

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.



ISHRS Trivia


1. What is the size of the ISHRS membership worldwide?
 - A. 500-1,000
 - B. 1,000-1,500
 - C. 1,500-2,000
 - D. 2,000-2,500
2. How many countries are represented among the ISHRS membership?
 - A. 25
 - B. 70
 - C. 106
 - D. 80
3. What is the most common medical specialty represented among members of the ISHRS?
 - A. Dermatology
 - B. Internal Medicine
 - C. Emergency Medicine
 - D. Plastic Surgery
4. Which of the following are benefits of ISHRS membership?
 - A. Listing on the ISHRS website as a recommended Hair Surgeon organized by number of surgeries accomplished (i.e., experience)
 - B. Morbidity and Mortality conference
 - C. Peer review and CME opportunities
 - D. Complimentary online (and paper) access to *Dermatologic Surgery* and *Hair Transplant Forum International* articles
5. Which of the following is a requirement for full physician ISHRS membership?
 - A. Fellowship training
 - B. 50 case reports and 2 letters of recommendation
 - C. Attendance of 1 meeting every three years
 - D. Ethical behavior and payment of annual dues ONLY
6. The ISHRS mission statement includes promotion of
 - A. Scientific research to improve remuneration rates for hair surgeries
 - B. Musicianship and Education
 - C. Technical Ability and Public Awareness
 - D. Collegiality and Ethics
7. The ISHRS was recently honored with which of the following awards?
 - A. Accreditation with Commendation by the ACCME
 - B. Golden Follicle Award
 - C. A "Group Performance" Academy Award (AKA Oscar) for the strong microphone performances of several members of the audience at the past 6 scientific meetings.
 - D. A Cannes Film Award for excellence in surgical documentary video production
8. The ISHRS was started in what year?
 - A. 1992
 - B. 1956
 - C. 1993
 - D. 2001
9. How many ISHRS members have attended all 22 ISHRS annual scientific meetings (including Kuala Lumpur)?
 - A. 5
 - B. 22
 - C. 127
 - D. 10
10. In which of the following cities has an ISHRS meeting occurred?
 - A. Paris, France
 - B. Amsterdam, The Netherlands
 - C. Juneau, Alaska, USA
 - D. Sao Paulo, Brazil
11. Who is NOT eligible to be an ISHRS member?
 - A. Surgery Office Staff
 - B. Surgical Assistants
 - C. Hair Research Scientists
 - D. Interested Physicians

⇒ *Answers on page 216*

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Answers

1. **B.** There are approximately 1,250 total members at the time of this writing.
2. **B.** There are 70 countries represented: 61% are non-US for the first time this year (2014)! Truly, we are becoming an "international" society.
3. **A.** The breakdown is as follows:
 - Dermatology, 19%
 - Plastic Surgery, 17%
 - Family Medicine, 13%
 - Cosmetic Surgery, 13%
 - General Surgery, 12%
 - Other, 4%
 - ENT/Otolaryngology, 4%
 - Internal Medicine, 4%
 - Emergency Medicine, 3%
4. **D.** By virtue of the fact that you are reading this, everyone should get this answer correct! The M&M conference has been conducted in conjunction with the ISHRS surgical meeting but it is an ABHRS-sponsored event. I suggested a peer review process to Dr. Cooley in Boston and it may yet become a reality (contact the ISHRS and voice your support if you like this idea!) but it is NOT yet a membership benefit. CME is certainly one of the biggest benefits of membership. Listing on the ISHRS.org website is advantageous, but the number of surgeries and the surgeon experience are not listed.
5. **C.** Fellowship training, case reports, and letters of recommendation are requirements for sitting for the ABHRS exam (i.e., "The Boards"). Since now attendance at 1 meeting every 3 years is required, ethical behavior and annual dues payment alone will not be sufficient for ISHRS membership!
6. **D.** The full ISHRS mission statement reads: "To achieve excellence in medical and surgical outcomes by promoting member education, international collegiality, research, ethics, and public awareness."
7. **A.** The ISHRS received this accreditation in 2014, which is truly an honor, although arguments could be made for B, C, and D as well.
8. **C.** Over 20 years ago now!
9. **D.** This is also known as "Last Man Standing" and these individuals have been in the organization since the very beginning and have never missed a meeting or sharing an alcohol "shot" on stage at the Gala Dinner Dance and Awards Ceremony. Now that is dedication!
10. **B.** ISHRS meetings have occurred all over the world including Kuala Lumpur, Malaysia; San Francisco, California; The Bahamas; Anchorage, Alaska; Boston, Massachusetts; Amsterdam, The Netherlands; Montreal, Canada; Las Vegas, Nevada; San Diego, California; Sydney, Australia; and many others (see ishrs.org for the complete list).
11. **A.** There is no surgical office staff category for ISHRS membership.♦



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*Not Included

Complications and Difficult Cases

Marco N. Barusco, MD *Port Orange, Florida, USA* drbarusco@tempushair.com



Below is an excellent article by Dr. Jonathan Ballon. In it, Dr. Ballon gives us his insight and experience as a neurosurgeon and highlights the potentially serious risks of performing hair restoration surgery on patients who were submitted to neurosurgery procedures in the past by describing one case in which the patient faced a major complication. As surgeons dedicated to improving our patient's quality of life, we must always keep in mind that sometimes the potential benefit is not worth the risk for the patient.

On a personal note, I thank Dr. Ballon for his candid comments about my approaches to the cases I have published in this column. Moreover, it is my duty to say—as I did in the articles I wrote—that my protocol for these patients was derived from extensive literature review and an attempt to cover every possible angle to minimize the potential for complications, which always exists.

Finally, I would caution that these types of patients are not ideal for a novice hair transplant surgeon and to the ones unfamiliar with sterile surgical techniques, which may be required for these patients in order to further minimize risks.

I thank Dr. Ballon for his excellent article.

A Neurosurgeon's Perspective on Hair Restoration Surgery

Jonathan Ballon, MD, FISHRS *Atlanta, Georgia, USA* jballonmd1@gmail.com

As perhaps the only representative of my specialty (neurosurgery) among the ISHRS membership, I feel I would be remiss if I did not take a moment to congratulate Dr. Barusco on his thoughtful management of the two challenging cases he presented over the past few months ("Hair Transplantation in a Patient with a Large Cranioplasty," Volume 24, Number 1, pp. 8-11; and "Follicular Unit Transplantation on Irradiated Scalp," Volume 24, Number 4, pp. 134-136). I'd also like to take this opportunity to give a brief overview of the special issues that sometimes need to be considered when evaluating neurosurgical patients for hair restoration surgery, and present a case of my own that illustrates the potential for misfortune.

Cranioplasty is both cosmetic and functional, serving to restore the natural contour of the skull and protect the brain. Dating back nearly 10,000 years to the Neolithic Period, trephination (or trepanation) and cranioplasty are the oldest surgical procedures for which archeological evidence exists.¹ Paintings found in caves suggest that opening the skull was a means of treating a variety of ailments, from headaches to seizures to abnormal behavior.² Over the centuries, the materials used to reconstruct the skull have evolved, from precious metals and gourds, to canine bone, to autologous bone, to modern day metals (chiefly titanium mesh and plates), and synthetic materials such as methyl methacrylate, hydroxyapatite, ceramics, and polyetheretherketone (PEEK).³ Wars have provided the impetus for advances in virtually every surgical specialty, and neurosurgery is no exception.

When considering hair transplantation in a patient harboring foreign material that has been placed either in the skull (e.g., a cranioplasty) or through the skull (e.g., a ventricular shunt or deep brain stimulation system), the physician must be cognizant of the unique risks to which these patients may be exposed. The surgeon's responsibility here is to help the patient make a decision based on what is essentially the very low likelihood of a very troublesome complication. Most patients have no idea whether their neurosurgeon simply replaced their bone flap, or used foreign materials to reconstruct the calvarial defect.⁴ Either way, I believe it is incumbent upon the physician to include the patient's neurosurgeon (or at least a neurosurgeon) in the decision-making

process so that the patient may be fully informed regarding the potential risks and their implications. Each patient will make his or her own decision about whether or not to proceed with surgery based upon the perceived risk:benefit ratio.

The major concern for a patient with an intracranial foreign body is infection, and the possibility (however remote) that all foreign materials, and perhaps a section of the skull, would need to be removed in order to effectively treat the infection, which could involve bone, brain, and/or cerebrospinal fluid (CSF); in the case of a ventriculoperitoneal (VP) shunt, treatment could also require hospitalization and placement of a temporary ventriculostomy for external drainage of CSF. The closer in proximity the foreign material is to the proposed recipient area, the more likely it is to become infected in the event of post-operative cellulitis or folliculitis. Again, the risk of infection is extremely low (especially if the foreign material is entirely subgaleal, since the galea is generally a formidable barrier to infection), but the stakes are high.⁵

The use of prophylactic antibiotics in clean surgery is controversial.^{6,7} With regard to neurosurgical procedures, there is no universally agreed upon drug of choice or protocol for pre-operative antibiotic prophylaxis, even for those patients undergoing VP shunt placement; however, at least a single pre-operative dose is routine for most procedures, and the intravenous route is generally considered to be more effective in reducing the risk of infection.⁸ The benefit of oral antibiotic prophylaxis for the hair transplant patient with intracranial foreign material is uncertain, though it would be difficult to argue against it, especially in the absence of intravenous antibiotics. The prevalence of MRSA carriers in the general population has been estimated to be about 2%,⁹ which brings into question the need for mupirocin. The most effective aspect of Dr. Barusco's prophylactic protocol may well have been cleansing of the skin with Hibiclens (chlorhexidine).

I was particularly impressed with Dr. Barusco's efforts to transform a "clean" operating environment into a sterile one. Even for those hair transplant surgeons once accustomed to working in sterile operating rooms in the past, it is easy to become forgetful of our aseptic ways. And certainly, most medical

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assistants engaged in hair restoration surgery are unfamiliar with true sterile technique.

The vast majority of patients who undergo external beam radiation (EBRT) for intracranial tumors will not be suitable candidates for hair restoration surgery because of the nature of their underlying disease (most commonly metastatic lesions from a primary tumor elsewhere and glioblastomas) and the poor prognosis for survival; however, as Dr. Barusco pointed out, it is sometimes necessary for patients with benign tumors (typically meningiomas) also to undergo EBRT. In these cases, there are concerns relating to decreased vascularity and tissue turgor, with associated poor wound healing and the possibility of necrosis—to say nothing of poor follicular growth—following hair transplantation. In an effort to optimize his patients' outcome, Dr. Barusco took the appropriate precautions of avoiding the use of epinephrine in the recipient area, as well as making relatively shallow, low-density sites. As we shall see, even when great care is taken to prevent necrosis of the radiated scalp, this can still occur—particularly when the area being addressed is in the mid-scalp, which is more susceptible to ischemia by virtue of its watershed vascular supply.

Stereotactic radiosurgery is increasingly being used to treat intracranial lesions because of the markedly decreased risk of damage to surrounding healthy brain tissue. Likewise, there is little or no associated hair loss, and little or no damage to the scalp, making it much safer for these patients to undergo hair restoration surgery in the event of the more common causes of transplantable of hair loss.

Having experienced a particularly dreadful outcome with a former brain tumor patient of mine, I can assure you that even low-percentage risks do occur. My patient, a 48-year-old nurse, underwent her second craniotomy for a recurrence of her right parasagittal meningioma 10 years later.¹⁰ This time, there was tumor involvement of the overlying skull, thus the bone was discarded and cranioplasty carried out using titanium mesh and methyl methacrylate. In light of the recurrence, the patient underwent a course of post-operative EBRT. She was, understandably, greatly distressed by the resulting large area of hair loss and contacted me after my career change to discuss the possibility of a hair transplant. Her hair in the non-radiated areas of her scalp was “salt and pepper,” coarse, and wiry, and her donor density was quite good. With the hubris of a novice, I enthusiastically scheduled the patient for surgery.

I did not go to the lengths that Dr. Barusco did with regard to pre-op antibiotic prophylaxis and rigorous aseptic technique, but 500mg of cephalexin was given an hour before surgery and 8 hours later. The donor and recipient areas were prepped with Betadine. As with Dr. Barusco's patients, “chubby” grafts were prepared and epinephrine was not used in the recipient bed. The shallow, low-density recipient sites were concentrated around the more vascularized periphery of the radiated scalp.

The patient tolerated the procedure well; growth at 1 year was sparse, but she was pleased with the small amount of improvement; unfortunately, I no longer recall how many grafts were transplanted, nor do I have her pre-op and post-op photos. Sufficiently emboldened by my success, a second session was offered to work more centrally in the mid-scalp and add a modest amount of density. The same technical protocol was followed as

in the first procedure. Again, I do not have a record of the number of grafts placed in this surgery, but the sites were generously spaced apart. Shortly after the second transplant, the patient developed necrosis in the central recipient area. A plastic surgeon in her home state admitted her to the hospital for excision of the necrotic tissue and closure of the scalp by means of a rotation flap. While hospitalized, the patient developed a MRSA infection; this required removal of all cranioplasty materials and a lengthy in-patient/out-patient course of intravenous antibiotics. At one point, the patient developed intractable seizures followed by a stroke, leaving her essentially non-ambulatory from a left hemiparesis. In spite of a protracted stay in a rehab facility, she was unable to return to her home and has remained in a long-term care facility to this day. Having sold her house and exhausted all of her financial resources, she is now on Medicaid. She decided she had had enough surgery and chose not to undergo delayed repair of her craniotomy defect; thus, she is left with a large, sunken “soft spot” in her scalp through which her right frontal lobe pulsates visibly. (Though I have visited the patient numerous times after the second transplant, I never had the heart—or the stomach—to take any photos.)

Ironically, this woman emerged unscathed—except for her hair loss—from two craniotomies more than 10 years apart for a large, complex and life-threatening tumor, only to meet her downfall as a result of two “simple,” elective cosmetic procedures. And the hair for which she has paid such a heavy price? All is gone.

As the numbers of both neurosurgical procedures and hair transplants continue to increase, hair transplant surgeons will encounter more and more prospective patients who have undergone treatment for intracranial pathology. I have spoken with a number of ISHRS members who have successfully performed hair transplants on neurosurgical patients, including those with extensive cranioplasties who have also undergone conventional external beam radiation therapy. While I congratulate them on their achievements, I am nonplussed by the dauntless attitude exhibited by some of my colleagues. It is said that a surgeon's judgment is inevitably tempered by his or her complications. Though it has been 10 years since my patient's surgery, this particular complication haunts me as much as any other in a 34-year surgical career. And it has made me more circumspect with regard to performing a hair transplant on radiated scalp, particularly where there is an underlying cranioplasty. Ultimately, it is important to remember that we are dealing with an elective cosmetic procedure. Our approach should be guided by an understanding of the potential complications, consultation with the patient's neurosurgeon, and the wishes of the patient after he or she has been informed of the possible risks and benefits of the procedure.

References

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2. Brothwell, D. *Digging Up Bones: The Excavation, Treatment and Study of Human Skeletal Remains*. London: British Museum (Natural History), p. 126.
3. Sanan, A. Repairing holes in the head: a history of cranioplasty. *Neurosurg*. 1997(Mar); 40(3):588-603.
4. *Author's note*: Technically speaking, even filling in bur holes with acrylic cement or plastic covers could be considered a

cranioplasty of sorts; alternatively, the bone flap might have been secured with titanium plates and screws. Either of these techniques introduces foreign material into the skull and thus it would behoove the hair transplant surgeon to make an effort to consult with the neurosurgeon.

5. *Author's note:* In addition to the risk of a ventriculoperitoneal shunt becoming infected, there is also the possibility of puncturing the shunt valve, reservoir, or tubing.
6. Bowater, R.J., et al. Is antibiotic prophylaxis in surgery a generally effective intervention? Testing a generic hypothesis over a set of meta-analyses. *Ann Surg.* 2009(Apr); 249(4):551-556.
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8. Ratilal, B., et al. Antibiotic prophylaxis for surgical introduction of intracranial ventricular shunts: a systematic review. *J Neurosurg Pediatr.* 2008(Jan); 1(1):48-56.
9. CDC; 2012 report. "Active Bacterial Core Surveillance (ABCs) Report Emerging Infections Program Network Methicillin-Resistant Staphylococcus Aureus."
10. *Author's note:* The 10-year recurrence rate for all meningiomas is in the range of 10%-15%. Parasagittal meningiomas are more likely to recur due to their intimate involvement with—and frequent invasion of—the superior sagittal sinus, thereby making an attempt at total resection unwise. ♦

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Cyberspace Chat

John P. Cole, MD *Alpharetta, Georgia, USA* john@forhair.com, and
Bradley R. Wolf, MD, FISHRS *Cincinnati, Ohio, USA* wolf@wolfhair.com

The following is a conversation between the co-columnists of Cyberspace Chat, debriefing after the recent ISHRS Annual Scientific Meeting in Kuala Lumpur, October 8-11, 2014. The daily meeting write-ups will be included in the next issue of the Forum. —RT



John P. Cole



Bradley R. Wolf

John Cole began: I must say that the meeting in Kuala Lumpur exceeded my expectations. A tropical environment along with the friendly nature of the Malaysians made for the perfect setting to a wonderful meeting. Dr. Pathomvanich certainly did his work preparing for the meeting. We could tell this was not the first meeting he has organized. What would you say are your highlights, Brad?

Bradley Wolf offered: Well, John, overall it was a great meeting. As you are well aware, hair pilgrims are known to unite anywhere in the world. I anticipated a unique experience due to the location, Malaysia, as well as the demographics of the attendees. With the change in dates, location, and troubling geopolitical issues, there were concerns that attendance would be down, but attendance figures exceeded everyone's expectations. The hotel was spectacular, in the center of Kuala Lumpur, and a short, (and relatively inexpensive) cab ride to most tourist attractions. The meeting and hotel rooms were close, making for a cozy meeting, conducive for chance meetings as well as professional and casual interactions with colleagues. The hotel staff was extremely accommodating as were all Malaysians I encountered. Everywhere in the city, they were smiling and helpful.

Forty-one percent (41%) of attendees (214/526) had never attended an ISHRS meeting. The average percentage of first-time attendees the prior five years (2009-2013) was 26%. This is a significant change. I could feel the energy and excitement. The exhibitors' booths were buzzing with business and discussion. Many of the exhibitors' supplies were exhausted by Friday forcing them to take orders. I looked out over the crowd in the lecture hall on Friday, when in most meetings the attendees had thinned a bit, and the seats were as full as they were on Thursday, the first day.

The average number of total attendees over the last five meetings was 555. The last meeting not in North America, Amsterdam, had 476 attendees. So Kuala Lumpur at 526 was quite remarkable. Unlike most ISHRS meetings where North American members dominate attendance numbers, Asian attendees dominated in Kuala Lumpur. The averages by country the last five years show that the United States (236), Canada (35), Brazil (24), United Kingdom (24), and India (19) had the highest attendance. This year, the top five were India (58), United States (58), Thailand (39), South Korea (37), and Australia (29).

John Cole added: While it is impossible to single out any one highlight, I rank the lectures by Rodney Sinclair and Thomas Dawson equally at the top of my list. I thought Dr. Dawson's lecture was relevant to every hair loss practitioner, while Dr. Sinclair offered insights to the physiology of hair that I'd never considered. Dr. Sinclair revealed that there are primary follicles and secondary follicles for the follicular unit. The primary follicles form first in utero. The secondary follicles of a follicular

unit form later also in utero. The secondary follicles are the first ones to depart in androgenic alopecia or, as he stated, "last in and first out." His talk centered on the arrector pili muscle. In androgenic alopecia, the arrector pili muscles separate from the secondary follicles first. In that the CK15+ stem cells are located in the arrector pili muscle, the capacity for follicle regeneration is lost when the arrector pili muscle disconnects from the secondary follicles. When the arrector pili muscle detaches from the hair follicle, the attachment is replaced with adipose. In alopecia areata, miniaturized follicles maintain their attachment with the arrector pili muscle. He also mentioned a niche of CK15+ cells at the junction of the arrector pili muscle and the epidermis. The arrector pili muscle does not form a single attachment to the follicle. Rather, muscle attaches at multiple points.

Paco Jimenez has noted that the insertion region of the arrector pili muscle to the hair follicle, which coincides with the lowest end of the isthmus, is located 1.6mm from the skin surface.¹ CK15+ cells are located an average depth of 1mm (0.9-1.35) below the skin surface and extend down to a depth of 1.8mm (1.6-2.25), just below the arrector pili muscle insertion. The average length of the bulge region as detected using anti-CK15 is 0.8mm, almost equivalent to the length of the isthmus.

While Dr. Sinclair suggests that regenerative capacity is lost when the arrector pili muscle detaches from the secondary follicles, Cotsarelis has found that follicle stem cells can migrate.² However, according to Dr. Sinclair, it seems imperative that we induce regeneration prior to a point of no return in the miniaturization process.

One thing that has always intrigued me is that the growth of single-hair grafts manufactured by reducing intact follicular units to single-hair grafts *in vitro* is less than 90% in many cases. It could be that stem cell niches are lost during the division process. Alternatively, the yield from secondary follicles of an individual follicular unit may be less than the yield of primary follicles when intact follicular units are fractionated.

Dr. Dawson gave a wonderful presentation on progressive loss of hair volume with age, styling habits that cause hair thinning, and biochemical options to improve hair. Curling, blow drying, shampooing, coloring, brushing, and teasing hair causes hair breakage predominantly in women. He suggested that shampooing three times a week was probably adequate and it is best to rinse in cold water. Dr. Dawson uses the same technology as sheep farmers to measure hair diameter. Wool that is 22 micrometers in diameter makes a pair of inexpensive socks, while wool 15 micrometers in diameter make an expensive garment. Using the methods he obtained from the wool industry, Dr. Dawson began to study hair diameter and calculate hair volume. Although hair is an elliptical structure, Dr. Dawson calculates hair volume using the formula for a cylinder. He included terminal hairs

ranging from 20 micrometers to determine the average diameter of hair is close to 60 micrometers. At age 45-46, women lose hair density from an average of 220 hairs/cm² to a density of 170 hairs/cm² by age 60. At age 40 to 45, both men and women begin to lose hair diameter and the loss is progressively worse over time. Hair volume decreases from 20,000 to nearly 12,000 by age 70. Thus, not only is the donor area impermanent as previously suggested, hair coverage becomes progressively worse over time due to a loss of hair volume.

In his measurement of hair volume, Dr. Dawson measures the long axis of the hair shaft. He noted that straight hair tends to lie on its minor axis, while curly hair lies on its long axis. Velus hair is stated to have a diameter of less than 30 micrometers, therefore, I was surprised he included hair follicles lower than 30 micrometers to calculate the average hair diameter. Because a hair below 30 micrometers adds so little hair volume, I did not include follicles below 30 micrometers when I calculated the average hair diameter was approximately 68 micrometers.

Dr. Dawson reviewed a number of ingredients to improve hair quality and volume. Ultraviolet light is damaging to hair. He stated that deposition and coating was a problem with UV protectors for the hair. Caffeine up regulates the aquaporin gene. Aquaporin increases the absorption of water into the hair follicle. A combination of niacinamide and caffeine at the proper concentration, can improve hair diameter and hair coverage. Based on the progressive decrease in hair diameter in time, we certainly need to look at the biochemical solutions to improve hair diameter for our patients.

The workshop on micropigmentation given by William Rassman, Ryu, Jino Kim, and Milena Lardi was excellent. The epidermis varies in depth from 0.5 to 1.5 mm due to undulations. The procedure is angle, depth, and time sensitive. It is important to deposit the particles in the outer dermis. Dr. Rassman feels that it takes about 100,000 tries to get the feel. The ink that Dr. Rassman uses and sells is permanent. The ink Milena sells fades over the span of about one year. Milena uses particle sizes of 15 micrometers and coats them with silicone. She feels her silicone particles are absorbed. Because skin takes about 1 month to turn over and shed any pigment deposited in the epidermis, the result takes about 1 month before you can evaluate it. Dr. Rassman noted that the pigments are carcinogens and we must not promise anything to the patient. Dr. Rassman feels a full head takes about 25 hours to complete, while Milena can accomplish this in 2 hours. She does a second pass the next day that takes 1 hour and then a final touch up one month later that requires another hour.

Bradley Wolf continued: I was certainly surprised to hear Ms. Lardi can accomplish one pass on a patient with Class VI hair loss in two hours. That is fast! It seems that most who perform scalp micro pigmentation (SMP) develop their own technique and timing. Dr. Rassman emphasized that he thinks SMP will become an integral part of every practice that offers hair restoration surgery.

John Cole offered: Dr. Pathomvanich did a nice job organizing the meeting. I think you were our busiest speaker with the most presentations with five as I recall, Brad.

Bradley Wolf added: It takes so many people working a year in advance to pull off what appears to be a seamless event. Much credit goes to Victoria Ceh, our tireless Executive and CME Director, the staff of the ISHRS, and the CME Committee (Continuing Medical Education). I saw Victoria, Kimberly

Miller, and Melanie Stancampiano everywhere. I thought they cloned themselves! Of course, Dr. Damkerng Pathomvanich, the program chair, also deserves much of the credit. Dr. Vincenzo Gambino, our president, and Damkerng, with Victoria, spend so many hours behind the scenes for a year working hard to make the five days of the meeting hum like clockwork. There are so many more who worked so hard, it's impossible to mention everyone.

John Cole noted: The first argument of the meeting occurred between Dr. Puig and me. Dr. Puig feels that he is seeing much mature results much faster with liposomal ATP while I disputed this contention. We have some work to go in establishing a protocol for platelet rich plasma (PRP). In presenting a response to PRP it is important to discuss the protocol used so that we can better evaluate the result. We need to disclose the needle size for injection, the concentration of PRP, the depth of the injection, how the PRP is activated, the hematocrit of the PRP, and any ancillary treatments such as microneedling. Dr. Puig gave a wonderful paper that suggests that a 1× concentration of PRP and a hematocrit less than 3% without activation of the PRP produces no improvement in the Hair Mass Index in women with Ludwig II female pattern hair loss (FPHL). Dr. Kumar found no hair transplant surgical result benefit (hair count or hair diameter) in a small sample size of patients with a concentration of 1 million platelets/μl and activation with calcium chloride or thrombin. Dr. Kumar stated that he used to trichoscan to document his results, but he did not present results demonstrated the use of a trichoscan. I have definitely seen an improvement in hair mass in women using a 5× concentration, a 2% hematocrit, injected in all layers from upper adipose to upper dermis using a 25 gauge needle, and activation with Calcium gluconate. I have seen the cross-sectional trichometry improve from 60 to 98 after one year in one woman. Clearly, we need more data with the specific protocol noted. We are lucky to now have some studies that demonstrate protocols that seem to offer no benefit from PRP.

Bradley Wolf added: As with most new medications, surgical modalities, or ancillary treatments, it takes time and studies to determine efficacy. From the lectures in Kuala Lumpur, it appears there is much work to be done on determining optimal concentrations of PRP, which activator, and the needle size that maximize the effects of PRP. It's interesting that there were no studies or lectures on ACell presented in Kuala Lumpur.

John Cole followed: I generally don't care for talks on scarring alopecias, but Dr. Paul McAndrews gave a wonderful talk on hair transplantation in Non-AGA & Scarring Alopecia. I tried grafting into incision scars with slightly larger grafts in the early 1990s. But I did not like the results. I was happy to see some nice results from Ryu using smaller grafts. This clearly gives us one more option in addition to trichophytic closure to improve the appearance of strip scars. In addition to an award for presentation skills, Sarah Wasserbauer gave a wonderful talk on grafting eyebrows. She worked the audience magically. I loved your high speed video, Brad. What camera did you use?

Bradley Wolf responded: I used a GoPro camera on a stationary mount just behind me. It was a challenge to dodge the camera while doing the strip excision surgery. I tried mounting it on my head but there was just too much movement in the video. The GoPro Studio editing software was quite a challenge.

John Cole continued: I think Dr. True presented a very nice study documenting the benefits of human recombinant hyal-

Cyberspace Chat from page 221

uronidase in strip surgery. I can't imagine doing a strip without it. One of your scars where you closed with metal sutures was pink. I wonder if you see an increase in pink scars with metal sutures. We perform hair transplants rather than fat transplants so I always wondered what the benefit was from chubby grafts and why so many were worried that FUE grafts lack adipose. I think you clearly demonstrated that we are transplanting the essential structures with FUE in your genomics study comparing hair follicles from FUT, FUE, and plucks, Brad.

Bradley Wolf followed: Thanks to P&G (Proctor & Gamble Co.) who did the genetic analysis. They studied 55,000 transcripts of 18,000 genes and looked closer at 132 genes of hair relevant keratin and keratin associated proteins. I think it's the best evidence to date that shows FUT and FUE grafts are pretty much the same down to the stem cells present in both.

John Cole replied: I'm not sure what to make of the hidden transection rate talk given by Dr. Kim. However, I just received a communication from Dr. Kyuhu Lee discussing the same thing. I believe we have to consider this. Dr. von Albertini gave a nice presentation on the benefits of limiting the incision depth. The volume of the contiguous wound is important in my opinion. A 1cm-wide strip cut 30cm long and 1cm deep removes 30,000 mm³ of tissue and might yield 2,400 follicular units. A 1mm punch incision 2mm deep removes about 1.56mm³ of tissue and each incision is separate from the next wound. In total, this would result in the removal of less than 3769.8mm³ of tissue when 2,400 grafts are removed. I can only approximate with FUE simply because with FUE the lower incision is always deeper than the upper part of the incision, so the excision is always less than a complete cylinder. However, because the punch enters the skin at an angle based on the angle of hair growth, the incision is always an ellipse and the volume of tissue removed is greater than the volume of a cylinder. Regardless, the volume of contiguous wounding with FUE is significantly less than the contiguous excision volume with strip excision.

It was interesting to discover that 47% of FUE physicians use motorized extraction. Only 21% of physicians use a dull punch. In five years, 32% of physicians expect to perform FUE 76-100% of the time and nearly 75% expect to perform FUE at least 26% of the time. Emre Karadeniz found that his grafts from FUE average only 2.03 hairs while his FUT grafts average 2.25 hairs. Clearly, this is a function of punch size and technique. Dr. Lorenzo averages 2.25 hairs per grafts from FUE. In the Farjo clinic, the ARTAS averaged 2.12 hairs per graft, while FUT averaged 1.98 hairs per graft. Quite frankly, I've never seen a clinic consistently average more than 2.05 hairs per graft from FUT though Bernstein's microscope vs. Loop study showed an average of 2.28 hairs per graft from microscopically dissected grafts compared to 2.14 hairs per graft from loop dissection.³ Sharon Keene gave a nice review of low level laser therapy (LLLT). She clearly did her homework. I appreciate the idea from Dr. Hwang to control the depth of graft placement based on the graft length. Pitting can produce low yields. This is a step in the right direction as variation in graft length can produce pitting when a single depth of insertion is followed.

Yun Joo Lee presented some fascinating data on patient satisfaction in Korean patients from hair transplantation. He found 75% of men were satisfied (3% dissatisfied) and 60% of females

were satisfied (13% dissatisfied). I think it is always harder to please a woman. Dr. Dua avoids the mid-sternal area when harvesting chest hair grafts due to a concern about hypertrophic scarring. In hundreds of cases using punches up to 1mm in diameter, I have not seen hypertrophic scarring on the chest regardless of anatomical location. I have seen hypertrophic scarring on the chest in multiple locations by another physician, so clearly there is a way to cause hypertrophic scarring. Fortunately, this patient responded well to injections of 10mg of kenalog/cc with a loss of elevation. The discoloration from the scarring remained on his chest. Drs. Bernstein and Harris were the "caboose" of our meeting. It is exciting to see the advances in robotic recipient site creation as demonstrated by Dr. Bernstein. Dr. Harris presented some retrospective data average hairs per graft by robotic harvest (12.2% one hair, 41.85 two hair, 30.8% three hair, 15.2% four hair). In my regional variation study, I found that in the entire donor area from the mid-occiput to the supra-auricular region the average was number of hairs per follicular group was 12.32% one hair, 36.3% two hair, 31% three hair, 14.9% four hair, 4.24% five hair, and 1.24% six hair.⁴ However, if we looked only at the mid-occipital area and the mid-mastoid area, the average number of hairs per group was 9.15% one hair, 37.6% two hair, 28.54% three hair, 17.35% four hair, 5.48% five hair, and 1.86% six hair. The robot harvests most of the grafts from the central part of the donor area and progressively less laterally. The robot is unable to harvest the larger groups containing more than 5 hairs and selectively chooses the smaller grafts. In general, the data is similar in both studies; however, we must also consider that a small amount of fractionation of follicular groups is occurring. Furthermore, when I harvest grafts by FUE using a punch size similar to that of the ARTAS I find it difficult to locate single hair grafts and my mean calculated density is 2.93.⁵ Still, we must be impressed with the progress the robot is making. Or should we?

If we look at a photograph comparing the ARTAS to a 0.8mm punch, we note the wounding is much larger with the ARTAS (Figure 1). In fact, the wounding with the ARTAS is much larger than 1mm. The reason we find 12.32% natural single-hair grafts in my regional variation study is that on the surface of the skin we can arbitrarily define natural single hair follicular units (Figure 2). What we cannot do is isolate these single-hair follicular units from the larger adjacent cluster using a punch that cuts holes the size employed by the ARTAS. If we use a punch that cuts holes similar to that of the ARTAS as depicted in Figure 1, we will find it almost impossible to isolate single hair grafts. In order to isolate single-hair grafts in FUE, we must use a punch similar in size or smaller than the 0.8mm punch depicted in Figure 1. We isolate single-hair grafts by taking small bites from larger clusters (Figure 3). In fact, natural single-hair follicular units are uncommon especially in the middle of the donor area where the ARTAS is most efficient. Only patients with a low calculated density and poor candidates for hair restoration surgery will have a large number of natural single-hair follicular units in donor boxes 1, 2, 5, and 6.⁶ Due to efficiency, the ARTAS often harvests predominately in the middle of the donor area and progressively less laterally (Figure 4). The ARTAS is known to over harvest isolated portions of the middle of the donor area where the resulting follicular unit density in this 0.1cm² area following a single pass with the ARTAS was equivalent to only 20 follicular units/cm² (Figure 5). The high percentage of single-hair grafts given a wound this size, the predilection to harvest predominately

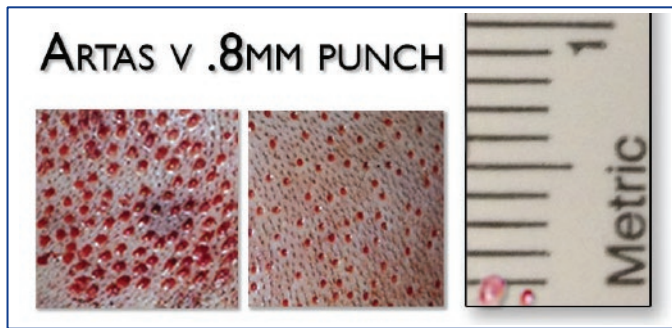


Figure 1. Side-by-side comparison of the ARTAS (left) vs. .8mm (right) wound size.

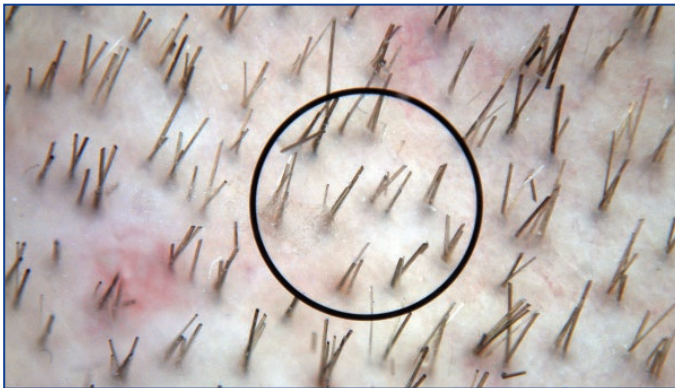


Figure 2. True single-hair follicular units are uncommon in an average donor area. In FUE, single-hair grafts are generally obtained by fractionating the larger follicular units using a punch 0.85mm in diameter or smaller. Isolating single hairs is far more difficult if not impossible with punches 1.1-1.2mm in diameter.

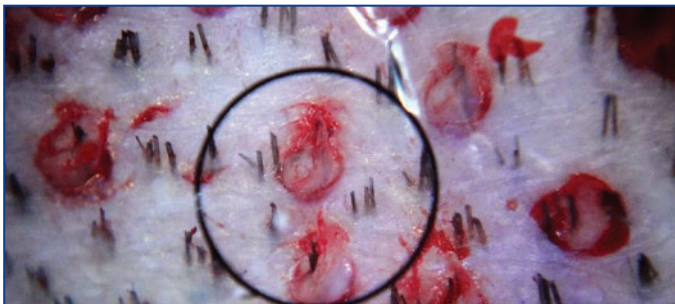


Figure 3. Single-hair grafts in FUE may be isolated *in vivo* using a punch 0.85mm in diameter or smaller.

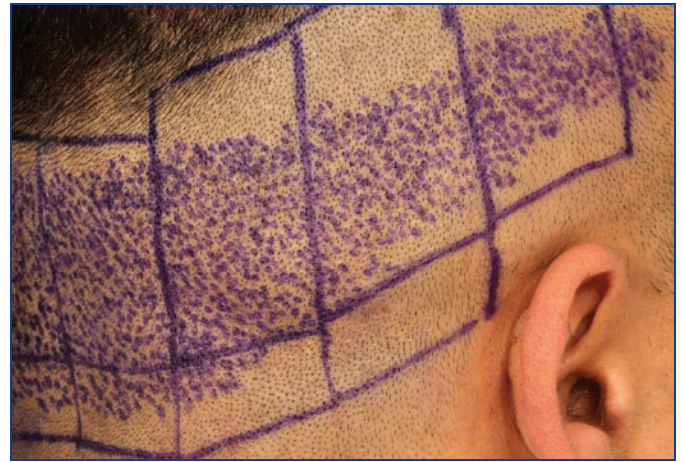


Figure 4. Due to efficiency, the ARTAS often harvests predominately in the middle of the donor area and progressively less laterally.

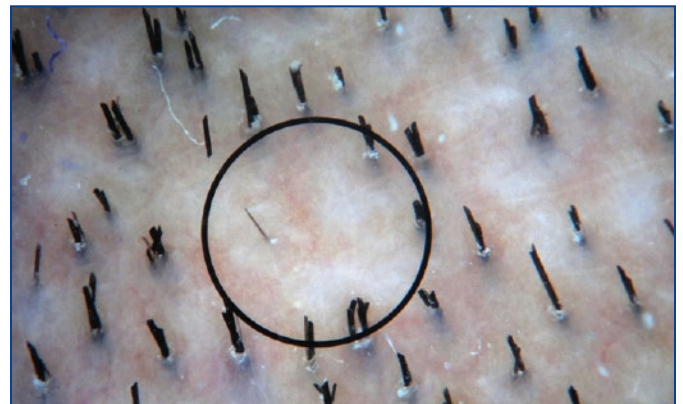


Figure 5. The ARTAS can over harvest in isolated areas; meaning, a single pass with a 1.2cm² punch area may leave only the equivalent of 20 follicular units/cm² in isolated areas.

from the middle of the donor area, the potential to over harvest isolated areas of the donor area, along with the unexplained high percentage of “missing grafts” remain concerns for the ARTAS.

Finally, I think Drs. Pathomvanich, Bhatti, Ng, and Vong treated us to some impressive results. It was a well-rounded meeting. What are your final thoughts, Brad?

Bradley Wolf concluded: It was exciting to see the energy of the new attendees from Asia, which was very well represented with 56% of the attendees from Asia. Now it's on to Chicago, September 9-13, 2015. Save the date! Good luck to our incoming president, Sharon Keene, and our program chair, Nilofer Farjo, who I am sure are busy right now working on ISHRS #23. I hope to see everyone there.

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Meetings and Studies

Review of the 6th Annual Conference of the Association of Hair Restoration Surgeons – India, HAIRCON 2014 September 19-21, 2014 • Goa, India

Sanjiv Vasa, FRCS India drvasa@gmail.com

Titled “Evidence Based Hair Restoration,” the congress was organized under Drs. Sandeep Sattur (President), Lakshyajit Dhami (Secretary), Rajesh Rajput (Scientific Chairman), Ajay Hariani (Treasurer), Kapil Dua, Anil Garg (Joint Scientific Secretaries), and Yuri Dias Amborcar (Goa Co-coordinator). The meeting was honored to host international faculty including Drs. Vincenzo Gambino (President, ISHRS), Patrick Mwamba (Belgium), and Akaki Tsilosani (Georgia). A total of 167 delegates attended.

FRIDAY/SEPTEMBER 19, 2014

For the first time in HAIRCON history, a Cadaver Workshop, which was attended to capacity, was arranged at the Department of Forensic Medicine, Goa Medical College, for a limit of 20 attendees. Under the supervision and instruction of national faculty, including Drs. Rajesh Rajput, Sanjiv Vasa, Manoj Khanna, Narendra Patwardhan, Lakshyajit Dhami, Ashok Reddy, Ajay Hariani, Anand Joshi, Puli Ravindra Reddy, Anil Garg, Kapil Dua, Aman Dua, K. Ramchandran, Vinod Vij, and Sandeep Sattur, harvesting by FUT (anesthesia, strip harvest, donor closure, slivering, graft and dissection) and FUE (anesthesia, manual punches, motorized punches) methods with graft implantation were demonstrated.

The meeting was inaugurated by the Chief Guest Dr. Pradeep Naik (Dean of Goa Medical College) and Dr. Gambino.

The “Video Surgery Workshop” was the most interesting, informative, and interactive session, and was beneficial for experienced as well as novice surgeons. International and national faculty presented their best videos covering the A to Z of hair transplantation with the pros and cons of different methods.

SATURDAY/SEPTEMBER 20, 2014

In using LED screens for the first time, we found that the presentation clarity was excellent even to the back of the room and with the lights on in the hall so no one dozed off or moved. Dr. Sattur started the scientific program by emphasizing the need of evidence based hair transplantation. Dr. Garg presented his data of 1,456 male patients with non-scarring alopecia: 51% were between 25-45 years of age; 77% were smokers; 30% were doctors; 70% were ferritin and D3 deficient; and 45% were B12 deficient. Dr. Kapil Dua requested all to monitor and record their follicular transaction rate (FTR), noting that FTR should be reduced from around 20% for the beginner to less than 5% for an experienced

surgeon. He advised avoiding over harvesting and not crossing the border of permanent donor zone during FUE harvesting. Dr. Desai expressed the opinion that partial as well as complete transection rates are higher in severe degrees of baldness, thin hair texture, and those who had previous FUE procedure.

Female and Young Patient Transplantation

Dr. Patwardhan presented the etiopathogenesis, management, and recent trends in female pattern hair loss. Dr. Gambino spoke on the importance of being conservative in selecting young patients and in avoiding low hairline designs. He also presented the prestigious “VASA GOLDEN PEACOCK ORATION.” The title of his talk was “The Hair Mystique: The Power, Symbolism & Significance of Hair Through Time.” With beautiful illustrations, he portrayed the purpose of hair and the variety of functions it serves: protective, aesthetic, symbolic, social, communicative, and erotic.

Company-sponsored sessions included the “Role of Biomimetic Peptides (Alembic)” by Dr. Rajesh Rajput; “New Generation Hair Restoration Medical Treatments (IPCA) by Dr.

Anil Ganjoo; “Hair Care” (Proctor & Gamble) by Drs. Jeni Thomas and Nina Madnani, and “Surgical Hair Restoration Using a Robot (ARTAS®)” by Dr. Chang-Hun Huh.

Dr. Rajput’s “My Overview of the Practice of Hair Restoration” delivered another prestigious AHRs oration. He presented his journey of more than two decades. He concluded his oration with a list of unsolved problems facing current practitioners, including misleading and self-promoting advertising, non-medical persons running clinics, and

surgeries done by technicians.

Body Hair Transplant

Dr. Akaki demonstrated extraction harvesting of beard, chest, and abdomen with simultaneous graft implantation and strip harvesting of pubic hair. Dr. Mwamba enlightened delegates by giving details of body hair sources from beard, chest, abdomen, axilla, and legs. Anatomical variation, density, caliber, angulation to skin, telogen/anagen ratio, speed of harvesting, and final yield of various sites were compared. He advised to warn clients about the unpredictability of the end result. Dr. Poswal detailed his anesthesia technique in non-scalp donor areas. Dr. Aman Dua presented an informative chart about anagen/telogen %, its duration, density, and follicular depth of different body hair donor sites.



The meeting was inaugurated by the Chief Guest Dr. Pradeep Naik (Dean of Goa Medical College) and Dr. Gambino (right).

Large-Session Hair Transplantation

Dr. Kapil Dua discussed the importance of rotation of surgeons, assistants, and implanters during large FUE sessions from scalp, beard, and chest. Dr. Akaki presented how he performed 9,688 grafts in a single FUT session. Dr. Poswal presented how he performed 11,460 FUE grafts harvesting from scalp, beard, mustache, chest, and axilla over multiple consecutive days. Dr. Khanna spoke on strip harvest planning. Dr. Soni and Dr. Ramchandran demonstrated strip harvesting combined with FUE above and below the incision.



Drs. Sandeep Sattur (left) and Patrick Mwamba (right).

Recent Trends

Dr. Patwardhan identified platelet rich plasma (PRP), extra cellular matrix, robotics, cloning, and gene therapy as emerging therapies. Dr. Akaki discussed long hair transplantation. Dr. Aman Dua presented cross-sectional trichometry. Dr. Desai demonstrated how harvesting with simultaneous graft implantation could improve survival rate. Dr. Poswal illustrated non-permanent, ultra-refined micro pigmentation.

Difficult Situations

Dr. Mwamba illustrated solutions to misangled hair, a pluggy look, ridging, pitting, and mislocation in revision cases. Dr. Joshi stressed follicular integrity as the key to success. Dr. Soni suggested wide coverage and dense packing for treatment of the vertex, but Dr. Reddy recommended the optimum goal is not maximal density.

Innovative Ideas

To reduce the visibility of the scar from strip harvest, Dr. Poswal transplanted beard hair into the freshly sutured incision. Dr. Garg showed an animated video demonstrating an 8cm distance above the mid-glabellar line as the crucial parameter for frontal hairline design. Dr. Atodaria presented a device for making multiple coronal recipient sites. Dr. Vasa showed an improved version of the "SAVA PLUS" implanter that is more efficient and easier to learn.

Dr. Kapoor highlighted the issue of Professional Indemnity in Hair Restoration surgery. It was an eye-opener as most of us found that we were often not fully covered by insurance companies. He suggested the importance of insurance for clinics as well as doctors.

SUNDAY/SEPTEMBER 21, 2014

In spite of the Great Gala Dinner, the sessions started on time with PRP & Biologics. Dr. Aman Dua presented protocol for PRP and Dr. Yeole presented his study of safety and efficacy in 200 cases. Dr. Ravi discussed the need for more studies and research using PRP alone, not in conjunction with other therapies, to establish evidence for clinical efficacy. Dr. Garg provided the scientific basis for how Ayurveda herbs and food supplements affect hair loss.

Post-op Care and Complications

For patient safety, Dr. Sattur gave the list of emergency drugs, monitoring, and resuscitative devices, and the action plan that each center should be equipped with for potential medical emergencies. Dr. Mysore outlined a practical approach, system, and hints on how to achieve patient satisfaction. Dr. Akaki presented the prevention,

early detection, and treatment of early, intermediate, and late complications. He discussed X factor and Poor Growth Index (PGI), where poor growth resulted in spite of all precautions.

Potpourri

Dr. Sharma suggested FUE trial transplantation in cicatricial alopecia. Dr. Mysore questioned the validity of permanent donor zone and showed that in some cases even donor area also recedes. Dr. Ramchandran delivered

practical hints for FUE beginners, stressing the need to start slowly with smaller sessions and as eye-hand-hair coordination improves increase the speed and number of grafts. Dr. Mishra supported recipient co-dominance in body hair to scalp. Dr. Vij said that persistence has a habit of producing success whether one uses sharp or blunt, motorized or manual punches. Dr. Agarwal suggested that adding finasteride, tretinoin, and aminexil to topical minoxidil is of inconclusive benefit. Dr. Pothula said that a good front hairline is the index of a good result.

All national and international faculty participated in a lively panel discussion for the live assessment and planning of four cases: a young man, advanced baldness, a woman, and a repair. The second half of the panel included managing with medical modalities, gray hair, and staff recruitment, prevention of attrition, and dealing with freelance technicians.

The conference ended with "Hair Transplant Quiz" by Quiz master Dr. Patwardhan. ♦

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Regional Societies Profiles

In this issue, as part of our ongoing series of regional society profiles, we are featuring the ABHRS/IBHRS. While not actually a regional society, it is a valuable and esteemed member of the Global Council of the ISHRS.

It's current President, Dr. Jim Harris of Denver, Colorado, USA is widely known and respected in our Society. He is also the 2014 recipient of the Golden Follicle Award.

It was a pleasure for me (RT) to serve again as an ABHRS examiner in Kuala Lumpur for the 26 candidates who sat for the exam from the following countries: Saudi Arabia, United States, Ireland, Thailand, South Korea, India, UAE, Malaysia, Philippines, the UK, and Iran.

A Look at the American Board of Hair Restoration Surgery

James A. Harris, MD, FISHRS, Diplomate ABHRS, 2014 ABHRS President *Greenwood Village, Colorado USA* jharris@hsccolorado.com

The American Board of Hair Restoration Surgery (ABHRS) was formed in 1996 to fill the recognized need for a certifying body in the field of hair restoration. Its counterpart outside the United States, the International Board of Hair Restoration Surgery (IBHRS), was recognized internationally in 2000. The ABHRS/IBHRS examination is the only psychometrically and statistically validated examination dedicated to the specialty of hair restoration surgery. The express purpose of the organization is to promote the highest quality, ethical care for the patient and to this end provide certification for physicians in this specialty. The examination consists of written and oral portions, and passing the exam assures the public of an individual's educational ability and experience to perform safe, aesthetically sensitive hair restoration surgery.

The organization currently has 178 diplomates representing 24 countries. Because of the international scope of hair restoration surgery, the ABHRS offers the examination in conjunction with the ISHRS annual scientific meetings to make the examination process more accessible to physicians around the world. The most recent examination was held in Kuala Lumpur and the next exam is slated for the Chicago ISHRS meeting in September 2015.

The ABHRS is committed to ensuring that the effort each candidate makes in preparing for and successfully passing the examination brings value to the title of "Diplomate of the ABHRS." To enhance the member's status, the ABHRS has co-sponsored the past two Morbidity and Mortality conferences with the ISHRS in order to provide a unique learning experience.

The concept of "value added" to the certification by the ABHRS prompted an investigation into ABHRS and ISHRS members' perceptions of the ABHRS. This was accomplished by way of a survey sent to members of both organizations. Based on the evaluation of the survey results by the ABHRS board of directors, a strategic planning session was held to chart the course for the organization. While the details of the plan are still being discussed, the ABHRS is committed to ensuring that the designation of "Diplomate of the ABHRS" is recognized by patients as a sign of a physician's commitment to professional conduct, ethical practices, and the pursuit of excellence through education and lifelong learning. In addition to this, the board is investigating numerous options to direct more patients to ABHRS-certified physicians.

The relationship between the ABHRS and the ISHRS is both logical and symbiotic; both organizations recognize the value of ethics and education. The ISHRS offers the gamut of educational opportunities for a physician interested in hair restoration and the ABHRS provides the objective evidence that a physi-

cian has amassed the requisite experience and factual knowledge of the specialty to provide quality patient care. Because taking the board examination is not required to perform hair restoration, passing the test is a demonstration to patients and colleagues alike that a base of factual information and experience matters to the profession.

There are several paths to candidacy to sit for the certifying examination. Please visit the ABHRS website at www.abhrs.org and read the "Applicant Brochure" to see the pathways and the requirements for application. If you determine that you are qualified to sit for the examination, the materials can be submitted online to streamline the process. The website also lists suggested reading materials to study for the examination. There is also a board preparation course offered in conjunction with the ISHRS annual meetings. It is usually best to take the course the year before your anticipated examination date.

As president of the ABHRS, I would like to invite all of my colleagues that meet the experience and knowledge criteria to apply to take the ABHRS certifying examination. The examination and experience requirements are rigorous, but the benefits of the added certification will enhance your standing among physicians and patients. As more hair restoration surgeons become certified by the ABHRS there will be an implicit endorsement of the educational standards of the ISHRS resulting in an elevation of the profession in the minds of medical professionals and the public alike. Take the exam, and consider your part in elevating the specialty! ♦



Dr. James A. Harris



Review of the Literature

Nicole E. Rogers, MD *Metairie, Louisiana, USA* nicolerogers11@yahoo.com



Pumpkin Seed Oil for Hair Loss?

Cho, Y.H., et al. Effect of pumpkin seed oil on hair growth in men with androgenetic alopecia: a randomized, double-blind, placebo-controlled trial. *Evidence-Based Compl Alt Med*. 2014; 2014:549721.

In April, Korean researchers investigated the use of pumpkin seed oil (PSO) to treat male pattern hair loss. A total of 76 men with mild to moderate androgenetic alopecia were enrolled in a randomized, placebo-controlled, double-blind study. The treatment group took 400mg oral PSO daily for 24 weeks. Results were assessed using standardized photography (taken by a blinded photographer), patient self-assessment scores, hair thickness, and hair counts. At the completion, mean hair count increases of 40% were seen in the treatment group versus 10% in the placebo group. The PSO group also had significantly higher self-rated scores. No changes in liver enzymes or creatinine levels were observed in the PSO group, and most tolerated the supplement well.

Comment: For decades, researchers have been trying to identify natural remedies for hair loss. Several plant-based 5-alpha reductase inhibitors already have been identified, including saw palmetto, however, the data to support their use has been limited. This study investigated another plant-based 5-alpha reductase inhibitor also touted for treatment of symptomatic BPH. Although the study was limited to men, it raises the question of whether females may also benefit from supplementation with PSO. ♦



Age-related Thinning: Why It Makes Sense

Chen, C.C., et al. Regenerative hair waves in aging mice and extra-follicular modulators follistatin, Dkk1, and Sfrp4. *J Invest Dermatol*. 2014; 134:2086.

New research helps explain why older people tend to have thinner hair. In one clever series of experiments, full thickness skin from "old" mice (aged 24 months) was transplanted to younger, immunodeficient mice aged 3-6 months. In areas where the transplanted area was very small, the hair cycling resumed throughout. In areas where the transplanted area was large, the hair cycling resumed only at the periphery. The researchers concluded that growth factors from young skin apparently diffused into the nearby transplanted skin to help stimulate the more senescent follicles.

Comment: The results of this study may have far-reaching implications for hair and beyond. For hair, it proves that even stem cells in aging hair can be reactivated by an influx of stimulators on Wnt5a, Wnt6, β -catenin, and follistatin. However, their ability to stimulate hair growth was regionally limited by Wnt pathway inhibitors Dkk1 and Sfrp4, which are more prevalent in more aged hair follicles. For skin, it suggests that we may be able to reverse signs of aging not by adding stem cells but simply by having the right mix of stimulators/inhibitors to jumpstart the repair process. ♦



Hair Loss Due to Voriconazole

Malani, A.N., et al. Alopecia and nail changes associated with voriconazole therapy. *Clin Infect Dis*. 2014; 59:e61.

Physicians treating fungal infections associated with the 2012 contamination of methylprednisolone heard many complaints about hair and nail changes. They devised a formal questionnaire and found that among 152 patients who received voriconazole for 1 month or more, 82% of patients reported hair loss. Areas affected were the scalp, arms and legs, and eyebrows or eyelashes, but loss of facial, axillary, chest, and pubic hair was also reported. In addition, 70% of patients reported nail changes, including 10% with complete nail loss. There was no association with serum drug levels and the hair began to regrow by 3 months of stopping voriconazole.

Comment: The results of this study contrast sharply with premarketing trials, which reported hair loss in fewer than 2% of patients on voriconazole. The authors postulate whether the fact that many study participants were on chemotherapy may have confounded the results and falsely lowered the rates of alopecia attributed to voriconazole. ♦

Letter to the Editors

Re: "State-of-the-Art FUE: Non-Shaven Technique" (*Hair Transplant Forum Int'l.* 2014; 24(5):161, 166-169).

Michael Kyu-ho Lee, MD Seoul, South Korea
fue.expert@gmail.com

I wish to express my respect and thanks to Dr. John Cole for his great article and share my own experience with this technique.

In 2008, FUE harvesting was introduced to South Korea in earnest. Many patients with hair loss, who were reluctant to do FUT hair transplant surgery because of fear for donor wound scar and post-operative pain, welcomed this less invasive procedure. But they also do not like the need to shave their heads for FUE surgery. Non-shaven FUE (NSFUE) is an innovative technique to overcome this demerit of FUE procedure. NSFUE helps more patients to choose the FUE by reducing concern about their appearance after surgery.

I have used NSFUE mostly on Korean patients for the past seven years. When I first used the technique, I found that harvesting was very time consuming because it was difficult to control the long hairs with hair clips. It was difficult to concentrate on the primary tasks of punching and follicle isolation. Another problem was that if I left the hairs too long it was easy to misjudge the correct exit angle of the hair. The donor surgical field was changed from 2D to 3D because of the surrounding long hairs. Honestly, I felt it looked like exaggerated "Magic Eye pictures." And with 5× loupes, I would get nauseated. NSFUE harvesting was like finding a four-leaf clover in an untrimmed grass yard.

But with time, and as we gained experience, getting the four-leaf clover became easier. The longer hairs weren't a problem any more and my transection rates improved to match those of my shaved FUE cases.

In East Asian patients like Koreans, one of the useful advantages of NSFUE is that we can evaluate the donor area hair coverage during and immediately after harvesting, especially in giga sessions (> 4,000 grafts). Koreans have less hair and follicular density than Caucasians. We have to harvest higher percentage of donor hairs to cover advanced balding. Pre-trimming the hairs to be harvested gives me information about coverage of residual hairs after surgery. This helps me not to overharvest.

Dr. Park described direct NSFUE, which does not need pre-trimming of hairs. (*Hair Transplant Forum Int'l.* 2014; 24(3); 103-104). He explained that direct NSFUE has an advantage of time saving compared with NSFUE because pre-trimming of hairs usually takes 1-2 hours. But, in my opinion, direct NSFUE does not reduce total procedure time because in NSFUE 1) follicular selection has been done already, 2) punch centering and scoring is faster and more accurate, and 3) I can use the time while my assistants are pre-trimming to prepare the recipient area. If I need to get additional grafts more at the end of surgery, I perform direct NSFUE.

Sometimes I get long hair grafts with direct NSFUE whether by intention or not, as shown in Figure 1. Although long hair grafts have some advantages, they can be pulled out easily by accident during or after surgery. It is better to cut the long hairs shorter before placement.



Figure 1. Long hair graft.

I don't like using micro-suction during FUE donor harvesting, unlike Dr. Cole, because grafts may be lost in the suction device, the sound of the suction is disturbing to patients, and it requires another assistant.

As an aside, an interesting experiment was done on a Korean TV program that does experiments to confirm if a general hypothesis is true. On the show, they were testing to see if an electric vacuum cleaner made infants stop crying and fall asleep due to its noise. The hypothesis was that the electric sounds were very similar to what fetuses hear in their mother's womb. It worked! In the same manner, the aimless, noisy suction sound may make my patient doze off, which can be a real problem because my patients, like Dr. Cole's, are sitting upright during the procedure.

In conclusion, I think it is not too much to say that NSFUE is the most valuable FUE technique. I think every FUE practitioner will want to master NSFUE and many patients will prefer this technique to all others. ♦

Recorded Sessions from Kuala Lumpur & Video Library

We recorded sessions that we thought the membership would find interesting. The recordings below are available for viewing exclusively to ISHRS Members.

Access the video links via the Members Only section at www.ishrs.org.

- Log in to the Members Only section.
- Top, right, click the maroon box "Members Only."
- Under "Resources," it is the first item.

VIDEO LIBRARY – SURGICAL VIDEOS: As another member benefit, the ISHRS also makes available for members a "Video Library" of many surgical videos shown at past meetings.

To access:

- Under "Members Only" section, click "Video Library" tab.



HAIRLINE DESIGN

Presented on Thursday/October 9, 2014, 9:15AM-10:20AM, in the General Session

Learning Objective:

Compare and contrast different surgeons' approaches to designing hairlines and temporal points.

Asian Hairline

6:17 running time
Damkerng Pathomvanich, MD

Caucasian Hairline

8:12 running time
Ronald L. Shapiro, MD

African Hairline

8:05 running time
Melvin L. Mayer, MD, FISHRS

Woman Hairline

8:55 running time
Nilofer P. Farjo, MBChB, FISHRS

Transsexual Hairline

6:22 running time
Russell G. Knudsen, MBBS, FISHRS

Questions & Answers

16:37 running time

.....

THE ROLES OF ANCILLARY STAFF IN THE OPERATING ROOM

Presented on Friday/October 10, 2014, 8:45AM-9:10AM, in the General Session

Moderator Introduction

1:30 running time
Vincenzo Gambino, MD, FISHRS

Who Can Do What: The Standard of Care and Legal Perspectives

11:55 running time
Scott Fintzen, JD, Gaido & Fintzen Attorneys at Law,
Chicago, Illinois, USA

Questions & Answers

15:53 running time

.....

ANDROGENETIC ALOPECIA: CURRENT & POSSIBLE FUTURE NON-SURGICAL TREATMENTS

Presented on Friday/October 10, 2014, 2:45PM-3:55PM, in the General Session

Learning Objective:

Review the latest studies of efficacy and safety of drugs and other related treatments in androgenetic alopecia.

Moderator Introduction

3:10 running time
Carlos J. Puig, DO, FISHRS

Androgenetic Alopecia: New Insights into the Role of the Arrector Pili Muscle in Hair Biology

23:26 running time
Rodney Sinclair, MBBS, MD – Featured Guest Speaker
Professor of Dermatology, University of Melbourne, Australia

Low Level Laser Therapy (LLLT): How Does It Work? What Is the Difference Between the Different Devices?

16:04 running time
Sharon A. Keene, MD

Questions & Answers

10:14 running time

Fellow of the ISHRS (FISHRS)

In 2012, the designation of Fellow was established in order to recognize members who met its exceptional educational criteria.

In order to be considered, the hair restoration surgeon must achieve a specific level of points in a system of various educational parameters, such as serving in leadership positions, American Board of Hair Restoration (ABHRS) certification, writing of scientific papers, and teaching at scientific programs, among others.

It is a great honor for a member to achieve the Fellow designation of the International Society of Hair Restoration Surgery (FISHRS). This recognizes the surgeon who strives for excellence in this specialized field. To maintain this status, the surgeon must continue to meet established educational criteria over time. Fellows may vote and hold office in the Society, and they may use the ISHRS Fellows logo on their websites and in other promotional materials.

We encourage all Physician Members to consider applying for Fellow status.

Qualifications and process can be found in the Members Only section of ISHRS website at: <http://www.ishrs.org/members-only/ishrs-fellow-category>

Congratulations to the 23 Fellows of the ISHRS Approved at the Recent 2014 Annual Scientific Meeting!

Marc R. Avram, MD, FISHRS
Jonathan Ballon, MD, FISHRS
Alan J. Bauman, MD, FISHRS
Pierre Bouhanna, MD, FISHRS
Bijan Feriduni, MD, FISHRS
Steven Gabel, MD, FISHRS
Aditya K. Gupta, MD, FISHRS
Sunjgoo Tommy Hwang, MD, PhD, FISHRS
David Josephitis, DO, FISHRS
Sharon A. Keene, MD, FISHRS
Gabriel Krenitsky, MD, FISHRS
Kongkiat Laorwong, MD, FISHRS

Masahisa Nagai, MD, FISHRS
Bernard Nusbaum, MD, FISHRS
Damkerng Pathomvanich, MD, FISHRS
Paul T. Rose, MD, JD, FISHRS
Marwan Saifi, MD, FISHRS
Ronald Shapiro, MD, FISHRS
Tseng-Kuo Shiao, MD, FISHRS
James M. Swinehart, MD, FISHRS
Ken Washenik, MD, PhD, FISHRS
Sara Wasserbauer, MD, FISHRS
Greg Williams, MBChB, FISHRS



The full list of 83 FISHRS as of Oct. 11, 2014, may be found online at the link above.

Live Surgery Workshop

In this new edition of the Mediterranean FUE Workshop we will continue to study the FUE Technique.
10 procedures, 8 ways to perform them, 5 different motorized devices, 3 distinct manual techniques.

Take three days to enjoy Istanbul,
the city bridging two continents.

- Examine the factors that influence the survival of the grafts in FUE technique.
- Evaluate the capacity of the donor area to avoid his depletion throughout different procedures
- Discuss surgical extraction strategies for patients with advanced alopecia using FUE techniques
- Identify possible complications and disadvantages in the donor and recipient area related to FUE
- Comparing and evaluating FUT and FUE: pros and cons of these two methods of donor harvesting



ISHRS Regional Live Surgery Workshop hosted by:

Koray Erdogan, MD,
Alex Ginzburg, MD, and José Lorenzo, MD

International Faculty:

J. Cole MD, J. Devroye MD, FISHRS, K. Erdogan MD,
A. Ginzburg MD, J. Harris, MD, FISHRS,
J. Lorenzo MD, E. Lupanzula MD, R. True MD, FISHRS

Who should attend:

Physicians with intermediate or advanced experience
in hair restoration surgery

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www.3rdmediterraneanfueworkshop.com

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Message from the 2015 Annual Scientific Meeting Program Chair

Nilofer P. Farjo, MBChB, FISHRS *Manchester UK* dr.nilofer@farjo.com

It is with great pleasure that I invite you to the 23rd Annual Scientific Meeting to be held in Chicago, Illinois, USA, September 9-13, 2015.

The Venue

The meeting will be held at the Chicago Hilton, a landmark building that opened in 1927 and at the time was the largest hotel in the world. Although now, in spite of having more than 1500 rooms, it no longer can claim this title, it does have the largest event and conference facilities in Chicago. The hotel is situated in the heart of Chicago overlooking the waterfront, Grant Park, and nearby museums and shops. In 2012, the hotel had a \$150 million renovation so we can expect a very high standard of their facilities.

Access

Chicago O'Hare International airport is one of the biggest airports in the world with easy access from all continents. So if getting to meetings has been a problem in the past, please make a point of attending this meeting.

Abstracts

The deadline for abstract submission is early this year as our meeting is 1 month earlier so get planning now! Abstract submission is open as of December 2014 and will close in early February 2015. As always, the abstracts will be rated blindly by the scientific committee and we do have a limited number of spaces for talks so please make your abstract count and follow the guidelines on the ISHRS site to increase your chances of being chosen for an oral presentation. There is also the opportunity to have your submission chosen for a poster or video presentation.

If you have never submitted an abstract before or you have been rejected in the past, here are a few tips. Have a good title that is concise but explains fully what your topic is about. If the reviewers are intrigued by your title, then they are more likely to rate your abstract higher. If you are describing a study, then follow the usual format: Introduction, Method, etc. Make sure you follow the online system guidelines, and it is important

that you have final results. The reviewers will reject any abstract that says "Results Pending" or "I will present the results at the meeting," but which doesn't have the results for them to see. Also important is good quality photographs with standard views. Any photograph that doesn't have high enough resolution will not project clearly onto the large screens in the conference room. If you have any questions about the abstract process, then please send me an email or contact the ISHRS headquarters and we will be happy to help.

If your abstract is chosen, then you will be asked to submit your PowerPoint or video at least 6 weeks ahead of the meeting. Why is this? The moderator for your assigned session has the task of ensuring that the content of your presentation meets the required guidelines for quality and time limit and also fulfils the learner objectives.

The Program

I look forward to feedback from the Kuala Lumpur meeting, and I am excited about putting together a program that will meet everyone's educational needs. The meeting is geared for the intermediate-to advanced-level surgeon; however, there are some learning opportunities for novices through the pre-congress beginner course and workshops. The Advanced/Board Review Course and ABHRS examination will be held again before the conference, so please take advantage of one trip to attend these programs as well as the annual meeting.

Guest speakers will cover wide-ranging topics from the latest thinking on female hair loss, to nutrigenics, to the latest in hair biology research. Together with popular workshop topics, such as FUE and micropigmentation, I hope that I can put together a great program. It is a daunting task, though, to follow in the footsteps of previous program chairs who have done the society proud. So I ask you all: please send me your ideas, volunteer your help for workshops, and most importantly, send in your abstracts. I hope you have all received the eblast below asking for your help. The deadline for your ideas is coming up fast so don't delay!♦



Propose a Session for the 2015 Annual Scientific Meeting

Would you like to share your knowledge with your peers while gaining valuable speaking experience?

Do you have a colleague with expertise that is relevant and valuable to hair restoration?

Have you been to a session that you feel was particularly valuable?

Have you seen an inspiring speaker you'd like the ISHRS to invite to next year's annual meeting?

Submit your topic/speaker proposals for the 2015 ISHRS Annual Scientific Meeting by December 31, 2014.

Abstract deadline: February, 2015.





Warmest wishes for a
happy, healthy
holiday season!

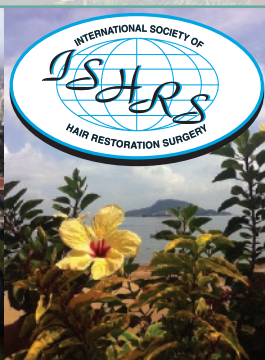
Please mark your calendars!

The ISHRS 2016 Annual Meeting location and dates have been confirmed!

October 19-22, 2016

24th Annual Scientific Meeting

Panama City, Panama



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Gorrin Surgical is expanding and seeks an experienced and dedicated hair transplant surgeon in the San Francisco Bay Area.

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

2015: 23rd ASM
September 9-13, 2015
Chicago, Illinois, USA

2016: 24th ASM
October 19-22, 2016
Panama City, Panama



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Advancing the art and science of hair restoration

Upcoming Events

Date(s)	Event/Venue	Sponsoring Organization(s)	Contact Information
November 23-24, 2014	19th Annual Meeting of the JSCHR <i>Okayama, Japan</i>	Japan Society of Clinical Hair Restoration (JSCHR) Hosted by Shinsaku Kawada, MD	Dr. Shinsaku Kawada, Program Chair kawada@kawada-keisei.gr.jp www.jschr.org
December 13, 2014	First Seminar of Circadian Rhythms in the Skin and Hair <i>Milan, Italy</i>	International Hair Research Foundation (IHRF) www.ihrf.it	Marta Buffa segreteria@ihrf.eu
February 27-March 1, 2015	ISHRS Asian FUE Hair Transplant Workshop <i>New Delhi, India</i>	International Society of Hair Restoration Surgery Hosted by Kapil Dua, MBBS, MS & Aman Dua, MBBS, MD	For details: www.asianfuehairtransplantworkshop.com
March 3-6, 2015 & May 26-29, 2015	University Diploma of Scalp Pathology and Surgery <i>Paris, France</i>	University of Paris VI Coordinators: P. Bouhanna, MD and M. Divaris, MD www.hair-surgery-diploma-paris.com	Dr. Pierre Bouhanna, Course Director sylvie.gaillard@upmc.fr
March 28-29, 2015	AAHRS Scientific Meeting & Live Surgery Workshop <i>Bangkok, Thailand</i>	Asian Association of Hair Restoration Surgery Hosted by Damkerng Pathomvanich, MD, FACS www.aahrs.asia	For details: infoaahrs@mail.com
June 26-28, 2015	ISHRS 3rd Mediterranean FUE Workshop <i>Istanbul, Turkey</i>	International Society of Hair Restoration Surgery Hosted by Koray Erdogan, MD, Alex Ginzburg, MD, & José Lorenzo, MD	For details: www.3rdmediterraneanfueworkshop.com
July 8-11, 2015	1st SILTAC Annual Meeting www.congreso-silatc2015.com <i>Buenos Aires, Argentina</i>	Ibero Latin American Society of Hair Transplantation (Sociedad Ibero-latinoamericana de Trasplante de Cabello - SILATC) www.silatc.org	Dr. David Perez-Meza, Meeting Chairman drdavid@perez-meza.com info@congreso-silatc2015.com
September 9-13, 2015	23rd Annual Scientific Meeting of the International Society of Hair Restoration Surgery <i>Chicago, Illinois, USA</i>	International Society of Hair Restoration Surgery www.ishrs.org	Tel: 1-630-262-5399 Fax: 1-630-262-1520
November 18-21, 2015	9th World Congress for Hair Research <i>Miami, Florida, USA</i>	North American Hair Research Society www.hair2015.org	For details: info@nahrs.org
December 5-6, 2015	20th Annual Meeting of the JSCHR <i>Kochi, Japan</i>	Japan Society of Clinical Hair Restoration (JSCHR) Hosted by Ryuichiro Kuwana, MD	Dr. Ryuichiro Kuwana, Program Chair der-r-kuwana@mte.biglobe.ne.jp www.jschr.org