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Hairline evolution as simple as ABC/123

William R. Rassman, MD Los Angeles, California, USA; Jae P. Pak, MD Los Angeles, California, USA;
Jino Kim, MD Seoul, South Korea wrassman@newhair.com

Hairlines show a migration from a basic concave shape at a well-defined anatomical position in early childhood to significantly different shapes and positions as an individual ages. For understanding the focus of this paper, you should not focus on traditional patterns of hair loss as defined by Norwood and Ludwig, although Ludwig showed hair in the frontal hairline zone when significant female balding was present.^{1,2} Hair loss will not be addressed, but rather the normal evolution of a hairline in non-balding and balding people will be covered. In addition, the changes in the hairlines that are discussed here are not a reflection of the “disease” we often attribute to androgenetic alopecia. (See Figure 1.)

All young children, no matter what racial identity, start with a concave hairline shape. The midline always lies just above the crease of the furrowed brow. This concave hairline shape evolves as the hairline recedes upward and laterally with age. At the sides of the hairline just above and in front of the ears, there are temple mounds that appear as the side hairline recedes from the smooth continuation of the leading edge of the hairline. The temple mounds are buried within the smooth continuation of the leading edge of the hairline, not showing a “mound shape” while the full concave juvenile hairline is present. In a child’s hairline, there is never a widow’s peak or temple peaks because the hairline is always a continuous and smooth circular shape hiding what may eventually become temple mounds, temple peaks, and a widow’s peak. We studied the hairlines of 1,051 children from their annual school yearbooks to draw this conclusion.⁴ We also studied hundreds of boys’ and girls’ swim teams posted on the internet and we viewed a large number of Olympic athletes on TV at the 2012 Olympics. We extended our search to shopping malls and airports studying men and women passing by. It was clear from these randomized observations that the hairlines of men and women vary in patterns and that these patterns reflect a classic phenotype that is most certainly tied to the genetic proclivities of the anatomic hairline.

Areas such as the widow’s peak and the temple peaks appear as the hairlines recede and arise from within the confines of the concave child’s hairline. The shape of these peaks, when they remain, must certainly reflect a different genetic code than the surrounding areas (the hairline zone lateral to the widow’s peak and the hairline zone above and below the temple peaks). For labeling purposes (see Figures 2 and 3), we have identified what we believe are the areas of interest and illustrated them. We divided the hairline into Zones D and E with distinct lines along the borders of the leading edges of these zones (A, B, and C). The widow’s peak and temple peaks are found within Zones D and E. Figure 4 shows (1) a typical example of a concave hairline in a 40+-year-old female that almost certainly reflects her original hairline from childhood with some early thinning of the leading edge and (2) another 40+-year-old

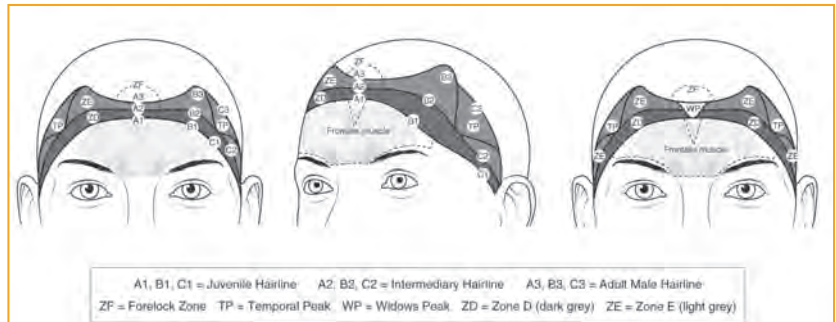


Figure 1. Hairline zones and area locations.⁴

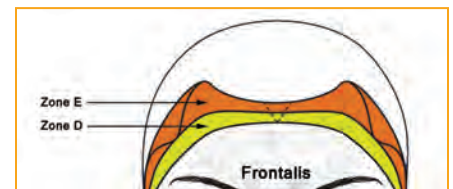


Figure 2. Hairline Zones D and E show where the temple peaks and the widow’s peak will appear with aging.

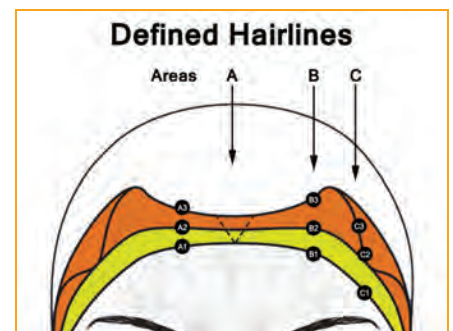


Figure 3. The hairline areas are divided into A, B, and C, and the hairlines levels are divided into 1, 2, and 3.

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President: Vincenzo Gambino, MD
vincenzogambino@vincenzogambino.com

Executive Director: Victoria Ceh, MPA
vceh@ishrs.org

Editors: Nilofer P. Farjo, MBChB
William H. Reed, II, MD
editors@ishrs.org

Managing Editor, Graphic Design, & Advertising Sales:
Cheryl Duckler, 1-262-643-4212
cduckler@yahoo.com

CyberSpace Chat: Sharon A. Keene, MD

Controversies: Russell Knudsen, MBBS

How I Do It: Bertram Ng, MBBS

Hair's the Question: Sara M. Wasserbauer, MD

Surgical Assistants Corner Editor:
Ailene Russell, NCMA
arussell@haircenter.com

Basic Science: Francisco Jimenez, MD
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Review of Literature: Marco Barusco, MD
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President's Message

Vincenzo Gambino, MD *Milan, Italy*
vincenzogambino@vincenzogambino.com



I am honored and privileged to serve as the 21st president of the ISHRS. Twenty-one years is a long time and the vision of a society that Dow Stough and O'Tar Norwood first conceived has flourished and become the most important global reference point for hair restoration surgery and science in the world today.

We are doing something right. Our membership is increasing and represents 68 nationalities. This international growth is both an opportunity and a challenge.

How can we do it better? Each president brings to the table his own experiences and the goals towards which he works during his term. As an Italian, I know firsthand that each nation and region is unique, and the ISHRS cannot have a "one size fits all" approach if it is to serve its members well.

We see the growth of national and regional societies in the field of hair restoration as a positive sign that our specialty is maturing and that there is a need and demand for doctors to come together and share information.

The ISHRS has a Global Council where the representatives from all the national and regional societies get together during our annual meeting and discuss the issues that are relevant to them. I see a benefit to the expansion of that international dialogue.

In that spirit I am planning to attend as many local meetings and workshops as possible to see and hear what you're doing and to have you tell us what we can do to help you grow. Beyond that, I ask all of you to please contact me with your thoughts, ideas and concerns. The more input we have the better we will serve.

Our annual meeting in San Francisco broke all previous attendance records and that's a reflection of the dedication of Drs. Carlos Puig, our immediate past president, Robert True, the Program Chair, and all the other physicians and assistants who worked so hard to make the meeting outstanding in its scientific and educational content while, in addition, providing opportunities for social networking and relationship building.

I would like you to look forward to Bangkok, Thailand, November 12-16, 2014 to build upon San Francisco's success. Dr. Damkerng Pathomvanich, the Program Chair, is already thinking about innovative initiatives, but a great meeting comes from the participation of the membership. I invite you to put yourself out there. Volunteer to participate beyond just presenting papers. Become part of the team that creates the kind of meeting you want to attend. ♦



Warmest wishes for a
happy, healthy
holiday season!

Co-editors' Messages

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



I bid a fond farewell to the *Forum*. It has been a momentous three years as editor not least because of the tremendous support of great partners in this task, my co-editor Bill, the regular columnists, and most of all our wonderful managing editor, Cheryl Duckler. The amount of patience she has with us submitting articles that we have attempted to edit for grammar, punctuation, accuracy, etc., is amazing. But it is also important to recognise the efforts of those who send in their articles. I know that it takes hours of work to write an article, so we are grateful for the support we have had. And special thanks to those who have written articles at our request when we have run short of submissions. If you wonder why some people seem to have a lot of publications, it's sometimes because they are the ones who always come through at our request.

So please keep the articles coming for the new editors. I often get people coming up to me and saying I disagree with such and such an article or that last article on ... didn't have much substance or why did you publish a certain person's article. But remember, we are not a peer-reviewed publication as such, and we are not inundated with submissions, so unless an article is of little educational value or too poorly written, then it usually gets accepted. Those same people who criticize, I challenge to send in their own articles. And those who have reliably written in to help us out, please give your continuing support to the incoming editors.

The great thing about the ISHRS is that if you work hard for the Society, you will get plenty of encouragement and help from the leaders in the field. I get great inspiration and encouragement from many colleagues, but I need to give a special thank-you to Richard Shiell who has been a personal advocate and a wonderful role model, who never lets anyone down, and even in retirement takes an active role in discussion groups and writing. I hope that when I reach the age of 75 I will have the passion and enthusiasm that he has, too.

Finally, what do I personally get out of reading the *Forum*? I find it a great source of educational material and a good way to debate topical controversies. I recently reviewed some of the more recent *Forum* editions when I had to re-sit the ABHRS exams, and I found this a very useful exercise. Controversies seem to be coming more to the forefront in our field or perhaps they were always there but we are just more aware of them with all the quick forms of communication to hand. A recent amusing or alarming story: A patient was consulting for a hair transplant procedure and was told that if he signs up right away he will get a free TV! Now I have heard a lot of sales pitches over the years, but that has to take top prize for being an unsuitable offer. Needless to say, the patient was not very impressed by this very unprofessional offer and sought advice elsewhere. Read more on these types of issues in Russell Knudsen's column. And then please sit down at your keyboard and let us know what you're thinking or what you're doing to maintain a successful practice. ♦

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



Reflections from 20 years of HT

Ozymandias

I met a traveller from an antique land
Who said: 'Two vast and trunkless legs of stone
Stand in the desert. Near them, on the sand,
Half sunk, a shattered visage lies, whose frown,
And wrinkled lip, and sneer of cold command,
Tell that its sculptor well those passions read
Which yet survive, stamped on these lifeless things,
The hand that mocked them and the heart that fed.
And on the pedestal these words appear—
"My name is Ozymandias, king of kings:
Look on my works, ye Mighty, and despair!"
Nothing beside remains. Round the decay
Of that colossal wreck, boundless and bare
The lone and level sands stretch far away.'
—Percy Bysshe Shelley

Doesn't, at least occasionally, this nihilism whisper as a background threat to any thinking person? We spend so much of our lives in some capacity in hair transplantation (HT), how we live HT likely has a lot to do with our sense of nihilism as we approach the finish line. I'm going to approach this subject from a physician's perspective, but it applies to any of the roles in a transplant practice as we all agree on the importance of each team member. So, how are we going to approach our chosen path as a physician, that of the HT surgeon? What will the quality of our last breath be?

I mentioned Aristotle in an editorial a couple of years ago and find his logic compelling. (I also feel that *Zen and the Art of Motorcycle Maintenance* adds an additional layer of refinement and recommend it as a read or reread. I find it even more compelling than when I read it in my early 20's.) Aristotle maintains that a life that thrives (eudaemonia) is one that utilizes well the gift that is most unique to that particular entity. In the case of a bloodhound, it is getting to be on scent; in the case of humans, it is our ability to reason, and, in the case of the physician, it is the skill in healing our patients.

What does this look like with respect to HT? Striving to be the archetypal physician...sure, but how to pay the rent and the many other expenses? This dynamic struggle with being a businessman as well as the physician we aspired to be in our youth raises interesting tension: The reality of an elective cosmetic practice is that you can start making money immediately by being hired by businessmen and, as long as they aspire to allow you to be your best physician self, all is good. Perhaps, and not unreasonably, there is uneasiness about expecting a businessman to have the same ideals as the physician year in and year out. The alternative, then, is that you do the business yourself. The bad news is that you need cash flow from something other than HT for a few years before you can make the necessary income from HT exclusively, for example, as a dermatologist, a GP, or

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

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

Submission deadlines:

February 5 for March/April 2014 issue

April 5 for May/June 2014 issue

OPERATION RESTORE Thanks Its Surgeons



Since its inception in 2004, Operation Restore has provided over \$500,000 worth of free hair transplants and travel expenses for 51 patients suffering from hair loss due to disease or trauma. We wish to thank the following physicians who have performed surgery on OPERATION RESTORE patients, contributing their surgical expertise, time, clinics, personnel, and supplies. Thank you!

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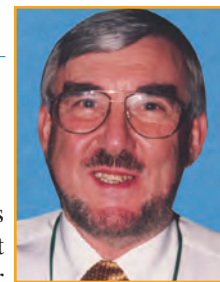
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Notes from the Editor Emeritus

Richard C. Shiell, MBBS Melbourne, Australia richard.shiell@gmail.com



After 40 years in the field, I retired from surgical practice in December 2006, and this has allowed me to look at our profession from a more unbiased perspective. I hope that readers will permit an old surgeon a few observations.

Some things, like the scalp blood supply and human nature, never change and our newer readers need to be reminded that rules devised by the past two generations of surgeons should be ignored only with great caution.

Blood Supply

The number of hair follicles that can be transplanted successfully in each square centimeter in a single session is still hotly debated, but it is generally conceded that if you are implanting greater than 25 FUs per square centimeter, then one needs to have a very small slit to avoid excessive vascular damage. Implanting into tiny slits requires considerable experience, first to find the slits and then to get the tiny follicular units to remain in place. Furthermore, dense grafting requires a very adequate blood supply, so areas that have been long bald or have cicatricial alopecia should be grafted more sparsely initially and revisited six months later for added density.

Human Nature

Most balding men have no strong desire for hair replacement of any type and will decline lotions, potions, pills, wigs, or transplant, even if free. On the other hand, about 2% of the male population feel precisely the opposite and will go to great lengths and expense to regain hair. This makes them very grateful patients but also vulnerable to quacks and shysters as well as to *bona fide* medical practitioners with big reputations but inadequate training. Many of us have had to repair transplants performed by eminent and even world-famous plastic surgeons who have felt that a 15-minute review of a surgical paper on hair transplantation or a video seen at a surgical meeting is the only instruction that they ever require.

Nothing could be further from the truth. This may have been the way that we pioneers learned the craft 40 years ago, but this is no longer appropriate today. Whether it is plastering a wall, painting a fence, or removing a wart, adequate detailed instruction is essential if the task is to be done well. For cosmetic procedures, one would think it obligatory, yet many surgeons will undertake transplants or even long scalp flaps with only rudimentary instruction.

I know that I am at this point “preaching to the choir” as you, my readers, have already become members of the esteemed ISHRS and have probably attended many meetings in the past. New techniques will arise in the future, however, and I plead with you to take the trouble to seek adequate instruction before attempting these, rather than thinking it has all been covered in a 7-minute presentation at a meeting or in a paper in the *Forum*. There is always so much that is left out of these brief presentations, and it is only after you are puzzled by a poor result that you learn of your omission or oversight. Believe me, I have been there and made the mistake of overconfidence and know that even a full week of instruction is not adequate with some techniques because patient scalps and requirements vary so much.

Things That Have Changed During My 45 Years in the Field

There have been a myriad of changes in techniques over the past 45 years, but with the graying and decrease of hair density within old 4mm plugs, transplants performed four decades ago can still look surprisingly effective. I know because my early patients were frequently personal friends, and we have kept in touch. Their bald areas have become larger of course, and most early patients have had additional graft sessions or lateral scalp reductions over the years. Some also have had the benefit of single-hair grafts to soften a hairline.

Graft preparation. In the early years, grafts were cut with a 4.0mm biopsy punch. Smaller and larger sizes had been tried, but larger grafts often had internal areas of necrosis, resulting in a donut shaped ring of hair growth. Small grafts always seemed a great idea, but we were unable to cut these without significant damage and subsequent poor growth. Despite vast improvements in punch design, sharpness, and motorization, small grafts remained out of common usage until the 1980s. Good, small grafts were finally produced by individual dissection of the 4mm plugs into “quarter grafts” each containing around 5-7 hairs or “micrografts” with 1-2 hairs.

The advent of AIDS, and the recognition in the early 1980s that the causative agent was blood-borne, was a cause of much concern. It quickly led to the demise of the mechanized punch, which, with its fine spray of blood and atomized particles, was seen as potentially hazardous. We switched to strip removal of the donor site. Multi-blade scalpels were devised to remove strips that were then cut into square grafts or slit grafts of various sizes.

By the late 1980s, Dr. Bobby Limmer showed us that very small grafts could be prepared from strips with minimal damage under binocular dissecting microscopes. This was time-consuming but gradually became the method of choice, especially with the recognition that hairs seldom grew individually, but rather they grew in naturally occurring anatomical clusters of 1-4 hairs. These were eventually termed “follicular units” and it was suggested by some that to use any older method was the path to a “*follicular holocaust*.” Although the small unit produced results that were obviously superior in the short-term, did grafts deprived of so much protective fat, sweat glands, and other tissue continue to grow well into the future? Much debate continues to this day.

Density of hair growth. Following several sessions of plug-grafts 9x4mm plugs could be inserted into 3.5mm holes in each square centimeter of hairline producing a theoretical density of around 200 hairs per square centimeter. Although such density has been claimed in practice, most of us were not able to regularly achieve this due to poorer hair yields after the first or second sessions of grafts.

Using selected 3-hair FUs and a density of 80 per square centimeter, the new generation of hair transplanters claimed to achieve similar density or better in a single session. Once again, a great deal depended on the suitability of the patient’s donor hair and scalp and the great skill of the operating team. All talk

Editor Emeritus

from page 201

of follicular holocaust and worries about AIDS virus seems to have been long forgotten as FUE experts claim over 95% success rates with their tiny punches, which are sometimes motor driven.

Donor area scarring. In the past half century, we have turned full circle from where 4mm holes were left unsutured, to now, where FUE holes of around 1mm diameter are also left to granulate. In the intervening years, we have had a vast array of suture and scar minimization techniques.

In spite of the great deal of internet discussion about donor area scarring, those of us with extensive experience found that less than 2% of our patients had a problem with their scars, and correction was rarely requested.

Drugs. There have been endless recipes for hair restoring lotions and potions since the days of the ancient Egyptians, but

minoxidil, finasteride, and dutasteride are the only ones to pass scientific scrutiny for safety and relative effectiveness. In fact, finasteride is still in the firing line as a small number of patients claim persistent adverse side effects.

Patient attitude and demands. A few coarse plugs along a hairline is no longer acceptable as it was 40 or even 30 years ago, and much more refinement is now necessary. Near perfection is possible with modern techniques, but, as techniques have improved, more patients with obsessive streaks now attend for advice and possible surgery. The surgeon has to be on guard for those with Body Dysmorphic Syndrome who may not be happy with a result that would be considered first rate by most other patients and surgeons. Many revisions may be necessary before this patient is satisfied, or more likely moves on to another surgeon. Whatever our age and degree of experience, we will occasionally be caught by such patients. ♦

Reed Message

from page 199

doing emergency medicine. I have heard physicians say that they couldn't be a successful businessperson. I would like to reassure them by saying, "If I can do it, for sure, you can do it, too." What is a very sweet reality is the beauty of how simple it is: just persevere with the intention of trying to be the Aristotelian archetypal physician! Patients want to be treated by a physician who cares more for the patient than many businessmen can.

Three pieces of advice that enlightened businessmen (they do exist) have given me over the years: 1) Try to give the patient more than they expected whether, for example, it be in free grafts or generous amounts of your time. 2) It has taken probably hundreds of dollars of marketing to result in the prospective patient to sit across from you in consultation. That person is highly motivated to do a procedure with you or (s)he would not have gone to the effort to come see you. In view of these two considerations, be generous with your time. Additionally, if you treat them with providing the education and fairness that you would want were the tables reversed, you need think of nothing more about your "sales technique." 3) Finally, treat your employees generously. They are valuable, critical assets to your practice and the amount of effort and lost time and quality required to train their replacements will drive that point home.

So much for Aristotle's advice to thriving as a physician. How about, his Reasoning as the highest function of the human? There are many unanswered questions to be the objects of your reasoning in hair transplantation, even more now that FUE is coming online: When should a strip or FUE harvest be performed in lieu of the other? Is the number of grafts available in the donor comparable in FUE vs. strip? Is survival comparable? Is FUE better with implanters, or from full or limited depth extraction? Is there harm to the circulation with full depth extraction? Is

this avoided with superficial depth extraction? How does a surgeon learn the complexities of defining the "safe donor," which necessitates considering hair fiber diameter, hair/skin color contrast, curl, age of patient and estimated final degree of hair loss? Should small test cases be performed to see how a particular patient heals with a given punch size? (Scarless surgery can happen and is certainly a sought after holy grail.) Are storage solutions important? PRP? ACell? Nutritional supplements? Lasers? Are lasers safe? You no doubt can add to the list...skinny vs. chubby grafts, the role of multiunit grafts, and so forth. Pick the question that interests you perhaps in concert with your colleagues in the ISHRS and enjoy eudaemonia: strive, enjoy, and thrive.

This is my last editorial as I head into retirement. I want to thank all of the bright, generally well-intentioned minds that I have been privileged to work with over the last 20 years... teachers, foils, colleagues, my team members in my practice. I believe more than ever that the ISHRS can be the focus for an ongoing confederation of private practitioners who will make a huge difference not only for the refinement of our specialty but also as a force to help each of us strive to become whatever it is that will make us comfortable with the nature of life that on one level is the nihilism so beautifully articulated by Shelley. I wonder if Ozymandias ever evolved beyond the lust for power that is a common mirage for many of us in our lifetimes. Has Shelley convinced us that at least one approach to life doesn't work? Can archetypal forces such as the Physician prevail over lust for power and the direction dictated by money from venture capital and established corporate entities? Does the journey described by Aristotle using Reason and the archetype of physician sound fulfilling? My best wishes to each of you as your path unfolds before you...one day at a time. ♦

Hairline evolution

from front page

female with an intermediate hairline, persistent widow's peak, and prominent temple mounds.

Imagine a line directly between the child's concave hairline and the male's convex mature hairline. I will call the line between these two hairlines the "intermediate" hairline. In the midline, the distance between the child's leading concave edge of the hairline and the location of what may eventually be termed the mature hairline of the male reflect a distance of approximately 2cm at the midline in the adult. These two zones can be divided into a superior zone of about 1cm in height (Zone E) and an inferior zone approximately 1cm in height (Zone D) as well. As the widow's peak lies in these zones (Figure 5), the widow's peak can never exceed the height of these two zones (~2cm). If the height of the widow's peak is less than 2cm in length, the broad base part of it always exists in Zone E and the inferior narrow point may extend inferiorly into Zone E alone, or Zone D and E, which would make it larger and more prominent visually. The temple peaks emerge from the concave juvenile hairline and, when they are present, they are always in Zone E and sometimes extend to Zone D.

For labeling purposes, we have defined three hairlines in Figure 5: (1) the juvenile hairline (which is found in all children at some point early in their development), which borders the highest crease of the furrowed brow and should be called the concave hairline, (2) the convex hairline (often called a mature male hairline in men with its highest point located superior to the lateral orbital rim), and (3) an intermediate hairline (a hairline midway between the convex and concave hairlines, directly between Zones D and E).

We identified important areas of the hairlines medially to laterally. Along these areas, we identified points that allowed us to divide the hairlines from the medial position to the lateral position as labeled (Figure 3):

- The frontal medial area, which we will call Point A (the central point of Area A)
- The "corner" hairline, which we will call Point B (the central point of Area B). Point B is defined by a line drawn approximately and superiorly to the lateral orbital rim.
- The side hairline area in front and superior to the ears (the mound area), which we call Point C (the central point in Area C). The mounds emerge from the lateral migration of Point C1 in Area C and the superior migration of Point B1 in Area B.



Figure 4. Two 40+-year-old females, one with a persistent concave hairline and one with unusually prominent temple mounds and widow's peak, with an intermediate hairline.

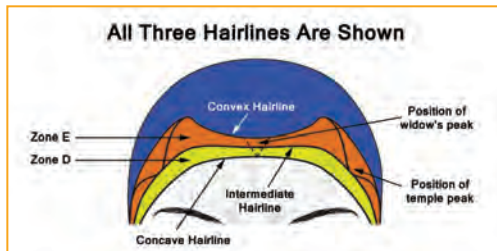


Figure 5. Three hairlines are shown (concave, intermediate, and convex). Note the position of where the widow's peak and temple peaks would be found, when present.

The widow's peak is always found directly in the middle of Area A at Point A, and it emerges as Zone D (and occasionally Zone E) recede. The mature male hairline is convex in shape. The highest point of the mature hairline's convexity is found in Area B, and it is the most superior point of the convex shaped hairline. The place where the temple mounds originally existed on the side of the hairline (in front and superior to the ears) is in Area C.

If this is put together with the numbered hairlines, the central area (depending where the hairline is located with respect to the juvenile hairline) goes from A1, which may recede upward to A2, reflecting the intermediate hairline, which has a flat frontal shape rather than a concave one. The actual locations of the hairlines (inferiorly to superiorly) have been labeled Points 1, 2, and 3 in Areas A, B, and C, where Points A1, A2, and A3 range from the midline of the concave hairline to the lowest most medial point of the convex hairline. Points C1, C2, and C3 are the most lateral points of the side hairline. When Areas A, B, and C are combined with Points 1, 2, and 3, we can precisely identify the position on a hairline in its various iterations. Point A1 is the midline of the juvenile hairline location at the crease of the furrowed brow. Point A2 is the midline location of the intermediate hairline and Point A3 is the lowest midline position of the mature vertex hairline that we often refer to as the mature male hairline (~2cm from Point A1). Although the nomenclature referencing the "mature male hairline" is somewhat standard for our industry and does not account descriptively for females, the authors recognize it is a poor choice of terms, so we prefer the term convex hairline, which is a unisex description.

The authors believe that Zones D and E are independently genetically coded from the areas where Norwood and Ludwig focused their attention. We have much evidence for this. Women with androgenetic alopecia and thinning of the front, top, and crown area of the head often do not show thinning in Zones D and/or E. On rare occasions, we see the persistence of Zones D and E in men who have significant patterned loss, particularly noticeable when the patient shows a Norwood Class VII pattern. We have seen men use a comb-back very effectively with persistent Zones D and E, even with a complete Norwood Class VII balding pattern. The temple peaks, which are located in Zone E, extend to Zone D some of the time. They may persist through the life of the individual and can appear quite prominent, even when there is advanced balding present in the male or female. The persistence of the temple peaks in the face of advanced balding patterns strongly suggests different genetics to the hair behind the hairline.

The forelock may be incorporated into the frontal area where the balding patterns extend inferiorly, but, frequently, they do not disappear in the defined Norwood patterns. There are many people who retain their forelock, even with frontal balding. These persistent forelocks vary in size and can be as small as an inch in diameter with an oval shape to as large a section that almost reaches the lateral fringe area in the front of the scalp and extends from Point A1 back as far as 10cm or more from the leading frontal hairline edge (Figure 6). These forelocks may incorporate the widow's peak and, when they do,



Figure 6. Forelock sizes vary inferiorly, laterally, and superiorly.

Hairline evolution

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the peak defines the lowest point of the forelocks, which often extend posteriorly into Zones D and E. Forelocks are particularly important from an artistic point of view because, if they are large enough, they create a good frame to the face. In the 1980s, Dr. Manny Merritt would create isolated frontal forelocks with a large number of smaller grafts (500 or so) as a substitute for a full frontal hair transplant reconstruction, and the results looked very good for the 1980s. Frontal forelocks run in families, and, if they persist until the male patient reaches ~35 years of age, the forelock will likely remain into old age despite progressive balding throughout the frontal area. When you see such patients, ask them who in their family have a frontal forelock and you will often find that these forelocks were present in the fathers and/or grandfathers even when advanced balding was present.

Hair direction at the hairline changes by zone. In Zone D, the hairs often point acutely downward and laterally in almost the same direction as seen in the side hairs of the temple mounds. In Zone E, there is a transition of hair direction from the downward and lateral pointing hairs found in Zone D to a progressively more medial and forward pointing direction of hairs in the upper part of Zone E (not shown).

In Figure 7 (the official government picture of Paul Ryan), the direction of the hairs at the A2 hairline retain much of the direction dictated by Zone D in his intermediate hairline. The widow's peak remains strong and points slightly to the right. If Mr. Ryan would recede further upward with the formation of a convex hairline, the direction of the hairs would most likely point forward and parallel to the horizon. The hair direction in Zone E therefore transitions from the more lateral and downward directions found in Zone D to the mature hairline location (pointing forward and parallel to the horizon) that run from position A3 laterally about 5cm on either side. At Point B3 of a convex hairline, the hair direction quickly shifts laterally in a transition zone of about 1cm wide where we would see the formation of a "part" that makes the hair fall to the side and layer laterally. Look carefully at women who retain their concave hairlines and you may see the whole story on hair direction in the hairline on just one woman's head if you examine hair directions in Zones D and E (see Figure 4).



Figure 7. Intermediate hairline of former vice presidential candidate Paul Ryan shows the direction of hair growth.

In a study of 360 women, Nusbaum reported 83% have a widow's peak by the age of 40.³ That means that 83% of women have lost hairs in Zone D and possibly in Zone E. Hairline reconstruction with hair transplants or hairline lowering procedures often address hairlines that have receded to Points A3 and B3, or in women who have had a very high hairline in Areas A and B since childhood, where Point A1 may still hug the lowest crease of the furrowed brow. In the latter group, I am sure that when these women were very young (e.g., 5-7 years old) they probably would have shown that the highest crease of the furrowed brow was unusually high. They will almost always give a history of a high hairline since childhood, and the surgeon will often elicit a family history of a high hairline in these instances. We see females complain that they are balding at Point B3 and

want that area filled in with hair transplants. Balding at Point B3 is fairly common in women as they age and even more common in women who had brow lifts and face lifts.

Rather than show example after example of variations in hairline presentations, be assured that mix and match combination of A1-3, B1-3, and C1-3, and the variations in the appearance of a hairline can vary widely. Hairline recession to Point C3, for example, may not conform to Point B3 on the same person.

To exemplify these zones, lines, and points, we have used two pictures of public figures, which are easily accessible from public sources, as well as pictures of non-public figures. We have taken the liberty to draw the concave hairline into some of these pictures to help you understand the changes in the appearance of these hairlines since childhood.

Figure 8 shows in intermediate hairline in former vice presidential candidate Paul Ryan and is compared to the hairline of a young woman who also has an upward eroding intermediate hairline. The juvenile hairlines have been drawn in by the authors. The female (photo on the right) is actually undergoing a transitional balding process with thinning to Areas B3 and the superior part of C3. In both pictures, a subtle suggestion of a temple peak can be seen emerging from the temple mounds in the lateral hairline in area C. Mr. Ryan has not evolved temple peaks.



Figure 8. Intermediate hairline of Mr. Ryan (left) and unidentified female (right). The female is undergoing thinning toward a convex hairline and Mr. Ryan shows an emerging intermediate hairline.

Figure 9 shows a patient before and after a transplanted intermediate hairline. She wanted to bring back her juvenile concave hairline and Dr. Jino Kim accommodated her request. Note the direction of the hairs in the after picture, which reflects a normal hair direction for Zone D.



Figure 9. Surgical restoration of a concave hairline from a patient who did not like her intermediate hairline (top) (before and after photographs). Hair direction shown with arrows (bottom).

Figure 10 shows former president Clinton's present hairline. Pictures available in archives show a complete concave juvenile hairline when he was governor and during his early presidential years. There are many pictures that show off the highest crease of his furrowed brow during emotional moments, which is exactly where we drew in his concave juvenile hairline on

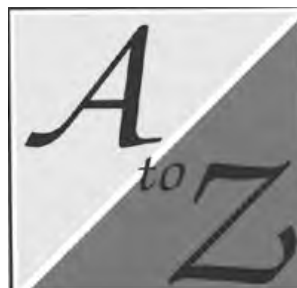


Figure 10. Former president Bill Clinton shows hairline characteristics defined in text.

the figure. His present hairline is changing and he has retained what appears to be a weak widow's peak. Zone D seems to be receding at the sides of the widow's peak in the hairline area. Point B1 is receding to Point B2. His temple mounds are evident but still intact, but their early appearance indicates that Point B2 is transitioning upward along with the upper part of Point C1. Mr. Clinton shows that hairlines continue to evolve as we age.

References

1. Norwood, O.T., and R.C. Shiell. *Hair Transplantation Surgery*, 2nd Edition. Springfield (IL): Charles C. Thomas, 1984; pp. 5-10.
2. Ludwig, E. Classification of the types of androgenetic alopecia (common baldness) occurring in the female sex. *Br J Dermatol*. 1977; 97:247-247.
3. Nusbaum, B.P., and S. Fuentefria. Naturally occurring female hairline patterns. *Dermatol Surg*. 2009; 35:907-913.
4. Rassman, W.R., J.P. Pak, and J. Kim. Phenotype of Normal Hairline Maturation. *Facial Plastic Surgical Clinics of North America*. Published by Elsevier Inc., August 2013. ♦



Kenny Moriarty
Vice President

Cell: 516.849.3936

Kenny@georgetiemann.com

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