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Hair Transplantation in Women

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ABSTRACT

Background: Hair transplantation is a widely used treatment for androgenetic alopecia (AGA) and other hair loss conditions, with increasing demand from women in recent years.
Aim: Explore differences in hair loss patterns, surgical techniques, and psychosocial impacts between sexes that allow for a more tailored approach to optimize outcomes.
Methods: A PubMed review of 1,443 publications was conducted using the keywords "female," "women," and "hair transplantation." Twenty-four studies focusing on hair transplantation in women were analyzed.
Results: Hair loss has a profound psychosocial impact on both genders, but women often face greater societal stigma. Women often present later than men for transplantation, with diffuse thinning across the vertex and temples compared to men who typically present with localized frontotemporal and crown recession. Women should be evaluated for systemic contributors and the presence of scarring or traction alopecia. Women favor follicular unit transplantation (FUT) due to donor area preservation and compatibility with long hairstyles, whereas men may be treated with FUT or follicular unit extraction (FUE).
Conclusion: Hair transplantation in women requires a tailored approach focusing on diffuse density restoration, donor area preservation, and adjunct medical management. Advances in techniques and adjunctive therapies are transforming the field, providing effective, patient-centered solutions for hair loss.

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INTRODUCTION

Hair transplantation is a widely used and effective treatment for androgenetic alopecia (AGA) and other hair loss conditions. Male pattern and female pattern hair loss (FPHL) are the most common indications for hair restoration, but other reasons include traction alopecia, end-stage scarring alopecias, or as corrective procedures post-trauma or surgery. In recent years, the demand for hair transplantation in women has been steadily increasing, and it is important to consider several sex-specific considerations to optimize outcomes. The pattern and trajectory of loss, psychosocial impacts, and treatment goals differ significantly between men and women. This paper aims to highlight the similarities and differences in hair transplantation between men and women.

MATERIALS AND METHODS

A comprehensive PubMed review was conducted using the keywords "female", "women", and "hair transplantation". One thousand four hundred forty-three (1,443) peer-reviewed studies were identified by this search. Twenty-four (24) publications were highlighted in this paper that focused on hair transplantation considerations in women. These studies were analyzed for insights into patterns of hair loss, consultation practices, surgical techniques, postoperative care, and future directions for hair restoration.

RESULTS AND DISCUSSION

The Consultation Phase

Both men and women require a thorough consultation process to assess their hair loss history, as well as personal and family medical history. By age 50, 50% of men have androgenetic alopecia, and by age 80, 50% of women do as well.[1] Unsurprisingly, men tend to present earlier for initial consultation than women. In a 2022 International Society of Hair Restoration Surgery Practice Census Results, the peak age of men presenting for transplantation was 30 to 39 years old, whereas for women it was 40 to 49 years old.[2] Other studies have found the average age for surgery for women to be nearer to 50 years.[3]

For women, it is especially important to take a thorough gynecological and hormonal history, focusing on potential systemic contributors such as iron deficiency, thyroid disorder,

and polycystic ovarian syndrome (PCOS). Control of underlying hormonal imbalances or medical conditions may significantly improve hair loss in affected women. Laboratory workup and routine gynecological exam are usually recommended for women, and in some cases for men too. Lastly, it is also important to ascertain what medications or procedures (eg, minoxidil, finasteride, spironolactone, platelet-rich plasma (PRP), red light therapy) are currently being utilized by the patient to address their ongoing hair loss.[4]

Scalp examinations using trichoscopy are routinely performed to evaluate hair density, miniaturization, and the quality of the donor area for both sexes. In addition to the above laboratory evaluation, it is important to confirm a diagnosis of FPHL clinically, as women may be more likely to have scarring alopecias like lichen planopilaris (LPP) or frontal fibrosing alopecia (FFA). There should be a low threshold for biopsy in borderline cases.[5] During the consultation, surgeons will also discuss realistic expectations, transplantation goals, and the importance of concurrent medical management, which has been shown to improve outcomes. It is important to explain to the female patient that the goal of the procedure is to increase volume and density, but caution that they should not expect full coverage following the procedure. At most, they might expect an increase of 30 to 50% in hair density and should understand they may still see their scalp post-procedure.[6]

One important difference between male and female hair loss is the pattern of thinning (Table 1). For men, affected areas primarily include a receding frontotemporal hairline and crown thinning. Men's hair loss is often categorized using the Norwood classification system. In contrast, women most commonly experience diffuse thinning from the frontal hairline until the crown. Women may also present with a "Christmas tree" pattern, with progressive thinning of hair along the central part of the scalp, which becomes wider toward the crown, resembling the triangular outline of a Christmas tree. In addition, a minority of women may have thinning associated with bitemporal recession.[7] Classifications, like the Ludwig or Sinclair scales, are often applied. Importantly, the majority of women with androgenetic alopecia will retain an intact hairline (Figure 1).[8] If the hairline is affected, other diagnoses such as traction alopecia and scarring alopecia must be considered.

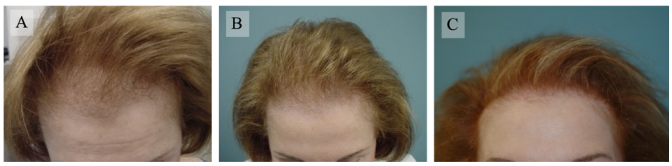
FIGURE 1. Ludwig Scale for classifying stages of female pattern hair loss. Stage I: Initial signs of thinning at the top of the head. Stage II: More pronounced thinning, with widening of the part and increased scalp visibility. Stage III: Advanced thinning, with significant scalp exposure across the top of the head.

The goals of hair transplantation are shaped by the distinct patterns of hair loss and aesthetic expectations (Table 2). For men, the primary focus is on reconstructing the frontal scalp and, if donor hair permits, the crown as well. A thicker and natural-looking frontal hairline is a key aesthetic priority, as it frames the face and influences perceived age. In women, the primary goal of hair transplantation is to restore density and volume diffusely, particularly in areas like the frontal scalp and temples, which are commonly affected by FPHL (Figure 2). As women typically retain their frontal hairline, the focus shifts away from hairline reconstruction to enhancing the density in areas of thinning while blending seamlessly with the existing hair to create a natural appearance.

TABLE 1.

Patterns of Hair Loss and Classification Systems		
Characteristic	**Men**	**Women**
Common Patterns	Frontal hairline recession, crown thinning	Diffuse thinning, "Christmas tree" pattern, and/or bitemporal recession
Classification Systems	Norwood-Hamilton Scale	Ludwig Scale, Sinclair Scale
Focus for transplant	Reconstructing frontal hairline and frontal scalp. If available donor hair, also crown.	Increasing density diffusely in frontal scalp and temples. If available donor hair, also the crown
Hairline Integrity	Often recedes with bald patches	Typically intact
Underlying Causes	Primarily androgenetic alopecia (AGA)	AGA, hormonal or systemic imbalances (eg, PCOS, thyroid, iron), harsh hairstyling treatments
Additional Diagnoses	Less common	More likely to have scarring alopecias like FFA, LPP or traction alopecia
Age of Onset	Typically starts in late teens or 20s	Often starts later, in 30s–40s, with peak consultation age in 40s–50s

FIGURE 2. Restoration of hair density at the frontal and temporal scalp. (A) Before. (B) and (C) Following two surgeries with a total of 1800 grafts with an increase in hair volume and density.



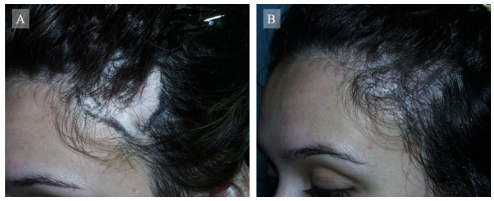
However, some women do seek hairline restoration or augmentation. For aesthetic purposes, some women may desire to lower a high hairline (often congenital or related to prior cosmetic procedures). Hair transplantation may be used to reduce face length in "long-face women," which may enhance facial symmetry or address concerns about proportions.[9,10] Localized frontal hairline loss from traction alopecia or scarring alopecias may also be effectively addressed with hairline reconstruction (Figure 3).[11,12]

Hair loss has a profound psychosocial impact on both genders, significantly affecting self-esteem and quality of life.[13] However, women often face greater societal stigma from hair loss.[14,15] For most women, going bald is not an acceptable cosmetic outcome, whereas for men, shaving the head is a reasonable option if hair loss is severe. Overall, there is greater societal acceptance of hair loss for men. In addition, women may also cite other motivations for seeking a hair transplant, such as restoring femininity.

TABLE 2.

Similarities and Differences Between Sexes at Different Steps of the Hair Transplantation Procedure		
Characteristic	**Men**	**Women**
Consultation Phase	Similarities: Detailed history, scalp exam, and trichoscopy. Discuss realistic expectations and concurrent medical management.	
	Differences: Frontal hairline focus. Men have more options; can shave entire head if hair loss is severe or do hair transplant.	Differences: Focus on volume and overall density. Greater psychosocial impact; shaving is largely unacceptable. May opt for wigs or hair transplant.
Procedure	Similarities: Common steps: FUT/FUE harvesting, graft preparation, and implantation. Pre-op requirements: Stop certain medications, avoid smoking.	
	Differences: FUE or FUT. For FUE, donor area shaved. Occipital donor area is more stable over time. Recipient site: Frontal hairline, frontal scalp > crown.	Differences: FUT preferred. Donor area more likely to thin. Recipient site: Diffuse placement with more focus on temples, hairline, and frontal scalp > crown.
Post-Op Care	Similarities: Standard care: Clean donor and recipient sites and avoid trauma Post-operative shock loss can occur in both genders. Same possible post-op complications.	
	Differences: More tolerant of shaved areas. Linear scars from FUT are less concerning.	Differences: Post-op shock slightly more likely. Counseling regarding concealing donor scars. Rare reports of post-transplant kinky or curly hair.
Eyebrows	Similarities: Indications: Trauma, overplucking, scars, cosmetic enhancement. Methods: FUE > FUT.	
	Differences: Prefer thicker, straighter, flatter eyebrows. Lower density for a natural, untamed look. Coarse donor hairs acceptable. Long-term need to trim transplants.	Differences: Prefer fuller, arched, symmetrical eyebrows. Higher density for polished definition. Finer donor hairs preferred. Long-term need to trim transplants.
Scarring and Other Alopecias	Similarities: Indications: Stable scarring alopecias (eg, LPP, FFA, CCCA). Challenges: Reduced vascularity, poor scalp elasticity, risk of shock loss.	
	Differences: Less common in men but also occurs	Differences: Scarring alopecias more common in women, often including eyebrows. Traction alopecia is more common.

FIGURE 3. Hair restoration in scarring alopecias. (A) Before, with scarring hair loss. (B) Increased density in the temporal region.



The Procedure

Hair transplantation procedures share many commonalities between the sexes. Both can utilize follicular unit transplantation (FUT) or follicular unit extraction (FUE), followed by graft preparation and implantation into recipient sites. Pre-operative instructions, such as discontinuing certain medications, avoiding smoking, and optimizing scalp health, are consistent for both men and women.

Despite these similarities, there are notable differences. Men often prefer FUE, which requires resection of individual hair follicles and leaves barely visible oval scars, allowing flexibility with shorter hairstyles. In contrast, women overwhelmingly prefer FUT, which involves taking a single strip from the donor area that is then stapled or sutured and covered by the surrounding hair. This leaves a fine linear scar and is therefore most compatible with long hairstyles, which ensures that the scar will not be visible.[16] Donor area stability is another differentiator between sexes; men typically retain stable occipital donor areas throughout life, whereas women's donor areas may thin over time.[17] The potential for future donor area thinning must be taken into consideration, as there is a limit to the number of grafts that can be safely harvested in a single session, requiring a more conservative approach to donor area management.

Postoperative Care

Postoperative care protocols are similar for men and women, focusing on promoting healing, preventing infection, and optimizing graft survival. Avoiding strenuous activities, sun exposure, and hair styling products during the healing phase is equally important for both genders.

Postoperative complications are rare for both sexes. However, for women, additional counseling may be needed to address the visibility of scabs and redness, instructing how to clean the areas gently, particularly with long hair. Both men and women may experience postoperative "shock loss" with temporary shedding in the first few months following the procedure. Interestingly, studies suggest that women may be more prone to this phenomenon, which can be distressing and requires careful preoperative counseling.[18,19] One rare complication that has been reported largely in women includes the development of post-transplant kinky hair (PTKH) or curly hair.[20]

Special Sites and Applications

Eyebrow transplantation is a growing area of interest for both men and women. Patients may seek eyebrow transplantation for thinning, overplucking, trauma, medical conditions (eg, hypothyroidism), or cosmetic enhancement.[21] While the procedure and methods are similar, most often using FUE, gender differences influence the aesthetic goals. Men typically prefer thicker, straighter, and flatter eyebrows for a natural appearance, while women seek fuller, arched, and symmetrical eyebrows, which require fine donor hairs for precision.

Women may also desire eyebrow transplantation due to loss in scarring alopecias such as FFA or LPP, which can affect both the scalp and other body sites. Both men and women with end-stage scarring alopecia may be candidates for transplantation once the condition is stabilized medically. However, overall, women are more likely to develop these conditions.[22] Both sexes face the same challenges post-procedurally, including the possibility that unpredictable future flares of disease may impact the longevity of the transplant.

Future Directions

Many promising innovations are under investigation in the field of hair restoration. One interesting technique is long hair transplantation, which is specifically designed to eliminate the need to shave the donor or recipient area, especially with FUE.[23] This technique not only avoids the aesthetic disruption associated with shaving but also offers the added benefit of immediate visual results, as transplanted long hairs allow patients to see the impact of the procedure right away. However, long hair FUE is technically challenging and requires advanced surgical skills and precision, as the surgeon must carefully work around existing long strands without damaging them. Significant technical improvements are necessary before this procedure becomes mainstream.

Another critical area of focus is donor area preservation, particularly relevant to women, whose donor regions may thin over time. Women with diffuse androgenetic alopecia or systemic contributors to hair loss may face limitations in the number of grafts that can be safely harvested. PRP is commonly used as an adjunct, separately or together with hair transplantation, to boost hair growth. Similar emerging therapies, such as exosomes and stem cell treatments, may also show promise in maintaining the health and density of donor areas, ensuring the availability of transplantable hair for future procedures.[24] They may also enhance graft survival and stimulate hair regrowth in transplanted areas. In the future, hair cloning may allow a limitless donor area pool for implantation.

Furthermore, adjunctive medical therapies are key for maintaining the results of hair transplantation. Current options include topical or oral medications (eg, minoxidil, spironolactone, or finasteride for post-menopausal women),

low-level laser therapy, high-energy lasers, and PRP injections, which can complement surgical procedures by stimulating hair regrowth, improving hair quality, and slowing the progression of hair loss. These therapies not only enhance the results of the transplant but also support long-term maintenance of hair density. Medical management continues to advance, and it is expected that future adjunct treatments will become even more targeted and efficacious.

Lastly, customized grafting techniques, aided by robotic or AI-assisted procedures, are expected to optimize outcomes for women with diffuse thinning. These technologies can help surgeons optimize graft placement to match the natural patterns of diffuse thinning in women, minimizing trauma to existing hair and ensuring a seamless, natural result. AI-assisted tools can analyze hair density and placement patterns to guide precise transplantation tailored to women's specific hair loss patterns.

CONCLUSION

Hair transplantation has advanced significantly to address the unique needs of men and women, with tailored approaches improving outcomes for both. Due to differences in pattern hair loss, men often prioritize frontal hairline and crown restoration, whereas women focus on diffuse density and donor area preservation.Techniques like follicular unit transplantation (FUT) are preferred by women due to better donor area preservation and compatibility with long hairstyles. Special circumstances like eyebrow restoration, traction alopecia, and scarring alopecia may be more prevalent in the female population. Innovations like long hair FUE, stem cell-based treatments, and AI-assisted grafting are transforming the field and will enhance precision, accessibility, and aesthetic results. Combined with adjunctive medical therapies, these advancements offer natural, lasting outcomes that restore confidence and quality of life. By recognizing gender-specific needs, hair transplantation continues to evolve as a more effective and patient-centered solution for hair loss.

DISCLOSURES

None of the authors has a conflict of interest pertaining to this submission.

REFERENCES

1. Piraccini BM, Alessandrini A. Androgenetic alopecia. *G Ital Dermatol Venereol.* 2014;149(1):15-24.
2. International Society of Hair Restoration. Practice census results. Published 2022. https://ishrs.org/wp-content/uploads/2022/04/Report-2022-ISHRS-Practice-Census_04-19-22-FINAL.pdf. Accessed July 21, 2025.
3. Yun D, Kim D, Juhyun C, et al. Clinical features of patients treated with hair transplants in female pattern hair loss. *Ann Dermatol.* 2024;36(6):341-347. doi:10.5021/ad.23.158
4. Atanaskova Mesinkovska N, Bergfeld WF. Hair: what is new in diagnosis and management? Female pattern hair loss update: diagnosis and treatment. *Dermatol Clin.* 2013;31(1):119-127. doi:10.1016/j.det.2012.08.005
5. Lam SM. Hair loss and hair restoration in women. *Facial Plast Surg Clin North Am.* 2020;28(2):205-223. doi:10.1016/j.fsc.2020.01.007
6. Unger RH. Female hair restoration. *Facial Plast Surg Clin North Am.* 2013;21(3):407-417. doi:10.1016/j.fsc.2013.05.011
7. Herskovitz I, Tosti A. Female pattern hair loss. *Int J Endocrinol Metab.* 2013;11(4):e9860. doi:10.5812/ijem.9860
8. Bertoli MJ, Sadoughifar R, Schwartz RA, et al. Female pattern hair loss: a comprehensive review. *Dermatol Ther.* 2020;33(6):e14055. doi:10.1111/dth.14055
9. Jung JH, Rah DK, Yun IS. Classification of the female hairline and refined hairline correction techniques for Asian women. *Dermatol Surg.* 2011;37(4):495-500. doi:10.1111/j.1524-4725.2011.01910.x
10. Park JH, Suh BS. Hairline correction by hair transplantation for reducing apparent face length in long-face women. *Plast Reconstr Surg.* 2023;151(3):511-519. doi:10.1097/PRS.0000000000009969
11. Earles RM. Surgical correction of traumatic alopecia marginalis or traction alopecia in Black women. *J Dermatol Surg Oncol.* 1986;12(1):78-82. doi:10.1111/j.1524-4725.1986.tb01434.x
12. Rodman R, Sturm AK. Hairline restoration: difference in men and women—length and shape. *Facial Plast Surg.* 2018;34(2):155-158. doi:10.1055/s-0038-1636905
13. Abt NB, Quatela O, Heiser A, et al. Association of hair loss with health utility measurements before and after hair transplant surgery in men and women. *JAMA Facial Plast Surg.* 2018;20(6):495-500. doi:10.1001/jamafacial.2018.1052
14. Dinh QQ, Sinclair R. Female pattern hair loss: current treatment concepts. *Clin Interv Aging.* 2007;2(2):189-199.
15. Davis DS, Callender VD. Review of quality of life studies in women with alopecia. *Int J Womens Dermatol.* 2018;4(1):18-22. doi:10.1016/j.ijwd.2017.11.007
16. Uebel CO, Piccinini PS, Spencer LSB, et al. Female pattern hair loss: why the follicular unit transplantation surgical technique remains a good option. *Plast Reconstr Surg.* 2021;147(4):839-849. doi:10.1097/PRS.0000000000007760
17. Rojhirunsakool S, Suchonwanit P. Parietal scalp is another affected area in female pattern hair loss: an analysis of hair density and hair diameter. *Clin Cosmet Investig Dermatol.* 2018;11:7-12. doi:10.2147/CCID.S153768
18. Unger WP, Unger RH. Hair transplanting: an important but often forgotten treatment for female pattern hair loss. *J Am Acad Dermatol.* 2003;49(5):853-860. doi:10.1016/S0190-9622(03)01568-8
19. Okochi H, Onda M, Momosawa A, et al. An analysis of risk factors of recipient site temporary effluvium after follicular unit excision: a single-center retrospective study. *Aesth Plast Surg.* 2024;48(7):1258-1263. doi:10.1007/s00266-023-03699-z
20. Park JH, Kim N, Manonukul K. Post-hair transplantation complication: kinky or severely curly hair. *J Craniofac Surg.* 2024;35(2):e146-e150. doi:10.1097/SCS.0000000000009926
21. Avram M. Follicular unit transplantation for male and female pattern hair loss and restoring eyebrows. *Ophthalmol Clin North Am.* 2005;18(2):319-323, vii. doi:10.1016/j.ohc.2005.03.001
22. Hashmi AA, Rashid K, Ali R, et al. Clinicopathological features of alopecia with an emphasis on etiology and histopathological characteristics of scarring alopecia. *Cureus.* 2022;14(8):e27661. doi:10.7759/cureus.27661
23. Park JH, You SH, Kim NR, et al. Long hair follicular unit excision: personal experience. *Int J Dermatol.* 2021;60(10):1288-1295. doi:10.1111/ijd.15648
24. Queen D, Avram MR. Exosomes for treating hair loss: a review of clinical studies. *Dermatol Surg.* 2024. doi:10.1097/DSS.0000000000004480

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