

**MARTINE LANGSAM, IAT, WTS-** Trichology Clinic  
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## **ANDROGENIC ALOPECIA TREATMENT OPTIONS**

Cyclical Vitamin Therapy- Hair growth can be achieved by strengthening the hair roots with the right choice of antioxidants, minerals, vitamins, and amino acids and promoting hair growth. However, excess use of antioxidants, vitamin A, vitamin E, omega 3 can cause hair loss instead of hair growth. Hair growth achieved through a combination of nutrients delivers wellness, good health and hair growth without the possibility of side effects from the use of hair loss medications.

Low Level Laser Therapy (LLLT)- Laser light uses the scientific principle of photo bio-therapy. This process occurs when cells absorb light and repair themselves. Laser light penetrates deep into the tissues of the scalp, stimulating micro-circulation of blood supply, cell metabolism and protein synthesizes. Clinical studies suggest that this cellular and sub-cellular activity breaks down the collection of DHT helping to stop hair loss.

Minoxidil (Rogaine)- Minoxidil, applied topically, is widely used for the treatment of hair loss. It is effective in helping promote hair growth in people with androgenic alopecia regardless of sex. About 40% of men experience hair regrowth after 3–6 months. Minoxidil is generally well tolerated, but common side effects include burning or irritation of the eye, itching, redness or irritation at the treated area, and unwanted hair growth elsewhere on the body. Exacerbation of hair loss/alopecia has been reported. Severe allergic reactions may include rash, hives, itching, difficulty breathing, tightness in the chest, swelling of the mouth, face, lips, or tongue, chest pain, dizziness, fainting, tachycardia, headache, sudden and unexplained weight gain, or swelling of the hands and feet. Temporary hair loss is a common side effect of minoxidil treatment. Alcohol and propylene glycol present in some topical preparations may dry the scalp, resulting in dandruff and contact dermatitis. Side effects of oral minoxidil may include swelling of the face and extremities, rapid and irregular heartbeat, lightheadedness, cardiac lesions, and focal necrosis of the papillary muscle and subendocardial areas of the left ventricle. Cases of allergic reactions to minoxidil or the non-active ingredient propylene glycol, which is found in some topical minoxidil formulations, have been reported. Pseudoacromegaly is an extremely rare side effect reported with large doses of oral minoxidil. Minoxidil may cause hirsutism, although it is exceedingly rare and reversible by discontinuation of the drug.

Finasteride- Finasteride, sold under the brand names Proscar and Propecia among others, is a medication used mainly to treat an enlarged prostate or scalp hair loss in men. It can also be used to treat excessive hair growth in women and as a part of hormone therapy for transgender women. It is taken by mouth. Side effects are generally mild. It increases the risk of certain rare forms of prostate cancer, and some men may experience sexual dysfunction, depression, anxiety, or breast enlargement. Finasteride is a 5 $\alpha$ -reductase inhibitor, and hence is an antiandrogen. It works by decreasing the production of dihydrotestosterone (DHT), an androgen sex hormone, in certain parts of the body like the prostate gland and the scalp. It inhibits two of the three forms of 5 $\alpha$ -reductase, and can decrease DHT levels in the blood by up to 70%.

Growth Factors- Growth factors are polypeptides that regulate growth and differentiation of many cell types. Different growth factor families including the epidermal growth factor (EGF)-related ligands, fibroblast growth factors (FGF), transforming growth factor-beta (TGF-beta), insulin-like growth factor (IGF), hepatocyte growth factor/scatter factor (HGF/SF), and platelet-derived growth factor (PDGF) have been shown to be crucial for the regulation of the hair cycle and hair growth.

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PRP & ACell- In hair restoration, ACell is combined with PRP (platelet rich plasma) and injected into the scalp. The application of ACell + PRP causes miniaturized hair follicles to become

healthier and larger, producing more robust hair growth. ACell activates follicular progenitor cells (adult stem cells) and PRP is loaded with growth factors that promote rapid angiogenesis and localized cell growth. Effective for both male and female pattern hair loss, ACell + PRP has also regrown hair in alopecia areata, eyebrow hypotrichosis and other patient cases with non-hereditary hair loss."

Amnion rather than A-Cell comes from human placenta. Can be combined with PRP.

Microneedling- Microneedling is a minimally invasive dermatological procedure in which fine needles are rolled over the skin to puncture the stratum corneum. This therapy is used to induce collagen formation, neovascularization, and growth factor production of treated areas. It has been used in a wide range of dermatologic conditions, including androgenetic alopecia and alopecia areata, among others. While there are a limited number of studies examining this therapy in the use of hair loss, microneedling has been successfully paired with other hair growth promoting therapies, such as minoxidil, platelet rich plasma, and topical steroids, and shown to stimulate hair follicle growth. It is thought that microneedling facilitates penetration of such first line medications and this is one mechanism by which it promotes hair growth. To date, the area most studied and with the most success has been microneedling treatment of androgenetic alopecia. While the current evidence does not allow one to conclude superiority of microneedling over existing standard therapies for hair loss, microneedling shows some promise in improving hair growth, especially in combination with existing techniques.

Hair Transplants- Hair transplantation is a surgical technique that removes hair follicles from one part of the body, called the 'donor site', to a bald or balding part of the body known as the 'recipient site'. The technique is primarily used to treat male pattern baldness. In this minimally invasive procedure, grafts containing hair follicles that are genetically resistant to balding, (like the back of the head) are transplanted to the bald scalp. Hair transplantation can also be used to restore eyelashes, eyebrows, beard hair, chest hair, pubic hair and to fill in scars caused by accidents or surgery such as face-lifts and previous hair transplants. Hair transplantation differs from skin grafting in that grafts contain almost all of the epidermis and dermis surrounding the hair follicle, and many tiny grafts are transplanted rather than a single strip of skin. Since hair naturally grows in groupings of 1 to 4 hairs, current techniques harvest and transplant hair "follicular units" in their natural groupings. Thus modern hair transplantation can achieve a natural appearance by mimicking original hair orientation. This hair transplant procedure is called follicular unit transplantation (FUT). Donor hair can be harvested in two different ways: strip harvesting, and follicular unit extraction (FUE).

#### Promising Future Treatments:

It has been proposed that AGA patients might benefit from the use of N-acetylcysteine or other antioxidants as a supplement to currently available or emerging AGA therapies such as finasteride, minoxidil, and PGD2 receptor blockers.

Cyclosporine A is been studied for Androgenetic Alopecia. Probably a topical use in the near future. The idea of using cyclosporine comes from some studies that show that the volume of the bulb's dermal papilla (DP) can be recovered by a movement of immigration of fibroblasts from the dermal tissue that surrounds the DP. As one of the hypothetical causes of miniaturization is the emigration of fibroblasts from the DP to the Dermal tissue, reducing the

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diameter of the bulb (as described David Whiting at the beginning of the 2000's), the opposite movement of cells can be one of the solutions for AGA. Cyclosporine, as well as PRP, minoxidil, and microneedling seems to promote this re-conversion of vellus to terminal follicles.

Potential role of Melatonin- Finally, among other natural substances, topical melatonin seems to be a promising candidate. Melatonin acts as a potent antioxidant direct radical scavenger and anti aging factor. In the skin, melatonin is present in a melatonergic system that is fully expressed in humans. Biological effects of melatonin on cell growth regulation have been shown in human keratinocytes. Furthermore, in healthy human subjects, topically melatonin effectively prevented the development of UV-induced erythema. Similarly, cell death of UVR irradiated leukocytes was prevented by melatonin through the scavenging of reactive oxygen species. In the latter study, the ant oxidative effects of melatonin were superior to those exerted by vitamin C. Thus, the melatonergic system in the skin may counteract the effects of environmental stressors to preserve the functional integrity and maintain the homeostasis of the skin and hair. In contrast to topical minoxidil and oral finasteride in the management of AGA, topical melatonin would seem to represent the first topical anti aging' product for treatment of the aging scalp. Penetration and bioavailability studies (unpublished data) have so far been done in the forefront of a pilot study by Fischer et al. suggesting that topically applied melatonin might influence human hair growth in vivo.