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### **New Methods in hair transplantation**

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. HOWEVER THEY ARE OF GREAT VALUE IN PREVENTING FUTURE BALDNESS AND THEREFORE IN ALL YOUNG PEOPLE WITH EARLY HAIRLOSS THEY ARE NEEDED TO BE TAKEN. THEY ARE ALL SAFE DRUGS EVEN WHEN TAKEN FOR LONG PERIODS OF TIME. Hence, even after transplantation, they need to be taken in most patients.

**Thus, hair transplantation is the only permanent method of hair transplantation. What this means is that grafted hairs are permanent.** 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 a foreign tissue. There have been several major advances in the techniques of hair transplantation. **This article provides some details on these new methods of hair transplantation.**

**1. Follicular unit Hair transplantation (FUT) with Trichophytic Closure:** 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. In FUT, a strip of skin with hairs is removed, dissected under microscope to separate follicular units and then transplanted. The removed strip area is sutured by a special method called trichophytic closure which heals with an imperceptible thin line which is hidden under the hairs. The other major advance in this field is the use of microscope to dissect hairs and avoid transaction of hairs. Improvements in technique have enabled us to transplant even upwards of 3000 units (in patients with good donor hair) in one session. While the average density given in an usual session is up to 35 per sq cm, higher density of even up to 50 or 60 can also be given.

**Its advantages are:**

- a) It is quicker**
- b) It is cheaper (half the cost off FUE)**
- c) It is very accurate as microscope is used for separation of hairs**

**Its disadvantages are:**

- a) It needs a stitch in back of head which heals with a scar**
- b) It heals with a scar**
- c) It needs 10 days to heal**
- d) Cause a little more pain than FUE**

**2. Sutureless transplantation or FUE:** More recently a new method called **FUE or follicular unit extraction** has been introduced. In FUE, each unit is pulled out from the donor area individually, with tiny 0.8mm, -1mm instrument called punch and then transplanted in to bald area, these tiny holes then heal with minute imperceptible scars, without stitching. For this reason, FUE is also called suture less transplantation. It should be understood that there is no difference in the way these hairs are transplanted in to recipient area. The only difference is in the way they are taken out from the donor area.

**Its advantages are:**

- a) It is a less invasive procedure.**
- b) It is less painful- in fact is very minimal**
- c) Healing time is faster within two days**
- b) There is no suture**
- c) There is not suture scar and so patient can at any time shave his head.**

**Because of these reasons, it is gaining in popularity. Nearly 25% of HT are performed by this method.**

**It has some disadvantages too:**

- a) It is less perfect than FUT as hairs are pulled out blindly. 5-10% of hair units may be lost.
- b) Donor scalp needs to be trimmed very short, almost shaven-1 mm
- c) It is more expensive; as much as two times the cost of FUT.

There is a limitation to the total number of grafts transplanted in one session: maximum is usually around 1500-2000. This is because: In FUE, one unit in 8 units is taken out to preserve normal appearance. If the back of the head has about 25000 units, leaving out the border areas( which can not be taken out to preserve cosmetic appearance), and allowing for some loss due to transaction, up to about 2200 units can only be taken out. If more are taken out, then one unit in 6 or 4 units need to be pulled out- then the gap between remaining hairs increases and give raise to a mottled appearance on back- so instead of a linear scar after strip, one gets a thinned out patchy appearance of hairs on back (due to multiple tiny dots), particularly when Length of hairs is small. To hide this, one has to leave long hairs, which would negate the primary purpose of doing FUE. So the basic advantage of preserving normal appearance, with short hairs, on back of head is lost, if too many hairs are extracted, that too having spent more money! So we don't recommend FUE if required no of grafts exceed 2000.

**Which method should I undergo? FUE or FUT?**

This is largely patients choice as there is a difference in costs involved. **it should be understood that FUE is only a method of taking the hairs out from donor- it is not a method of implantation;** the process of implantation is the same in both methods. So the comparison should be between FUE and strip donor excision. The results in recipient area are the same!

**Both methods have their advantages and disadvantages, and both are useful. What is needed is to have a balanced view, keep a proper perspective, and use them for ones best advantage. See below table for comparison of the two methods.**

**Comparison of FUT and FUE :Both have same technique over recipient area.  
ONLY DONOR IS DIFFERENT**

FUT	FUE
Strip excision of donor skin with suturing (Stiching)	Extraction of individual units one by one through small punch holes; each alternate hair unit is removed. No Suturing.
Heals with a single linear scar which is 1-2 mms wide , hidden under hairs	Heals with multiple tiny dot like scars in between hairs
Healing over 10 days	Healing over 3 days
Donor area not shaved; suture completely hidden.	Donor area completely shaved; to remove 2000 grafts, at least 20*4 sq cm are shaved
Quicker;4 hours for 2000 grafts	Slower 7-10 hours for 2000 grafts
More precise because of microscopic dissection	Less precise as units are manually pulled blindly
Minimal damage to hair roots	Damage to hair roots possible in 2-5-8%
Operation site over donor hidden completely even on the day of surgery	Operation site shaven and hence visible
Large sessions, up to 3000 grafts possible	Large sessions difficult-so suitable for small and medium bald areas
Less expensive	2 times more expensive because of the prolonged
80% of world's transplants are done by this method	20% of transplants by this method-suitable for small areas, people who are afraid of stich and people who want to keep short hair

NOTE: FUE IS NOT POSSIBLE IN ALL- SOME PEOPLE HAVE VERY TIGHTLY PACKED HAIRS AND THESE GRAFTS DON'T COME OUT EASILY BY FUE, AND MAY BREAK-IN SUCH PATIENTS, A TEST CALLED FOX TEST IS DONE; BY EXTRACTING 50-100 UNITS TO ASSESS. IF THE TEST YIELDS POSITIVE RESULTS, ONLY THEN FUE IS PERFORMED.

**3. Body Hair transplantation(BHT):** Body hair transplantation is generally done only when scalp hair is exhausted. Again this is a technique receiving a lot of hype and exaggeration on internet sites, and many patients ask for it hoping not to disturb their scalp hair.

Body hair is not the preferred source when scalp hair is visible for the following reasons:

- a) Body hair has to be extracted singly and hence is slow- takes 2-4 days for a 2000 graft session.
- b) Body hair occurs mostly as single hair units and hence gives less density.
- c) Body hair diameter is less and so gives less volume.
- d) Long term behavior of body hair is still not known as the technique is new.
- e) Body hair may grow long when transplanted on to scalp, but not as long and as thick as scalp hair- so it is inferior to scalp hair
- f) Lastly and most importantly, Body hair transplantation is possible only for patients who have good body hair on chest.
- g) BHT is associated with tiny scars on chest.

**Hence, BHT is performed only when scalp donor is exhausted. Its biggest advantage is it supplies very large no of hairs**

**4. Long hair transplantation:** The normal length of grafted hair is 0.5 cm. Some patients( such as film actors) want long hairs after transplantation, to look natural- this is called long hair transplantation in which hairs are left long , 2-4 cms.

However, it is technically more difficult to do and therefore costs more .*Further, it should be remembered that whether hairs are transplanted long or short, they will fall off in the second week.*

**5. Transplantation in special situations:**

**i)Transplantation in between existing hairs:** Many patients develop diffuse thinning , with out complete loss of hairs, with gaps in between hairs.

Transplantation can be done for them also. The following special conditions apply:

- a) Any graft needs minimum space to survive. So grafting can only be done in places where such gaps are available due to loss of hairs( loss of density)
- b) Other gaps are due to decrease in diameter of hairs; here, transplantation is not possible and drugs are needed.If we transplant grafts too close to existing hairs there will be severe loss of hairs called SHOCK LOSS, WHICH SHOULD BE AVOIDED.
- c) **In other words, in all such patients , while transplantation can be done, it is only in combination with drugs.SO the final results not only depends on transplantation, but also how well drugs work.**If drugs are stopped or they don't work well( which happens in 15% of patients), then there are fresh areas of thinning.
- d) Therefore in all such patients, **it is always preferable to administer drugs for 4-6 months to decide how well drugs work before doing transplantation.**
- e) Lastly, grafting amidst long existing hairs is more difficult and time consuming .It is therefore helpful to trim the hairs short for better visualization of gaps. If this is not acceptable to patients, then transplantation can be done by using special techniques, which however costs more.

**ii)Vertex transplantation:** Vertex ( back of head) is generally a difficult area-this area is large, circular in shape, and therefore hairs emerge in a radiating pattern, like spokes of a wheel. It also has whorls.Therefore it needs a large no. of grafts and these have to be arranged in different directions.This takes more time, and is time consuming. More importantly, because the baldness is circular, in future, it could expand in a centrefugal pattern- hair transplantation in the central circular area could result in a situation in future wherein, grafted hairs remain in the centre and new area of bald ness is seen all around it.This will look odd.

**For these reasons, it is always the policy worldwide not to operate vortex area early, always try drugs first in this area, and operate in the front of the head first.**

**iii) Transplantation in young people:** Young people below 23 years of age present a special situation. Hair loss in them is still evolving, and in early stages, but they are very upset about it, and often find it difficult to accept it. They need drugs to prevent loss of existing hairs for at least 10 years- which is difficult to do and they generally can not be relied upon to take drugs for such prolonged years. However, if transplantation is done at this stage, while it will make them happy temporarily, but they will very soon lose hairs over rest of the scalp and come back for a second transplant within 2-3 years. **So it is generally advisable to delay the first transplant till 25-26 years of age, unless they have significant established baldness. However, this does not apply to special situations such as large areas of baldness, occupations in visual media, very disturbed patients etc**

**iv) Hair transplantation in other areas-eye brow, moustache, beard, eye lashes:** Hair transplantation can be done, not only for baldness over scalp, but also over other areas such as eyebrows, eyelashes, moustache, beard, etc. These need special considerations, as they are mobile areas. They are also more expensive.

**v) Transplantation in women:** It can also be done in women, which is however is more challenging. This should be discussed in person with the doctor.

1. In women, there are multiple causes for hair loss. These should be investigated and treated before transplantation.
2. In women, hair loss is more diffuse and widespread, so a proper discussion about which area should be transplanted is necessary.
3. Women have long hairs and do not accept trimming of hairs. Hence transplantation should be done amidst these hairs. This is more time consuming.
4. Since women want hairs to be long, results take almost 1 ½ years, to grow to required length.
5. Finally, women have exaggerated expectations about their appearance. For these reasons a detailed discussion with the doctor is necessary.

**Summary:** 1. In our opinion, for Indian situation, for patients with limited budget, FUT is the best method as it is cheaper, more convenient and gives outstanding results.

2. Despite this, FUE holds attraction to many patients who are apprehensive of the FUT method because of "stitch- skin being removed". **In such patients, and for those who wish to have short hair, those with adequate financial resources, and limited bald area, FUE can be done.**

3. Body hair in our opinion is inferior to scalp hair and is therefore recommended only when scalp hair is not available and as part of Giga sessions.

4. In our opinion, the real value of these new techniques is that they give more options for the transplant team: The techniques give options for those who have poor donor and for those who wish to have 3-4-5 sessions. They help us to transplant more grafts ; for eg. By combining FUT, FUE, BHT, it is possible to transplant even beyond 4500 grafts in one session: 2500-3000 by FUT, 1000-1500 by FUE and another 1500-5000 by BHT, over a period of 3-4 days. This is particularly applicable for those with large areas of baldness, who wish to complete surgery in one session, such as those coming from foreign countries. Of course, this would mean a heavy cost, above 3 -5 lakhs Rs.

*It should be emphasized that despite all the hype in internet sites, 80% of all hair transplants in the world are done by FUT only. FUE accounts for only 20% of all transplants because of its high cost. This is the case with us also- we have many patients who seek FUE after reading on internet, and then change their minds to have FUT after knowing full details.*

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

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