

Hair loss and Hair transplantation

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Hair is a very important structure cosmetically. Ironically it does not serve much useful function for the body. However, it in a way serves as our passport to the society- how we look is largely decided by the appearance of the hair. - it contributes to the self-image of an individual, thus affecting the personality of a person. This explains the society's obsession with hair. More money is spent on hair cosmetics and hair treatments than any other ailment!. Advertisements of all types abound in the lay press, often giving false and incomplete information. Hence it is very important to understand the causes of hair loss, and their treatments.

At the beginning, It is important to understand the importance of the hair cycle, and the difference between natural daily shedding, temporary hair loss and permanent pattern baldness.

The normal hair growth cycle and Natural shedding

At full maturity, the human scalp maintains an average of 100,000 hair follicles. Hair is made up of proteins called keratins. Human hair grows in a continuous cyclic pattern of growth and rest known as the "hair growth cycle." Normal hair goes through 3 stages:

Of the 100,000 hairs in the adult scalp, 90% are in growing stage (called anagen). The average duration of anagen is 1000 days. The average daily loss of telogen hairs is 100, which is considered normal. After any illness or stress, delivery etc, this number of telogen hairs can go up leading to hair loss and is referred to as telogen effluvium. This is the most common cause for hair loss.

When does hair loss become abnormal?

Your hair loss may be abnormal if you are losing more than 100 hairs a day. This may result in a general thinning of hair or in a patchy loss of hair over the scalp and other areas-beard or eyebrows.

What are the different kinds of hair loss?

Temporary Hair loss

Emotional turmoil, medications, skin conditions, surgery, childbirth, poor nutrition and illnesses can cause hair follicles to enter the resting or telogen phase prematurely, resulting in increased shedding which presents itself as temporary diffuse thinning. Among the many medical conditions that can cause hair loss, the most common ones are:

- anemia
- thyroid disease

- other endocrine problems (especially those that produce excess androgens)
- gynecological conditions - such as ovarian tumors
- connective tissue disease (such as Lupus)
- surgical procedures and general anesthesia
- rapid weight loss or crash diets that are not nutritionally balanced
- severe emotional stress
- Drugs such as oral contraceptives ,thyroid medication ,blood pressure medication (such as beta-blockers or water pills) ,"mood" medication such as lithium, Prozac, or tri-cyclic antidepressants , blood thinners such as heparin or coumadin, cholesterol lowering medication

It is very important to note that all these various causes listed above do not lead to permanent baldness and cause only temporary hair loss! The treatment of all these medical causes of hair loss(which never cause total baldness) is that of underlying cause. Proper nutrition containing proteins, vitamins and minerals, avoiding stress and treatment of the underlying disease, by a specialist, are advised.

In addition, certain skin and hair diseases may also lead to hair loss. These include:

- a) Alopecia Areata - this usually results in a patchy loss of hair. .
- b) Scalp Diseases - fungal and bacterial infection, and other local scalp diseases.
- c) Excessive traction on the hair - for example tight curling and hair styles (corn-braiding, pony-tails).

What is dandruff? Does it lead to hair loss?

Dandruff is a condition causing scaling of scalp. It is due to a fungus in the hair called Pityriusporum ovale. This fungus which is normally present in the skin of most people, becomes more active under certain favourable conditions and results in inflammation, leading to dandruff. However, dandruff does not lead to hair loss, contrary to popular belief. Dandruff is treated by antifungal shampoos. It should be noted that treatment of dandruff is on a long term basis-patient needs to continue the use of shampoo at least once a week.

What should a patient do when he has abnormal hair loss?

If you feel your hair loss is excessive you should consult your dermatologist. He will try to find the cause of your hair loss and may be able to treat any causative medical conditions.

Use a wide-tooth comb and avoid brushes. Avoid curlers and excessive traction with curlers. It is advisable to keep your hairstyle short.

Be wary of what others may offer you in terms of hair treatment and cure. Do not apply garlic, turmeric, oils etc. Contrary to popular belief, dandruff usually does not cause hair loss. Like wise, type of water, frequent shampooing, helmet, oiling the scalp do not affect hair growth at all. Various shampoos which claim to make the hair grow have no basis.

Also treat it as a manifestation of a disease and not simply as a cosmetic problem . When in doubt, consult doctor.

Permanent Baldness AND Hair Transplantation

Permanent Pattern Baldness –commonly referred to as Common baldness of men and women- (Androgenetic Alopecia) is an extremely common problem. Seventy percent of all men and fifty percent of women will experience some degree of pattern baldness in their lifetimes. It causes severe cosmetic deformity and emotional distress.

The Root of the Problem

The cause of baldness is no longer a mystery. Research has confirmed that hair loss is inherited like the color of the eyes. The gene can be inherited from the mother or father's side .The hair follicles are genetically coded. If hair loss genes were present, the hair follicles on top of the head possess receptors, which are sensitive to the hormone dihydrotestosterone, or DHT. These hair follicles which are genetically "programmed", begin shrinking in adulthood. When this occurs, the hair follicles grow finer and smaller hair that is lighter in color, shorter and less deeply rooted than their predecessors- hence they are called miniature hairs. In summary, pattern hair loss of men and women (Androgenetic Alopecia) is an inherited condition manifested when androgens are present in normal amounts. The onset, rate, and severity of hair loss are largely dictated by genetics, hormones and age. The severity increases with age and if the condition is present it will be progressive and relentless. In most cases, this "thinning hair" will progress to "baldness" when the shrinking follicles finally stop producing hair.

For men (Male pattern hair loss-MPHL), permanent baldness generally follows a specific pattern, which starts either in temporal areas (sides of head) or vortex (top of head). **While it can also occur in women, total baldness is very rare.** It Men in their 20's have a 20 percent incidence of MPHL, in their 30's a 30 percent incidence of MPHL, in their 40's a 40 percent incidence of MPHL, etc. Using these numbers one can see that a male in his 90's has a 90 percent chance of having some degree of MPHL.

Androgens (testosterone, dihydrotestosterone) are necessary for the development of baldness (MPHL) .However, it should be emphasized that the blood levels of androgens present is normal . It is the sensitivity of the hairs to the hormone which is abnormal. It is important to note that even, in the most extensive cases, a horseshoe-shaped fringe of hair remains in the back of the scalp. This hair-bearing fringe is insensitive to hormones and usually will last a lifetime. These hairs, when transplanted into thinning or balding areas, will take root and grow, and continue to grow for the rest of a person's life-This is the principle of hair transplantation.

How can baldness be treated?

Firstly, it should be noted that treatment of temporary hair loss discussed above and treatment of baldness are entirely different. Baldness can be treated with both medical and surgical treatments.

Presently, there are only two approved drugs for this purpose:

- a) Minoxidil lotions 2% and 5%-it has to be applied daily twice over the affected area
- b) Finasteride 1mg tablets (Propecia®)- one tablet daily for 3-4 years and is more effective over vortex

The disadvantages of these drugs are –they have to be taken for long duration, indefinitely. Also, they may not be effective in established and extensive baldness.

Other modes of treatment such as hair weaving are temporary, need periodic maintenance and their long-term costs are significant. Thus **hair transplantation is the only permanent method of hair transplantation.**

Hair transplantation: The hair in the back of the scalp is genetically programmed and is insensitive to the balding process –hence is the basis for transplantation as they usually will last a lifetime. The transplanted hair is removed from back of the scalp (donor site) and transferred to another (recipient site). The transferred tissue is not "rejected" as it is not foreign tissue.

Originally, in 1970s, large circular grafts containing 15-20 hairs were transplanted resulting in noticeable and unnatural results. These were called punch grafts. They were replaced in early eighties by smaller punch grafts called minigrafts. Over years, instruments and techniques have been developed that allow us to achieve truly natural results by transplanting small grafts containing 1-2-3 hairs, very close together. It has been found that hair grows from the scalp in groups of one, two, and three hair follicles called follicular units. Transplantation of these units results in denser and more natural results. This, the so called 'follicular unit transplantation' is the state of art technique for hair transplantation today. The other major advance in this field is the use of microscope to dissect hairs and avoid transaction of hairs.

Procedure

The procedure is performed under local anaesthesia, as follows:

1. Donor area: Strip 8-10 cm long and 1-1.5 cm wide is taken from occipital scalp.
2. The donor area is then sutured with continuous / intermittent suture. The sutures are removed after 7-10 day. The donor area heals with our any obvious scar.
3. The donor graft is then dissected into follicular units of 2 hair, 3 hairs and single hair
4. The follicular units are then implanted using special implanters over the recipient area.

The procedure is simple, though time consuming (lasting for 4-6 hours depending on the number of hairs to be implanted). Identification and dissection of follicular units may need magnification under microscope.

Very little pain is experienced during the procedure. Some discomfort is to be expected as the anesthetic is injected into the scalp. Once the skin is anesthetized, there is no pain.

Typically the grafted hair will shed in 2-4 weeks. New growth will begin in 4-5 months and length will increase approximately 1/2 inch per month. The advantages of this method are a large number of hairs are transplanted in one session, it is an outpatient procedure and patient can return to work the very next day with a very small bandage over back of scalp; and of course, with a very satisfying cosmetic result which is very permanent and for the rest of the patient's life.

Often more than one session may be needed, depending on the 1) area of scalp treated 2) the number and size of grafts used and 3) the density which the patient desires 4) the individual characteristics of the patient, e.g. coarse hair will provide a denser look than fine hair.

Does it really work?

Yes. The transplanted hair is removed from one area of the body (donor site) and transferred to another (recipient site). The transferred tissue is not "rejected" as it is not foreign tissue. The transplanted hair maintains its own characteristics; color, texture, growth rate, and curl, after transplantation and regrowth. The vitality of the grafted follicle is maintained by the rich blood supply to the scalp. Originally, large circular grafts containing 15-20 hairs were transplanted resulting in noticeable and unnatural results. Over years, instruments and techniques have been developed that allow us to achieve truly natural results by transplanting small grafts very close together. We have found that hair grows from the scalp in groups of one, two, and three hair follicles. We transfer these groups of follicles after eliminating the excess surrounding fatty tissue. This allows the grafts to be placed closer together resulting in a denser and more natural result.

What can be expected immediately after surgery?

The post-operative course will depend on adherence to the instructions given after surgery. Small scabs will form on the scalp at the graft sites. Generally speaking, these scabs disappear in 4-7 days. Shampooing can be resumed 24 hours after surgery. The suture (stitch) used in the donor area is undetectable as it is completely covered by your existing hair. An appointment will be made for the suture to be removed one week after surgery. It is advisable to take at least two days off work after surgery. A baseball type cap can be worn at anytime after surgery. Patients should avoid strenuous physical activity for at least five days after surgery. Typically the grafted hair will shed in 2-4 weeks. New growth will begin in 3-4 months and length will increase approximately 1/2 inch per month.

Is Hair Transplantation painful?

Most people are surprised at how little pain there is during the procedure. Some discomfort is to be expected as the anesthetic is injected into the scalp. Once the skin is anesthetized, there is no pain.

If the numbing medicine wears off during the course of the procedure, more is injected to re-anesthetize the area.

What will it look like after the procedure?

The grafts form small scabs in the days after the procedure. If one has enough surrounding hair, these scabs can be camouflaged with creative styling. If not, the small scabs may be visible but do not attract much attention. By keeping the scalp moist, the scabs usually come off in about a week or so.

When can I go back to work?

Depending on the type of procedure you have done and the type of work you do, it is often possible to go back to work the next day. Your surgeon will discuss this with you during the consultation.

Is hair transplantation expensive?

Hair transplantation is more expensive than a hairpiece or some alternative treatments. However considering that the results are permanent, most people consider it a good investment in their future happiness.

How many sessions will be required?

The number of the sessions will depend on the 1) area of scalp treated 2) the number and size of grafts used and 3) the density which the patient desires 4) the individual characteristics of the patient, e.g. coarse hair will provide a more dense look than fine hair. The estimate of the number of sessions can be discussed during the consultation with your surgeon

Growth cycle of Hair

1. growing phase or anagen: 3-5 years
 2. resting phase or catagen: 2-4 weeks
 3. falling phase or telogen: 2-4 months
- 90% of hairs are in growing phase
Hair grows at 1cm per month
50-100 hairs are lost daily during bathing
Hormonal, nutritional factors, stress, deficiency of vitamins, internal diseases affect hair growth
Male hormones are the most important factor for hair growth

Great things are done by a series of small things brought together

-Vincent Von Gough

