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### **Male Pattern Balding**

#### **How common is Male Pattern Balding?**

- About 30 % of men by age 30 and 50 % by age 50 years of age will have androgenetic alopecia or male pattern balding.

#### **Do men inherit male balding from mom's side or dad's side?**

- The condition is inherited from both sides, contrary to popular belief that it is only mom's side.

#### **What do men with male pattern balding experience?**

- Men experience hair loss in the temples and the crown which slowly progresses to involve the entire frontal, mid and top of the scalp in some individuals. The back of the scalp is usually not involved.
- The condition is usually asymptomatic.
- In the early stages, many men will experience slightly increased shedding of hairs.

#### **What tests are needed to confirm the diagnosis?**

- Male pattern balding is a clinical diagnosis meaning that a biopsy and blood tests are not needed for the vast majority of individuals.

## **What are the treatments for male pattern balding?**

Treatments include:

1. minoxidil
2. finasteride
3. low level laser therapy
4. platelet rich plasma
5. hair transplantation
6. wigs, hairpieces
7. scalp micropigmentation

**Dr. Donovan – 6 ARTICLES ON MALE  
BALDING**

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## ARTICLE 1: MALE BALDING: More Complex than Imagined



How many genes are implicated in male balding? In previous studies several genes were identified. A new study from the UK, however, has shown that male balding is far more complicated and many hundreds of genes contribute to balding in men. It identified 287 genetic regions linked to male pattern baldness. This large study examined data from over 52,000 men.

Of these 287 genetic regions, 40 were on the X chromosome (which men get from their mothers). This was confirmation that a man's mother does have an important impact on susceptibility to hair loss. The impact of the mother's side of the family was most important in men with early onset genetic hair loss in comparison to men developing hair loss in their late 30s and beyond.

Using these 287 genetic regions, it was possible for researchers to give a given man a 'risk score' in order to predict men who were likely to have hair loss and men who were not likely to have hair loss. For example, among those men with a low score, their risk for severe hair loss was only 14 %. Those men with a high score had nearly a 60 % chance of moderate to severe hair loss.

This study confirmed a similar finding as our previous instagram post showed last

week - namely that many of the genes regulating hair loss in men also give an increased chance for shorter height. The present study also uncovered additional associations including an association between male balding and having a lower risk of bipolar disorder.

Conclusion: This is an exciting study and builds on previous studies which identified only a limited number of genes. This data may improve our ability to predict and treat genetic hair loss in men.

#### Reference

Hagenaars SP, Hill WD, Harris SE, Ritchie SJ, Davies G, Liewald DC, et al. (2017) Genetic prediction of male pattern baldness. PLoS Genet 13(2): e1006594

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## **ARTICLE 2: Finasteride may cause Persistent Erectile Dysfunction (PED)**

Finasteride is an oral medication that is FDA approved for treating male pattern hair loss. It is well known that sexual dysfunction is a potential side effect of finasteride that occurs in less than 2% of male users. Recently concerns have arisen that these side effects may be persistent in some - even after stopping the drug. A study by Dr Belknap and colleagues from Northwestern University in Chicago has given the first solid attempt at quantifying the risk of persistent sexual dysfunction with men using the hair loss drug finasteride.

#### A look back

Studies to date and clinical trials in the 1990s first showed that sexual dysfunction was possible with finasteride. However, these studies did not show that men using these drugs experienced any residual side effects if they chose to stop the drug. In fact, some of the clinical trials showed that side effects often went away even if men kept taking the drug.

## Latest Data on PED

The authors in a new study examined a large database of patient records and looked for patients who had used finasteride and dutasteride and who also reported erectile dysfunction, decreased libido. In addition - the authors looked at the proportion of patients experiencing persistent sexual dysfunction or "PED" (defined as erectile dysfunction occurring more than 90 days after stopping the drug).

The main messages of the study were that men using finasteride 1 mg have an approximately a 1 % chance of experiencing persistent erectile dysfunction (PED). About 1 in 3 young men who ultimately do experience erectile dysfunction using finasteride will experience persistent erectile dysfunction - and this can last several years (average 3.7 yrs in the study). The longer one is using these medications the greater the risk of PED.

## Conclusion and Future

This study is important. We are moving away from wondering whether or not PED is real or not to now wondering what exactly is the risk (is it actually much less than the study quoted? ... or is it much more?). The concept of PED is here to stay. Moreover, I do feel it is important to advise patients considering finasteride about these issues and to advise patients who are currently on these medications that these issues can still occur in users despite lack of any sexual problems at present.

An ideal study would be a randomized double blind placebo controlled study over 5 years. That has never been done. And likely never will be given the challenges, costs, etc. This would help us sort out the magnitude of risk.

## REFERENCE

Kigiradze et al. Persistent sexual dysfunction in men exposed to the 5 alpha reductase inhibitors finasteride or dutasteride. PeerJ 2017

## ARTICLE 3: Finasteride vs Minoxidil for Frontal Thinning

In general, finasteride is more effective but minoxidil can help. Now the pivotal studies.

### **Olsen et al 2012**

Dr Elise Olsen did a very nice study in 2012 looking at the benefits of finasteride on the front, middle and crown in men 18-60. She and her group showed that young men clearly benefitted in the frontal region as well as the middle and crown. Older patients (40 and over) did not benefit in the front! Only a hair transplant can outright lower the recessions.

### **Mirmirani et al 2015**

Now, what about minoxidil? Well minoxidil does help the frontal region in men. Another great dermatologist, Dr Paradi Mirmirani did a nice study recently showing the minoxidil helps the front AND the crown. Basically, anywhere where the hair is miniaturizing - help can be achieved for some people using minoxidil.

And other studies have shown the combination of the two is even better than either alone.

Take home message: if you want to stop and thicken, these are good options. if you want to lower your hairline, hair restoration combined with finasteride and minoxidil is likely the best option.

## REFERENCES

Olsen EA, et al. Global photographic assessment of men aged 18 to 60 years with male pattern hair loss receiving finasteride 1 mg or placebo. Randomized controlled trial. . J Am Acad Dermatol. 2012.

Mirmirani P, Consolo M, Oyetakin-White P, Baron E, Leahy P, Karnik P. Br J Dermatol. 2015 Jun;172(6):1555-61. doi: 10.1111/bjd.13399.

## **ARTICLE 4: Male balding progresses at different rates in men**

I'm often asked to help patients predict their rate of balding? How different will they look in 1 year? How different in 2 years? When will they look like their father or a specific photo they bring in?

Getting a sense of male balding rates of progression is challenging and certainly becomes more reliable as the patient ages. For example, predicting what someone will look like at 50 is easier to predict at 40 than 20. However, with a series of carefully chose questions and a through evaluation of the scalp it is often possible to gain some understanding of the patient's rate of balding.

The following questions are 'key' to ask when assessing the likelihood and degree of progression of male pattern balding:

1. What age did the hair loss start?
2. What is the current age of the patient?
3. How much progression has occurred in 6 months?
4. How much progression has occurred in 12 months
5. How much progression has occurred in 5 years (if hair loss started more than 5 years ago)?
6. What medications are used by the patient? What has been the results?
7. How much hair loss does the patient's father has?
8. What age (if any) did the patient's father start balding?
9. Does the patient's mother have hair loss?

10. What are the hair loss patterns of both grandfathers?
11. Are there any males in the extended family who have a Hamilton Norwood above level VI? If yes, how many?
12. What medications does the patient take now?
13. What medications were used in the past ? (anabolic steroids, isotretinoin)?
14. Is the patient a smoker?
15. What is the patients' health?
16. What sun exposure has the patient had over the years?
17. Is the patient obese?
18. Does the patient have high cholesterol?
19. Does the patient have diabetes?
20. Does the patient have high stress?

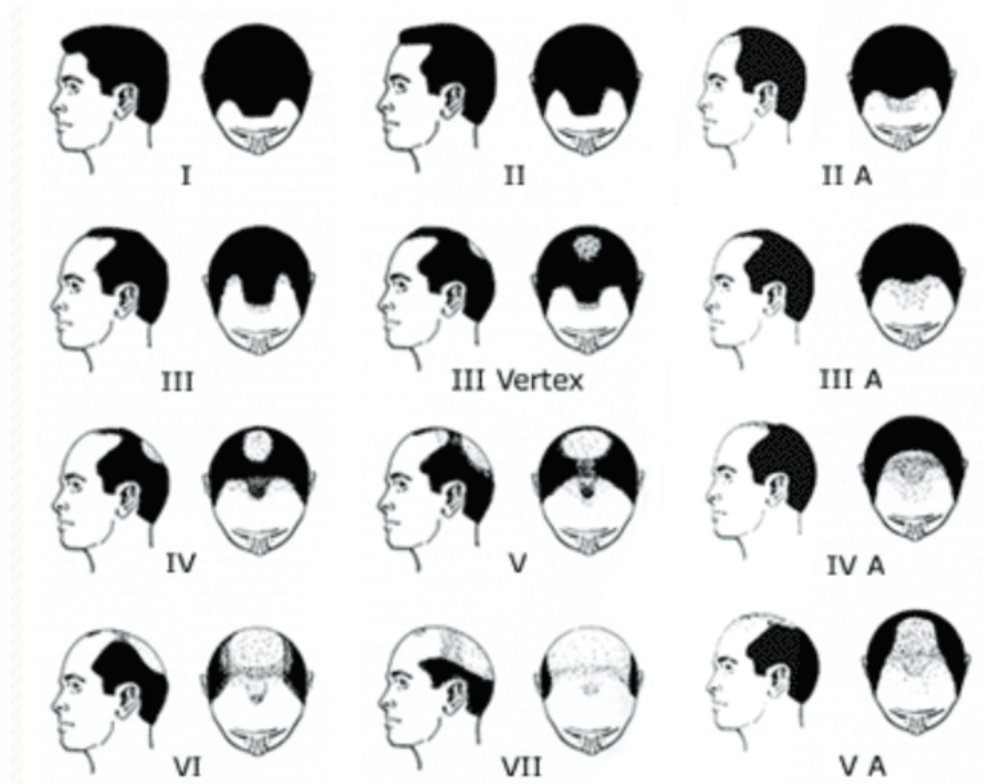
The following items are key to evaluate when assessing the scalp in order to evaluate the likelihood and degree of progression of male pattern balding:

1. What is the current position of the frontal hairline? How much has it changed since age 12?
2. How much temporal recession due to balding (not hairline maturation) is there? How much has it changed since age 12?
3. What change have occurred in the crown?
4. What changes have occurred in the area in front of the ear (pre auricular area)?
5. Is there hair loss in the back of the scalp (occipital area)? Is the pattern of hair loss best described as 'diffuse unpatterned alopecia (DUPA)?
6. What percent of hairs are miniaturized in the frontal, mid scalp, crown and occipital scalp?
7. What changes in miniaturization have occurred in the past 6, 12 and 18 months?
8. Is their seborrheic dermatitis present in the scalp? What other scalp conditions are present?



## ARTICLE 5 DUPA: Why it matters?

DUPA is the short form for the term 'diffuse unpatterned alopecia.' This is a subtype of hereditary hair loss, or androgenetic alopecia. DUPA can affect both men and women. Today, we'll focus on DUPA in men and why it is critically important to identify men with DUPA and to separate this pattern of hair loss from all others. In order to understand DUPA, it is important to understand the normal pattern of hair loss in men.



### The Hamilton Norwood Scale

Hair loss in many men follows the so called Hamilton Norwood scale whereby men first lose hair in the temples and/or crown. The seven stages of the Hamilton Norwood scale is shown in the diagram on the right. Over time, some men will develop hair loss over the the entire frontal, mid-scalp and crown - this defines the Advanced Hamilton Norwood Stages (Hamilton Norwood scale VI or VII). Not all men with hair loss follow the Hamilton Norwood scale.

### Diffuse Patterned Alopecia (DPA)

In diffuse patterned loss, patients thin across the entire frontal scalp from front to crown. All of these hairs undergo miniaturization. The back and sides however - are spared. Treatment for diffuse patterned alopecia includes both medical and surgical treatments. Because the back of the scalp is unaffected in diffuse patterned alopecia, and therefore rich in good hairs hair transplantation is a good

option. Finasteride, minoxidil, low level laser and platelet rich plasma may also be good options.

#### Diffuse Unpatterned Alopecia (DUPA)

With this basis, we can begin now to understand a relatively uncommon pattern of hair loss in men called Diffuse Unpatterned Alopecia or "DUPA". About 2-6 % of men have this pattern of hair loss, so it is relatively uncommon. Patients with DUPA develop hair thinning not only in the front and top of the scalp, *but also in the sides and back*. In men with DUPA, the majority of hairs on the scalp are undergoing miniaturization or will at some point undergo miniaturization. The importance of recognizing DUPA is the fact that hair transplantation is not an option. Hairs at the back are not of good quality to move as they are (or will someday become) miniaturized. If a hair transplant is attempted in a patient with DUPA, it may look good for a few years, but the transplanted hairs are at very high risk to thin out and be lost over time. The only treatment for patients with DUPA is medical treatment - minoxidil, finasteride, low level laser and platelet rich plasma.

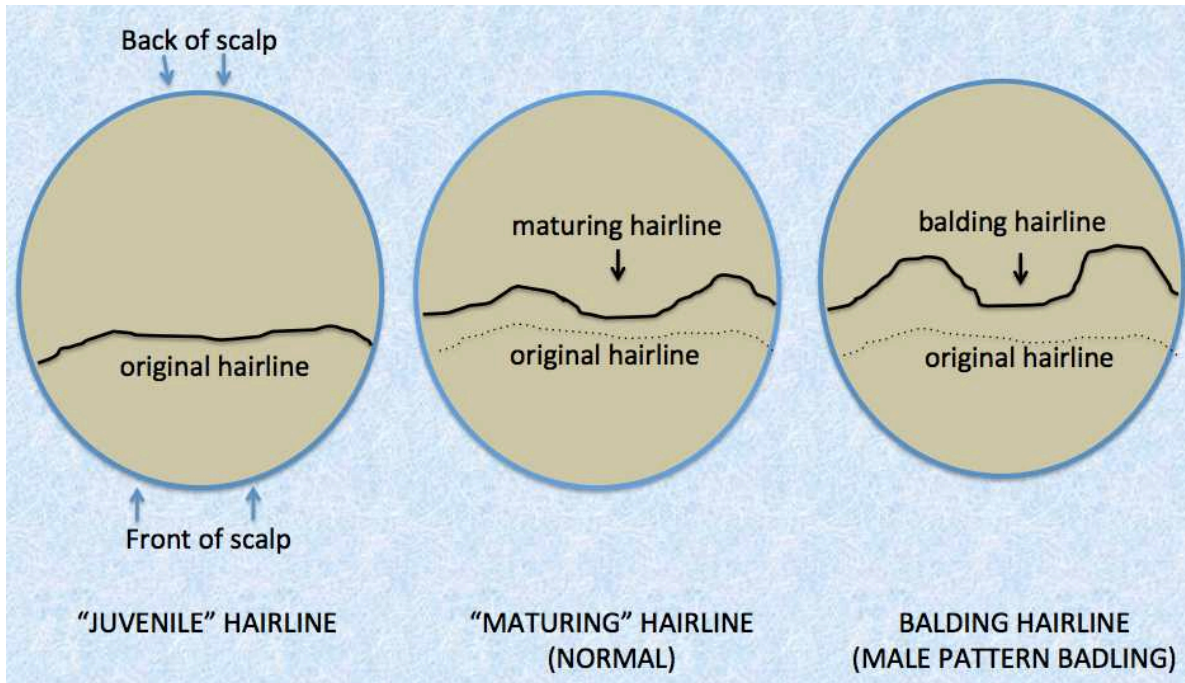
## ARTICLE 6: Is your hairline 'maturing' or a 'balding'?

It's a little known fact among many men that the frontal hairline actually changes shape between the ages of 17 and 27 – even if that man doesn't proceed to develop genetic balding. We refer to this normal change as 'maturation' of the hairline and we say that the man noticing these changes has a 'maturing' hairline. Eventually the hairline stops 'maturing' and we say that the man has a 'mature' hairline. Not all men's hairlines proceed through this normal process of 'maturation' but most do.

The concept of a maturing hairline is extremely important to know about so that medical treatment or surgical treatment is not recommended to patients who don't require it. For example, a 23 year old man who notices his hairline thinning out slightly in the area just above his eyebrows may not have genetic hair loss - but rather a 'maturing' hairline. He doesn't need to begin any sort of treatment whatsoever. Several studies have shown that men with maturing hairlines don't necessarily go on to develop balding. These are two completely separate processes!

#### Hairline maturation diagram

The following diagram helps to explain the process by which the hairline matures and how it differs from genetic hair loss. The hairline of a boy or early adolescent is relatively flat and we refer to this as a 'juvenile' hairline. Between age 17 and 27, many men (but not all) start to notice that the hairline directly above the middle section of the eyebrow starts to undergo thinning (maturing).



In fact, if you wrinkle your forehead, you'll see a series of lines that run side to side. The highest forehead wrinkle often marks a spot where the 'juvenile' hairline was once located. A 'mature' hairline is usually about 1-1.5 cm above this. In true genetic balding (male pattern hair loss), the hairline may recede beyond this 1.5 cm point and undergo even more significant recession in temple area.

### **Why is this concept important?**

Understanding the concept of hairline maturation is especially important when it comes to designing natural looking hairlines during a hair transplant. Attempting to lower a 'maturing' hairline in a young man is usually not a good idea. Many young men want a more 'juvenile' hairline when they first meet for a hair transplant consultation. However, by proceeding down that route, the young man runs the risk of having his new hairline take on an unnatural looking appearance when compared to other males as he approaches his 30s, 40s and 50s.

### **Other References of Interest**

Rassman WR, Pak JP and Kim J. Phenotype of normal hairline maturation. *Facial Plast Surg Clin North Am* 2013; 21: 317-23

## ARTICLE 7: Has my minoxidil stopped working?

Minoxidil is FDA approved for the treatment of male balding and female thinning. After using it for a period of time, some patients find that it no longer seems to be working the way that it once did. This leads many to ask :

### **"Has my minoxidil stopped working?"**

The most likely explanation is that the minoxidil is, in fact, still working but the machinery that controls balding is working harder. It is likely that more and more genes are being expressed inside the scalp and hair follicles that are accelerating the balding process forward.

### Genetic hair loss has many genes

A recent study from the UK, however, has shown that male balding is far more complicated and many hundreds of genes contribute to balding in men. It identified 287 genetic regions linked to male pattern baldness. This large study examined data from over 52,000 men.

Consider the 30 year old male who started noticing balding at 21 and started minoxidil. At age 16 - 18 he might have had 4-6 genes expressed at the start of balding (before he even noticed) and 21 there may have been a dozen or so distinct genes pushing the balding process. At age 30, there could be dozens and dozens of genes expressed. For many users of Minoxidil, it is usually working the same - and while it was pretty good at stopping 4 genes, it can't fully hold back the genetic changes associated with 60 or 70 genes. These numbers are different for everyone - but it illustrates an important point. The scalp environment and hair follicle milieu changes drastically over time.

### **Reference**

Hagenaars SP, Hill WD, Harris SE, Ritchie SJ, Davies G, Liewald DC, et al. (2017) Genetic prediction of male pattern baldness. *PLoS Genet* 13(2): e1006594

