brief abstract appears at start of article (follow IMRaD method and include Key Words section).	❑	
4. Figures and tables are provided as separate files; captions provided.	❑	❑ N/A
5. Article is original work and not published elsewhere.	❑	
6. Written informed consent or IRB attained (if required).	❑	❑ N/A
7. Individual Author Authorization Release attached for each author on the byline.	❑	

Signature of corresponding author: _____ Date: _____

To download a copy of the *Forum* guidelines, go to:
https://ishrs.org/wp-content/uploads/2020/06/ISHRS_Forum_ArticleSubmission_checklist_Fillable.pdf

To download an Author Release form to be filled out and submitted by each author listed in the byline, go to:
https://ishrs.org/wp-content/uploads/2019/03/AuthorAuthorizationReleaseForm_ISHRS-Forum_08-07-05.pdf

Classified Ads

Seeking Hair Transplant Physician and Technicians

Anderson Center for Hair in Atlanta, Georgia, is looking for a full-time hair restoration physician and full-time technicians. We are a state-of-the-art, brand-new boutique center. We perform one procedure per day, with emphasis on quality, ethics, and natural results…not quantity. On-the-job training available for physicians. Technicians will require experience, with references required. Outstanding, friendly working environment, salary, benefits, insurance, 401k, vision, dental, etc.

Please email your résumé to jobs@andersonhsc.com.

Seeking Experienced Hair Transplant Physician

Busy Hair Transplant practice is seeking Hair Transplant Surgeon experienced in FUT and FUE procedures for our New York location. We provide an excellent compensation and benefits package with equity and ownership opportunity.

Please send CV to charmane@zieringhair.com and anthony@zieringhair.com.

Seeking Experienced FUE Harvester

Busy Hair Transplant practice in Beverly Hills seeking experienced Nurse Practitioner to perform FUE harvesting.

Must be proficient in hand-held non-robotic SAFE system FUE harvesting. We provide excellent compensation and benefits package.

Please send résumé to charmane@zieringhair.com and anthony@zieringhair.com.

Seeking Hair Transplant Physician – St. Louis, MO

St. Louis Hair Restoration is seeking an experienced Hair Transplant Physician to perform manual/motorized FUE 3-5 days per month. We also have the ability to utilize a weekend if that is a better fit for your schedule. Excellent compensation.

If you are interested or would like more information, please send your résumé to Info@stlouishairrestoration.com.

For Sale: ARTAS® Robotic System with Chair

2015 ARTAS Robotic System for sale. System includes patient chair and was only used a few times. The system was originally purchased in 2015 for $250,000 and is in excellent condition. Asking price of $80,000 or best offer.

Email info@parsamohebi.com for more details or to make an offer.

For Sale: ARTAS® 9X

3 Artas 9X Robotic Systems for sale. Systems include patient chair. All systems in excellent condition. Asking price for each $75,000. Email nick@zieringhair.com for more details.

Calendar of Hair Restoration Surgery Events

http://www.ishrs.org/content/upcoming-events

DATES	EVENT/VENUE	SPONSORING ORGANIZATION(S)	CONTACT INFORMATION
AUG 22-23, 2020 & AUG 29-30, 2020	ISHRS 2020 Basics Course *Virtual (online)*	International Society of Hair Restoration Surgery www.ishrs.org	www.28thannual.org/basics-course
SEP 26, 2020 & OCT 3, 2020	ISHRS 2020 Advanced/Board Review Course *Virtual (online)*	International Society of Hair Restoration Surgery www.ishrs.org	www.28thannual.org/advanced-board-review-course/
OCT 18, 2020	ISHRS 2020 Surgical Assistants Program *Virtual (online)*	International Society of Hair Restoration Surgery www.ishrs.org	www.28thannual.org/surgical-assistants-program/
* OCT 17-25, 2020	28th World Congress of the ISHRS *Virtual (online)*	International Society of Hair Restoration Surgery www.ishrs.org	www.28thannual.org
* MAR 18-21, 2021	ISHRS Regional Workshop: Cowgirl Hair Loss Workshop—Art & Perfection, Female Hair Loss *Houston, Texas, USA*	International Society of Hair Restoration Surgery Hosted by Carlos J. Puig, DO, FISHRS	cpuig@hairdoctexas.com
JUN 4-6, 2021	Italian Society for Hair Science and Restoration International Conference *Florence, Chianti*	Italian Society for Hair Science and Restoration	segreteria@SITRI.IT
* JUL 23-24, 2021	12th Annual Hair Transplant 360 Cadaver Workshop & FUE Hands-On Workshop *St. Louis, Missouri, USA*	Saint Louis University School of Medicine, Practical Anatomy & Surgical Education In collaboration with the International Society of Hair Restoration Surgery http://pa.slu.edu	pa@slu.edu

* Meetings that qualify for the ISHRS member educational maintenance requirement

REMINDER

ISHRS full **Members** and **Fellow Members** are required to attend 1 ISHRS-approved meeting every 3 years to maintain their member category.

ISHRS WORLD CONGRESS SCHEDULE

28TH WORLD CONGRESS	29TH WORLD CONGRESS	30TH WORLD CONGRESS	31ST WORLD CONGRESS
October 17-25, 2020 Virtual (online)	October 20-23, 2021 Lisbon I Portugal	October 26-29, 2022 Panama City I Panama	Dates to Be Determined, 2023 New Delhi I India

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Mission: To achieve excellence in medical and surgical outcomes by promoting member education, international collegiality, research, ethics, and public awareness.

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  Workgroup on Webinars: Robert S. Haber, MD, FISHRS
Task Force on Artificial Hair Fibers | Shady El-Maghraby, MD, MSc

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American Society of Hair Restoration Surgery
Arab Association of Hair Transplantation
Argentine Society of Hair Recovery
Asian Association of Hair Restoration Surgeons
Association of Hair Restoration Surgeons-India
Australasian Society of Hair Restoration Surgery
Brazilian Society of Hair Restoration Surgery
British Association of Hair Restoration Surgery
China Association of Hair Restoration Surgery
French Society of Hair Restoration Surgery
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Hair Restoration Society of Pakistan
Hellenic Academy of Hair Restoration Surgery
Ibero Latin American Society of Hair Transplantation
International Society of Hair Restoration Surgery
Italian Society for Hair Science and Restoration
Japanese Society of Clinical Hair Restoration
Korean Society of Hair Restoration Surgery
Paraguayan Society of Hair Restoration Surgery
Polish Society of Hair Restoration Surgery
Swiss Society for Hair Restoration Surgery
Thai Society of Hair Restoration Surgeons

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 advancing the art and science of hair restoration and improving 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. If intra-operative or immediate post-operative photos are presented, please submit photos that show results (at least 6 months after surgery) of the procedure being presented.
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 with experience in the area in question for the purpose of obtaining further 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 blind 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 **forumeditors@ishrs.org**.
9. An Author Authorization and Release form must be individually completed by every author listed on the byline and the Word document (not a fax) submitted at the time of article submission. The form can be obtained in the Members Only section of the ISHRS website at **www.ishrs.org**. This release is meant to be signed electronically directly in the Word document. Simply open on your computer, fill in the highlighted fields, and return the Word document with your submission.
10. All figures and tables should be sized down to no greater than 6 inches in width and sent as separate attachments to your email.

11-17. For the complete list of instructions and downloadable checklist, go to: **https://ishrs.org/wp-content/uploads/2020/06/ISHRS_Forum_ArticleSubmission_checklist_Fillable.pdf**.

Submission deadlines:
August 5 for September/October 2020 issue
October 5 for November/December 2020 issue
December 5 for January/February 2021 issue

Classified Advertising Guidelines for Submission

To place a Classified Ad in the *Forum*, email cduckler@ishrs.org. In your email, include the text of what you'd like your ad to read. You should include specifics in the ad, such as what you offer, the qualities you're looking for, and how to respond to you.

Classified Ads cost $100 per insertion for up to 75 words. You will be invoiced for each issue in which your ad runs. The *Forum* Advertising Rate Card can be found at the following link:

https://ishrs.org/media/advertising-and-sponsorship/

Submit your Classified Ad to:
cduckler@ishrs.org

Due to the COVID-19 pandemic, the previously scheduled in-person meeting to occur in Panama this Oct. 2020 will now take place virtually. Please mark your calendars and watch for registration details.

INTERNATIONAL SOCIETY OF HAIR RESTORATION SURGERY

OCTOBER 17-25

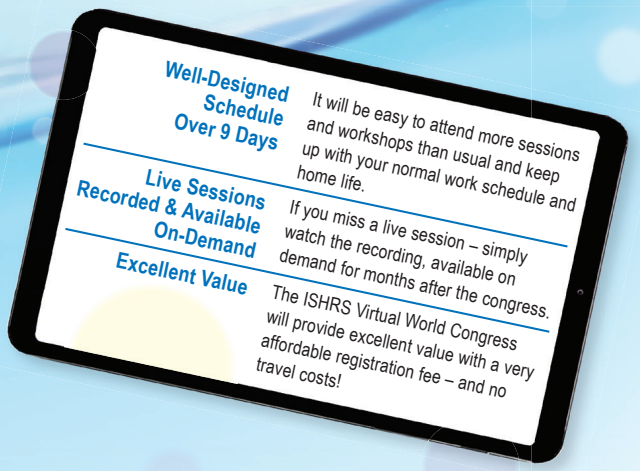
ISHRS 28TH WORLD CONGRESS

VIRTUAL 2020

https://www.28thannual.org/

You Don't Want To Miss the First Virtual Big One!

As always, the ISHRS World Congress will deliver the best education from the top minds in the field of hair restoration surgery. We are introducing exciting technology to achieve a highly interactive, fully engaging congress that will actively promote networking and be entertaining.



Connecting Ideas and Surgeons from Around the World

GENERAL SESSIONS with our featured speakers and other key talks will take place on Saturdays and Sundays for approximately 4 hours per day.

FOCUSED SESSIONS, formerly known as "Workshops," will take place at staggered times during the week.

ORAL AND POSTER ABSTRACTS will have a special featured section.

NETWORKING OPPORTUNITES, including "Coffee & Cocktails with the Experts" discussion tables and other reciprocal resources.

ADD-ON OPTIONS, such as Basics Course and Advanced/Board Review Course.

EXHIBITORS will have dedicated hours and additional optional office hours. There will be several company-sponsored satellite symposia.

INTERNATIONAL SOCIETY OF ISHRS HAIR RESTORATION SURGERY

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