HAIR TRANSPLANT forum INTERNATIONAL

Volume 25
Number 3
May/June 2015

Inside this issue

Androgenetic Alopecia: How It Happens

Rodney Sinclair, MBBS, MD, and Niloufar Torkamani, MD *Melbourne, Victoria, Australia*
rodney.sinclair@epworthdermatology.com.au

Androgenetic alopecia (AGA) affects both genders and is characterised by hair loss in a distinctive and reproducible pattern from the scalp.[1] Local and systemic androgens transform large terminal follicles into smaller vellus-like ones.[2] Follicular miniaturization is the histological hallmark of AGA.[3,4]

Diffuse hair thinning and increased hair shedding precede the appearance of baldness by a number of years. This is because the follicular miniaturization of AGA does not simultaneously affect all follicles within a follicular unit (FU). Instead, there is a hierarchy of follicular miniaturization with a follicular unit's secondary follicles affected initially and primary follicles miniaturized last.[5]

Scalp hairs arise from FUs that are best seen on horizontal scalp biopsy. FUs comprise a primary follicle that gives rise to an arrector pili muscle (APM), a sebaceous gland, and multiple secondary follicles that arise distal to the APM (Figure 1). Hairs from secondary follicles commonly emerge from a single infundibulum (Figure 2). In contrast, hairs over the beard, trunk, and limbs do not give rise to secondary hairs and exist singly or in groups of 3, known as Meijeres trios (Figure 3). Miniaturization occurs initially in the secondary follicles, leading to the reduction in hair density that precedes visible baldness (Figure 4). Baldness ensues when all of the hairs within a FU are miniaturized.

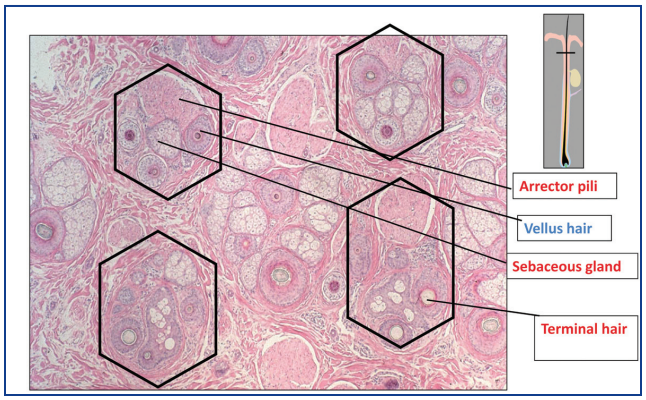

Figure 1. Horizontal section of skin biopsy from a hairy scalp showing features of early androgenetic alopecia. Follicles exist within follicular units comprising arrector pili muscle, sebaceous gland and derived secondary hairs, some of which have miniaturized to become secondary vellus hairs.

Figure 2. Multiple hair fibres can be seen to emerge from a single infundibulum.

One vexing question is that identical hair follicle miniaturization is seen histologically in lesions of alopecia areata. In this condition, miniaturization of all follicles occurs simultaneously. Unlike AGA, miniaturization in alopecia areata is potentially fully reversible.

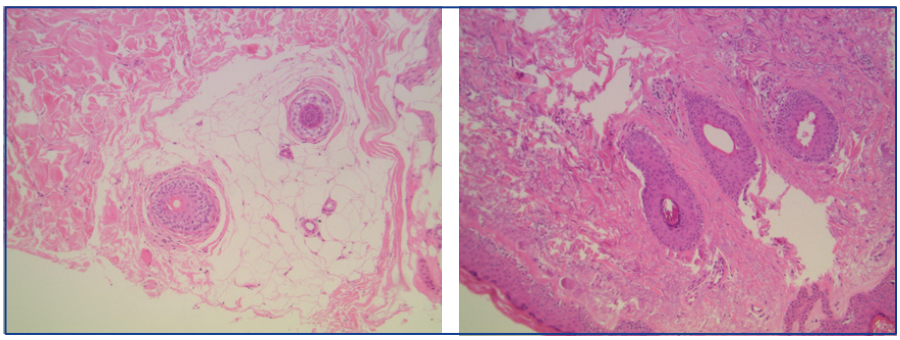

Figure 3. Horizontal section of skin biopsy from a hairy forearm showing follicles to exist singly (*left*) or in groups of 3 (*right*), known as Meijeres trios.

This apparent paradox can be explained by investigation of the arrector pili muscle (APM) and in particular its proximal attachment to the hair follicle bulge.[9] The APM is a small band of smooth muscle that runs from the hair follicle to the adjacent upper dermis and epidermis. This muscle contributes to thermoregulation and sebum secretion. The APM arises proximally at the hair follicle at the bulge, which is an epithelial stem cell niche. Three-dimensional reconstructions of scalp biopsy specimens demonstrate that preservation of the APM predicts reversible hair loss (Figure 5) and conversely

⇨ page 100

Hair Transplant Forum International
Volume 25, Number 3

Hair Transplant Forum International is published bi-monthly by the International Society of Hair Restoration Surgery, 303 West State Street, Geneva, IL 60134 USA. First class postage paid at Chicago, IL and additional mailing offices. POSTMASTER: Send address changes to Hair Transplant Forum International, International Society of Hair Restoration Surgery, 303 West State Street, Geneva, IL 60134 USA. Telephone: 1-630-262-5399, U.S. Domestic Toll Free: 1-800-444-2737; Fax: 1-630-262-1520.

President's Message

Sharon A. Keene, MD, FISHRS *Tucson, Arizona, USA* skeene@ishrs.org

Dear Colleagues,

The first of its kind, stand-alone Assistants Workshop will be completed by the time of this publication. Experience is the greatest teacher, and I know we will have gained so much from this workshop hosted by Dr. James Harris and his experienced and excellent course faculty, Tina Lardner and Emina Karamanovski. This workshop underscores the ISHRS's long-standing and continued commitment to assistant education and training. There are rapid changes occurring in the field of hair restoration surgery and the more we are able to adapt to the varying needs and requests of our patient population, the better able we and our staff will be to meet them.

However, some of the changes we have experienced are not all about innovation and surgery. In recent years, we have witnessed the proliferation of the unlicensed practice of medicine by some assistants previously trained under the auspices of ISHRS members. Disappointingly, we have even witnessed the abuse of our efforts to recognize assistant contributions, with former assistant members advertising their awards or teaching at workshops as a credential to perform surgery and practice medicine without a license. When ISHRS members complained about seeing advertisements with the ISHRS logo used to advertise alleged illegal activity among some of these assistant members, the Executive Committee and Board of Governors spent many hours to find a way to preserve our commitment to our valued assistant members and their educational program, while curtailing abuse of the ISHRS reputation. I would like to take this opportunity to review what has changed, and what hasn't, and I want to assure our members that we continue to welcome them to bring their assistants to meetings and to take advantage of training opportunities and professional collegiality.

Recent changes in membership requirements have been made and voted on by the ISHRS Board of Governors and General Membership to preclude ISHRS membership for assistant technicians who do not work for an ISHRS doctor. This means that independent technicians, some of whom are amongst those offering to perform surgery in place of a physician—will not be allowed membership in the ISHRS. Membership is also no longer allowed for business consultants, some of whom allowed technicians to perform surgery and hired a doctor only as a figurehead—rather than as a specialist in HRS. It is also the case that assistants who run a clinic and hire a doctor—a similar paradigm—are not allowed to be members.

In addition to these changes for membership, future assistant applicants will be required to have some type of medical license—such as registered nurse, licensed practical nurse, etc., so that if they operate outside the scope of their licensure, then there is a regulatory body that can take action to ensure that they do not continue to perform outside the boundaries of their licensure. However, many of our current assistant members are medical assistants with no licensure and would not have been able to continue their membership under the new requirements. In order to avoid penalizing our loyal assistants, a provision was made to "grandfather in" all current assistant members in good standing for continued assistant membership. These assistants will be eligible for continued membership for as long as they remain employed and in good standing with an ISHRS physician member and maintain their membership dues.

But questions have been raised: What about the future of medical assistants attending ISHRS meetings? While new attendees who are unlicensed medical assistants may not be eligible for ISHRS membership, they will still be able to attend ISHRS meetings, and participate in our assistant teaching programs, as long as their ISHRS doctor is attending the meeting, and will vouch for their full-time or permanent part-time employment status. This means medical assistants employed by ISHRS member doctors can still attend our meetings, learn valuable skills, and make new friends.

The bulk of our current curriculum for teaching assistant education was designed by nurse members who worked for ISHRS physician members in the earliest days of our Society (Marilynn Gillespie, Anne Knudsen, Helen Marzola, MaryAnn Parsley,

⇨ *page 98*

Co-editors' Messages

Mario Marzola, MBBS *Adelaide, South Australia* editors@ISHRS.org

We, your editors, are now halfway through our tenure with the *Forum*, so it's good to pause and see if we are fulfilling your needs, the reader. Is there a good balance of practical tips in surgical hair restoration, medical hair maintenance, all sprinkled with some hair science that might show us the future? Obviously, Dr. True and I have our pet subjects, but the basic principle in publications is to cover the subjects the reader needs. Also, some fun, photos, gossip, and things less serious. We hope you find there is a good balance of all of these.

Part 3 and the final installment of Dr. Sharon Keene's marathon work on low level laser therapy (LLLT) in hair restoration appears in this issue. What a wonderful effort from our congenial president. All three installments have been at peer-reviewed standard, deeply researched and accurately referenced, and we thank her warmly for what must have been many late nights of work.

As editors, we wonder if this is the standard of article that we should aim for in our *Forum* journal. Certainly it would add respectability in the scientific community, and perhaps we can slowly move in this direction. However, it would take more time to prepare such articles so ideas and developments would take longer to reach the readers. There is a lot to be said for sharing our ideas quickly, to read what is topical, and to feel involved in the process. If we can engender a feeling of continuing our conversations in the corridors of our conferences, that may be the best way of enhancing our learning process.

Cyberchat is great reading again. Dr. John Cole finishes up with so much information on PRP that it will be very worthwhile making a pot of coffee and sitting down comfortably to digest it all. Platelets and their growth factors are at the forefront of cell-based therapies for many things including hair loss. If I had little else to do, I would chase this technology to the Nth degree and home in on protocols that genuinely produce hair growth, as little as that may be, then develop it to something worthwhile. This is somewhat akin to developing the technology of cultivating very expensive truffles. It was said for so long that it could not be done, but now farms of oak trees whose roots have been inoculated with the truffle fungus are common and produce truffles enough for the masses. Wonderful breakthrough, enjoy with pasta, mashed potatoes, or omelet!◆

Robert H. True, MD, MPH, FISHRS *New York, New York, USA* editors@ISHRS.org

The ISHRS has many benefits for its members. The most important being its educational offerings. This year has already started with some excellent regional workshops. It was my pleasure to be part of the Asian FUE workshop held in New Delhi and for Dr. Marzola to attend the live surgery workshop in Bangkok. Reviews from both meetings have been very positive. The Delhi meeting report is in this issue and the Bangkok meeting will be in the next issue. Live surgery workshops are really vital educational opportunities as they provide extended, in-depth direct demonstration of techniques by expert faculty. I personally value the opportunity to serve as faculty in these workshops as I feel they give me a chance to really get to the nitty-gritty (or key details) of clinical practice. I will participate as faculty in two more clinical workshops this year: the Mediterranean FUE Workshop in Istanbul (not ISHRS sponsored) in June and the St. Louis Cadaver Workshop (co-sponsored by the ISHRS) in November. Both will have great faculty and will present wonderful educational opportunities. For the researchers and hair geeks among us, there is also the 9th World Congress for Hair Research in Miami in November. And, if you are like me, you are already eagerly looking forward to being in Chicago in September for our 23rd Annual Scientific Meeting. I have complete confidence that with Dr. Nilofer Farjo chairing, it will be one of our best.

Dr. Rodney Sinclair's fascinating presentation at our November meeting in Kuala Lumpur stimulated a lot of discussion, and so we are pleased to publish his concept in this issue of the *Forum*. He proposes a provocative new model for the development of androgenetic alopecia in which he introduces the concepts of primary and secondary follicles, atrophy and detachment of the arrector pili muscle, and the loss of secondary follicles first as central to the underlying pathobiology. Further research will be needed to substantiate these hypotheses. If proven, new therapies directed at inducing or increasing smooth muscle of the arrector pili muscle may become important in the control and reversal of androgenetic alopecia.

There have been several papers recently identifying the potential for HRS to trigger cicatricial alopecia such as lichen planus pilaris and frontal fibrosing alopecia. In his case presented in this issue, Dr. Farhad Rejali illustrates that HRS can also act as a trigger for alopecia areata. Such reports are of great value to us all in that they make us even more aware of the need to identify patients at risk.

I want to echo Dr. Marzola's comments in thanking ISHRS President, Dr. Sharon Keene, for her outstanding three-part series on LLLT. She has gone a long way in helping us to understand the realities of the scientific evidence for this technology.◆

INTERNATIONAL SOCIETY OF HAIR RESTORATION SURGERY

Vision: To establish the ISHRS as a leading unbiased authority in medical and surgical hair restoration.
Mission: To achieve excellence in medical and surgical outcomes by promoting member education, international collegiality, research, ethics, and public awareness.

2014–15 Chairs of Committees

American Medical Association (AMA) House of Delegates (HOD) and Specialty & Service Society (SSS) Representative: Carlos J. Puig, DO, FISHRS (Delegate), Paul T. Rose, MD, JD (Alternate Delegate)
Annual Giving Fund Chair: John D.N. Gillespie, MD, FISHRS
Annual Scientific Meeting Committee: Nilofer P. Farjo, MBChB, FISHRS
Audit Committee: Robert H. True, MD, MPH, FISHRS
Bylaws and Ethics Committee: David Perez-Meza, MD, FISHRS
Communications & Public Education Committee: Robert T. Leonard, Jr., DO, FISHRS
CME Committee: Paul C. Cotterill, MD, FISHRS
Regional Workshops Subcommittee: Matt L. Leavitt, DO (Chair) & David Perez-Meza, MD, FISHRS (Co-Chair)
Subcommittee on EBM and Research Resources: Marco N. Barusco, MD
Subcommittee Expert Panel: Paul C. Cotterill, MD, FISHRS
Core Curriculum Committee: Anthony J. Mollura, MD
Fellowship Training Committee: Robert P. Niedbalski, DO
Finance Committee: Ken Washenik, MD, PhD
FUE Research Committee: James A. Harris, MD, FISHRS
Hair Foundation Liaison: E. Antonio Mangubat, MD
International Relations Committee: Bessam K. Farjo, MBChB, FISHRS
Membership Committee: Michael W. Vories, MD
Nominating Committee: Sungjoo Tommy Hwang, MD, PhD, FISHRS
Past-Presidents Committee: Carlos J. Puig, DO, FISHRS
Pro Bono Committee: Edwin S. Epstein, MD, FISHRS
Scientific Research, Grants, & Awards Committee: Carlos J. Puig, DO, FISHRS
Surgical Assistants Committee: Janna Shafer
Surgical Assistants Awards Committee: Tina Lardner
Ad Hoc Committee on Database of Transplantation Results on Patients with Cicatricial Alopecia: Jeff Donovan, MD, PhD
Ad Hoc Committee on Issues Pertaining to the Unlicensed Practice of Medicine: Carlos J. Puig, DO, FISHRS
Ad Hoc Committee on Regulatory Issues: Paul T. Rose, MD, JD
Subcommittee on European Standards: Jean Devroye, MD, FISHRS
ISHRS Representative to CEN/TC 403
Subcommittee on Alberta, Canada Standards: Vance Elliott, MD, FISHRS
Task Force on Finasteride Adverse Event Controversies: Edwin S. Epstein, MD, FISHRS

2014–15 Board of Governors

President: Sharon A. Keene, MD, FISHRS*
Vice President: Kuniyoshi Yagyu, MD, FISHRS*
Secretary: Sungjoo Tommy Hwang, MD, PhD, FISHRS*
Treasurer: Ken Washenik, MD, PhD, FISHRS*
Immediate Past-President: Vincenzo Gambino, MD, FISHRS*
Alex Ginzburg, MD
Robert S. Haber, MD, FISHRS
James A. Harris, MD, FISHRS
Francisco Jimenez, MD, FISHRS
Melvin L. Mayer, MD, FISHRS
Paul J. McAndrews, MD, FISHRS
William M. Parsley, MD
David Perez-Meza, MD, FISHRS
Robert H. True, MD, MPH, FISHRS
Arthur Tykocinski, MD, FISHRS
**Executive Committee*

Global Council of Hair Restoration Surgery Societies

Membership proudly includes:
American Board of Hair Restoration Surgery
Asian Association of Hair Restoration Surgeons
Association of Hair Restoration Surgeons-India
Australasian Society of Hair Restoration Surgery
Brazilian Society of Hair Restoration Surgery (Associação Brasileira de Cirurgia de Restauração Capilar – ABCRC)
British Association of Hair Restoration Surgery
French Hair Restoration Surgery Society
Ibero Latin American Society of Hair Transplantation (Sociedad Iberolatinoamericana de Trasplante de Cabello – SILATC)
International Society of Hair Restoration Surgery
Italian Society for Hair Restoration
Japanese Society of Clinical Hair Restoration
Korean Society of Hair Restoration Surgery
Polish Society of Hair Restoration Surgery
Sociedad Iberolatinoamericana de Trasplante de Cabello

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

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

Submission deadlines:
June 5 for July/August 2015 issue
August 5 for September/October 2015 issue
October 5 for November/December 2015 issue

www.ISHRS.org

Notes from the Editor Emeritus

William H. Reed, II, MD *Asheville, North Carolina, USA* wreedmd@me.com

As some of you know, I retired last year from HT leaving my practice in the capable hands and artistry of Dr. Tim Carman and his caring staff. When Mario asked me to write an Editor Emeritus column, I told him that I have little to say about hair that people would want to read and that my interests since retiring are under the categories of politics and religion or metaphysics, each a subject that my mother warned me as not being topics of conversation for polite company. Mario responded that perhaps some of you readers might be interested in my experiences in retirement, this last chapter of our lives.

With respect to remarks about hair directly, all I have to say is that in the last year I have noted a marked thinning of my donor hair, especially to those hairs outside of the "safe zone." To those who say, "Well you got good use of a head of hair for decades," I must say that at 67 I still care about not having a mangy, thin head of head and certainly wouldn't want pocked, scarred donor skin showing through when I get my hair wet. Harvesting to 50% density outside of the safe zone does not account for the progressive thinning with age and I believe this practice, depending in part on the patient's age, should be considered as cautiously as transplanting the hairline of a 20-year-old with Norwood Stage II hair loss.

So that's the relevant remark that I have for you, my colleagues. Now, politics or religion? Well, my political interests have more in common with hair than religion and here is why: the precautionary principle, that is, "First do no harm." There is an interesting struggle going on between the USA and Europe now over this issue in their discussions about the Trans-Atlantic Trade Agreement. *The New York Times* had a revealing op-ed not long ago (http://nyti.ms/1A22MTC) that discusses these difficulties of what is a fundamental cultural and philosophical difference between the two sides of the Atlantic. It remarks: "… the European approach incorporates the so-called precautionary principle and requires companies to establish that new chemicals are safe before they are put on the market. The American approach puts the onus on regulators to show some evidence of danger before taking action against new chemicals." Fine, let's trust the EPA and the FDA. After all, that's what they are for, right? This would be a reasonable, ideal position, but an article referred to in the op-ed states that the EPA has removed only 5 of 80,000 chemicals introduced into the environment since the 1970s. Another study cited states that there are 82 instances of pesticides allowed in the United States that are barred or restricted in Europe. The article uses atrazine as an example. It is a Swiss herbicide that is banned in the EU and even in Switzerland itself. In 2013, it was used in the United States in more than half of corn, two-thirds of sorghum, and 90% of sugar cane even though there are serious concerns about its persistence in our water supplies and about studies that show it to be a serious endocrine disruptor. Yet another *Times* editorial states that for the multiple bills introduced into Congress since 2008 that used the wording "reasonably safe" for regulating chemicals and drugs, none has received even a single Republican vote. These facts highlight the fundamental difference between the United States and Europe in applying the precautionary principle and, the editorial noted, it's very likely that the EU, with its current economic struggles, will have to give in in the trade negotiations and yield to the power of the USA's agro-chemical industry in the upcoming months.

Another drug, fluoride, reveals the intransigence of the FDA and EPA in revising their risk-to-benefit ratios on an ongoing basis. Fluoridation of community water supplies and its benefits to teeth is a 70-year-old scientific "fact," you know, from the era of DDT, scientific reassurances of cigarette safety, leaded gasoline, and the use of X-rays for acne and for measuring how new shoes fit. I think most of us are in positions from our training to have experienced how funding and egos of people in positions of authority can make "medical truths," including public health policies, difficult to change. Two studies are the more recent of many studies that raise concern about fluoride's safety.[1,2] Not surprisingly, these studies from quality institutions and appearing in quality journals are derided by industry's usual panel of "credentialed experts." If we were like Continental Europe, which in general doesn't fluoridate its water, or Israel, who has responded to the increased concerns about fluoride's safety by planning on removing it from their water next year, the U.S. regulatory agencies would also acknowledge at least some of the concerns that have been raised in the last 70 years. Regrettably, such is not the case. Visit fluorideactionnetwork.org or momsagainstfluoridation.org or the National Research Council's 2006 report[3] on fluoride and form your own opinion about the talking heads of the trade groups such as the ADA or the dentists of the Oral Health Division of the CDC.

I could keep going on with examples that make it hard not to conclude that there is a swinging door between jobs with business and government and Supreme Court decisions that ensure that the U.S. government is for sale to the highest bidder. See the documentary Boughtmovie.com. All of this, perhaps, should make us feel all the more responsible for what we do in our little corners of the world, responsibilities to our patients for educating them so that they can decide the amount of risk they want to assume in the services we offer and perhaps taking time to be socially responsible regardless of its efficacy vs. the Powers That Be.

Life after a career in hair transplantation at its fundamental levels isn't so much different than from within our careers. It lets us do more of whatever we really value, which is something that differs radically with the individual. Decades lived as a physician has led many of us to value service and the intellectual curiosities that don't end at the borders of our medical practice. I've described a partial list of what engages me. I would love to hear of how others of you are engaged. We physicians, and hair transplant surgeons of this era in particular, are the fortunate ones to have such freedom and breadth of choice.

References

1. Malin, A., and C. Till. Exposure to fluoridated water and attention deficit hyperactivity deficit disorder among children and adolescents in the United States: An ecological association. Environmental Health. 2015; 14:17.
2. Peckham, S., D. Lowery, and S. Spencer. Are fluoride levels in drinking water associated with hypothyroidism prevalence in England? A large observational study of GP practice data and fluoride levels in drinking water. J Epidemiol Community Health. doi:10.1136/jech-2014-204971.
3. http://www.actionpa.org/fluoride/nrc/NRC-2006.pdf◆

President's Message from page 94

Carol Rosanelli, and Cheryl Pomerantz, to name a few) . We have always valued their work and contributions and look forward to this continued educational commitment from our future assistant members. However, because the Distinguished Assistant Award has been used by some award recipients as an advertising tool to confuse patients about who is medically licensed to perform surgery, we have opted to change the appearance of the assistant award, to distinguish it from the physician follicle award. The new design is a beautiful crystal statue with engraving to illustrate a hand placing grafts. If you have other ideas to recognize the contributions of dedicated assistants, please forward them. We are always open to new ideas.

Our specialty is changing, and we must be open-minded to changes and innovations that can benefit patient care, safety, and outcomes. However, change for the sake of change, when it does not benefit patients, should not be embraced. As often occurs when "rules" or laws become necessary to control negative behavior, restrictions of some sort are imposed on law-abiding people, too. The Board of Governors has worked diligently to create a solution that does not harm our loyal assistant staff, and these changes were voted on and supported by the General Membership at our last meeting.

I hope this message clarifies what has changed—and especially that our commitment to assistant education and training has not!

Finally, I would like to encourage our members to get involved personally in the upcoming annual meeting in Chicago, Illinois, September 9-13, 2015, even if you did not submit an abstract. We have two ways for you to do that. Our scientific chairman, Nilofer Farjo (dr.nilofer@farjo.com), has put together an outstanding program—but seeks to provide more member participation in the form of **case submissions for the very popular panel on post-operative complications**. Such cases provide important discussions and learning experiences for all of us. Some cases will be included in the General Session Complications session and others in the M&M Conference being chaired by Marco Barusco (drbarusco@tempushair.com). With that in mind, we also wish to **invite members to submit cases to Márcio Crisóstomo** (marcio@implantecapilar.med.br), **the chairman for the Live Patient Viewing session, for presentation at the live session in Chicago**. Please keep in mind that if you are accepted to present a patient for the Live Patient Viewing session, you will also be accepting responsibility for travel and accommodations expenses. There are few opportunities like this one to share your surgical results with your peers—so please let Márcio know if you would like to participate.

I look forward to seeing you all in Chicago!◆