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From hype to hair restoration

New treatments for hair loss, from at-home solutions to improved surgical techniques, will be game-changers in the near future. **Wendy Lewis** reports

The average human scalp is covered with 100,000 hair follicles. Although that sounds like a hefty supply, no new follicles are formed after birth, so you will certainly want to hang on to every follicle for as long as you can. Around the age of 30, both men and women will start losing hair, although men tend to lose it at a much faster rate. Hair naturally thins with age, but there are many other factors that can contribute to excessive shedding, including genetics, medications, hormones, illness and stress. Over time, the hair follicles shrink and eventually they stop growing altogether. This is due to a shortening of the anagen cycle, which gradually stops altogether.

According to dermatologist Dr Rebecca Kazin: "The causes of hair thinning may include genetics, stress, certain medications, hormones, plus scalp conditions like seborrheic dermatitis, psoriasis and fungal infections, which can cause inflammation that makes it difficult for hair to grow."

Telogen effluvium can be a devastating condition. "Hair shifts faster than normal

from its growing phase into the resting phase before moving into the shedding phase. The older you are when you experience this, the less likely you are to get your hair back to the state it was," says Kazin. Hereditary hair loss, known as androgenetic alopecia, is the most common cause of hair loss.

Fortunately, there are treatments that can help and early intervention after hair loss begins has been shown to help avoid prolonged androgenetic alopecia from destroying hair follicles.

A TRENDING TOPIC

In 2016, the global hair care market is estimated to be worth about US\$83.1bn. Attention has long been devoted to lustrous, full hair, but recently we have seen a growing interest in products and systems that offer hair health benefits. Products are

The use of topical products promoting good scalp health is on the rise

being launched in all channels, at all price points, promising to improve the health and condition of the scalp, offer solutions for itching and flaking, and increase hair volume. Understanding that a healthy scalp is the key to beautiful hair is a growing theme among consumers.

For example, Unilever's Clear Scalp & Hair Therapy brand made a big splash, with product ranges for beautiful, dandruff-free hair for both genders sold at mass retailers. At the prestige level, Redken's Cerafill Thinning Hair Solutions range has three systems for thinning hair, advanced thinning hair (which includes Minoxidil), plus treatment stylers, for a complete solution for each stage of hair thinning.

Hair growth supplements, shampoos and scalp serums are now available at all price points, confirming consumers' desire for practical and effective solutions to common hair concerns. Drug-free products, such as Viviscal Hair Growth and Hair Care Programs and Nioxin, are marketed directly to consumers, as well as through the professional channel. Keranique, created for women, targets female consumers with the emotional side of hair thinning and markets a full range of hair cleansing and volumising products, and follicle boosters.

HAIR LOSS PRESCRIPTIONS

The most common medication available to treat hair loss is Minoxidil, the first FDA-approved ingredient clinically proven to grow new hair. Available over the counter, there is a foam and extra strength solution for men and a topical solution and newly launched topical aerosol for women, intended to be used daily. It penetrates into the scalp to stimulate follicles to grow new hair, and results can be seen within four to six months of continued use. The downside of Minoxidil is that you need to keep using it, twice every day, to maintain the effects.

Another option is Finasteride or Propecia, the first oral medication the FDA cleared for treating hair loss in men; it can also be used by women, but only if they are post-menopausal. Certain hormonal treatments, including Aldactone (Spironolactone), can also be used to treat hair loss in women.

AT-HOME TREATMENTS

Low level laser light therapy (LLLT) has long been used to stimulate hair growth; red light has been shown to be effective in stimulating energising within the cells of the hair follicle. There are many LLLT devices on the market, and HairMax Laser Comb was the first and only laser light hair growth device to earn FDA clearance for home-use to treat hair loss and stimulate hair growth in both





Keranique is developed for women and targets the emotional impact of hair loss

genders. It is marketed in 170 countries.

Although these treatments can work, compliance has been a challenge. The convenience and ease of use, or lack thereof, tends to make people discontinue using them at home. One of the most popular systems recently is the Capillus 272, which comes with a baseball cap, a portable battery pack, and a light source that can be used at home.

STEM CELL-BASED BREAKTHROUGHS

Stem cell regeneration and hair follicle regrowth is considered by some researchers to be the Holy Grail of hair regrowth. "There are some important developments in the pipeline, including new and effective drugs, robotic surgery and cell based approaches to hair loss," says Dr Robert M Bernstein of Bernstein Medical – Center for Hair Restoration in New York City. Research on several biological agents used to enhance hair growth is ongoing.

Platelet rich plasma therapy (PRP) is used by physicians in an off label manner to stimulate hair growth. Some studies have indicated benefits to support the clinical application of PRP for this indication: a procedure where the physician draws the patient's blood, which is then spun in a centrifuge, and the PRP is separated and removed from the rest of the blood. The PRP, which is rich in growth factors, is then injected into the scalp to wake up follicles.

Another interesting stem cell application uses a protein from the tissues of pig bladders. Maryland company ACell has developed a unique product with a chemical structure similar to human tissues, used in an off label manner by some hair surgeons to potentially aid in graft survival after hair transplantation. At present, there is no clinical data to support the hair-related effects, and studies need to be conducted to determine potential benefits.

HAIR RESTORATION

Unfortunately, no medication or topical treatment to date has been proven to restore hair in the frontal areas, where most people want it. Hair restoration surgery is the only reliable method to restore hair in the frontal hairline area, and the newest methods available have come a long way.

According to the most recent census of the International Society of Hair Restoration Surgeons (ISHRS), an

estimated 310,624 surgical hair restoration procedures were performed worldwide in 2012. Asia has shown the largest increase and highest number of procedures by region, followed by the Middle East. Since the ISHRS began compiling procedural data in 2004, the number of hair restoration procedures around the world jumped 85% by 2012. Hair restoration procedures performed on the eyelashes, eyebrows and facial hair have also been steadily increasing. Hair follicles may take centre stage in other fields of medicine as well. ISHRS member Dr Francisco Jiménez is researching the transplantation of hair follicle grafts to induce healing of chronic skin ulcers, garnering the attention of other international researchers.

Surgical hair restoration may be the only feasible treatment for some people, and techniques are continually improving. The former 'pluggy' hair transplant has been largely replaced by virtually undetectable results with natural-looking hairlines. In recent years there has been a tremendous increase in Follicular Unit Extraction, commonly referred to as FUE. This involves the removal of the donor hair to be used for the transplant process, one graft at a time, and avoids the traditional strip excision that leaves a long visible scar.



The ARTAS Robotic System uses precision robotics to carry out FUE procedures

There has been a proliferation of automated devices used to harvest follicular unit grafts, namely NeoGraft, that have been widely adopted.

According to Bernstein: "Follicular unit extraction (FUE) procedures have progressed from using labor-intensive hand-held instruments all the way to a computer-assisted, image-guided robot that can dissect follicular units accurately and consistently, thousands of times in a single session." The FDA-cleared ARTAS Robotic System is the first and only hair restoration system to use advanced imaging and precision robotics to achieve this.

The advantages are reduced treatment times, discomfort, recovery and most importantly, avoiding a linear scar in the donor area.

"The ARTAS Robotic Procedure is a great advance in automating the most challenging part of the FUE procedure," says Bernstein. The next stage for the ARTAS Robotic System will be the ability to create recipient sites in addition to harvesting grafts. "Within the next three years, it should be the dominant method used around the world. With the addition of recipient site creation, we will be one step closer to fully-automated robotic hair transplantation," he says.

ON THE HORIZON

There are many more promising developments underway for hair. Latisse (Allergan), the only FDA-approved drug for eyelash growth, may also help regrow hair on the scalp. The next hair growth treatment may be Bimatoprost, the active ingredient in the drug known as Latisse, which is on the market for lengthening, thickening and darkening eyelashes and is also being used (off label) for growing eyebrows. Research is ongoing to determine if it can stimulate scalp hair growth too. It works by keeping hair in the anagen or growth phase. There is also some talk about possibly combining a drug like Latisse with a kind of medication used to treat allergies and asthma that blocks a hormone-like substance that prevents hair from growing.

Perhaps the next innovation in hair restoration will come in the form of synthetic grafts that can be placed into the human scalp. Several early stage biotech firms in Israel and Asia are currently working on perfecting this technology, although it remains controversial in many countries and falls under strict regulatory agency scrutiny. **cb**

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