

Management of Alopecia

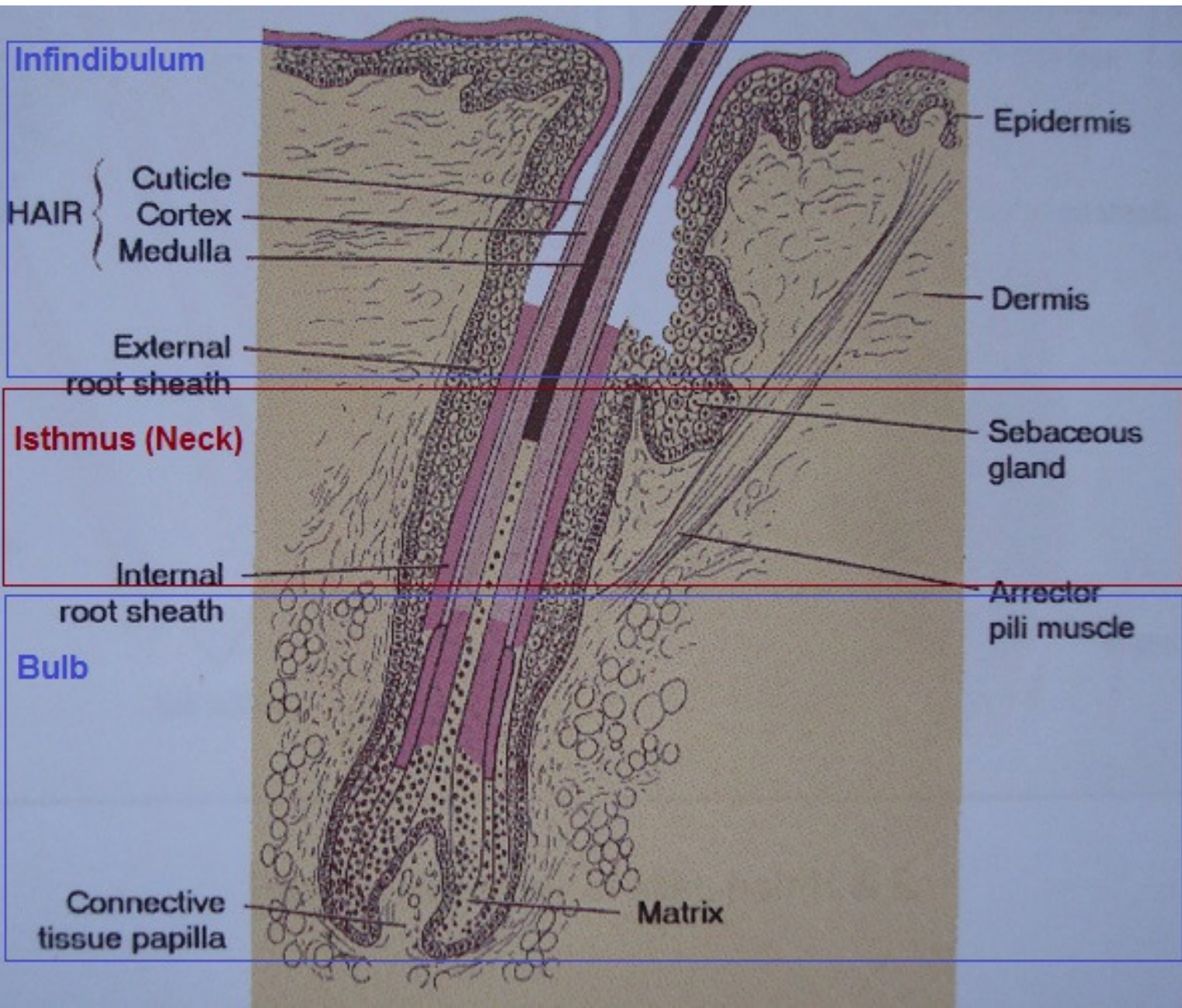
By

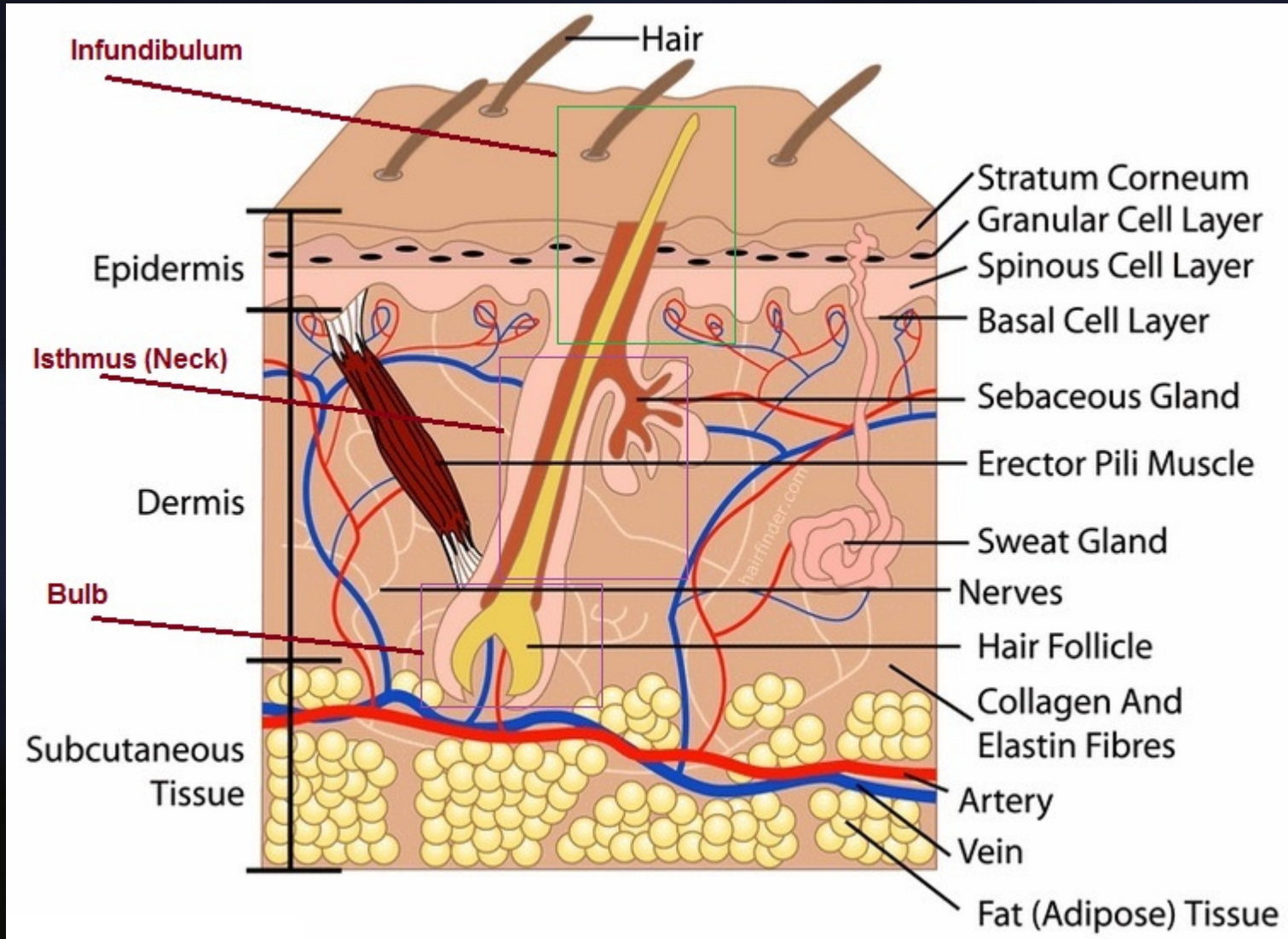
Dr. Tarek Ahmed Said
Professor of Plastic Surgery
Cairo University

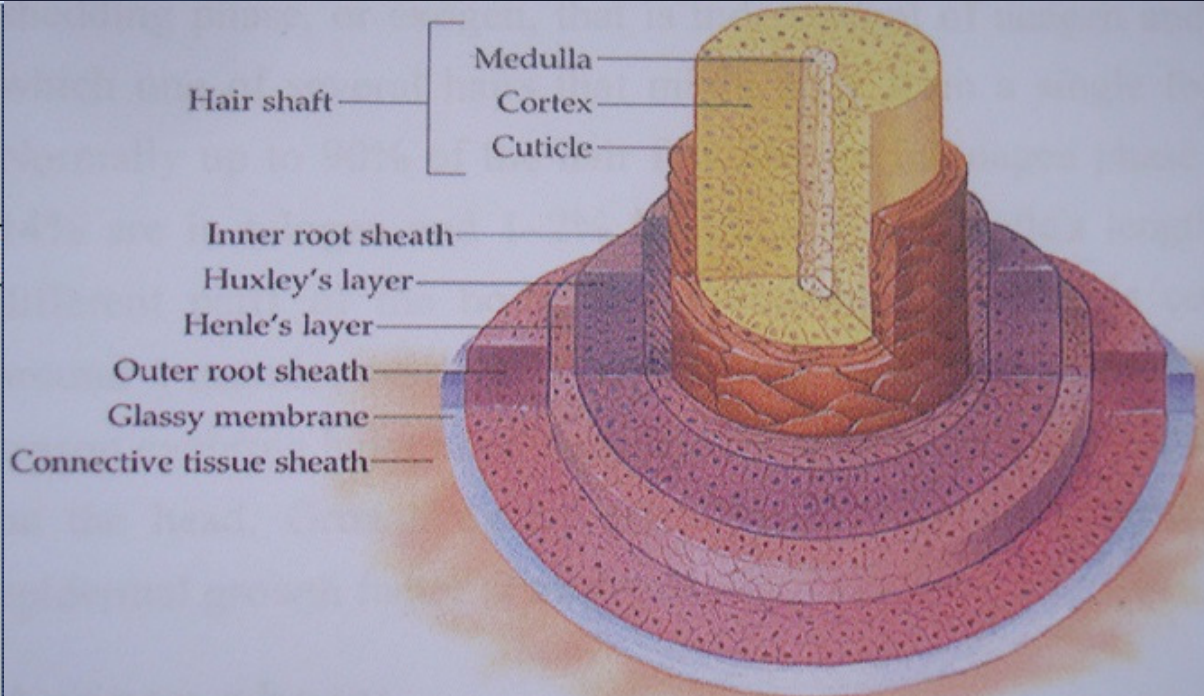
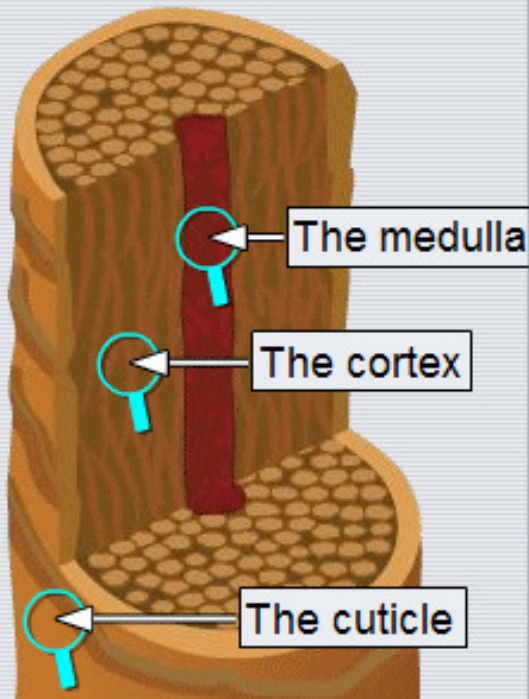


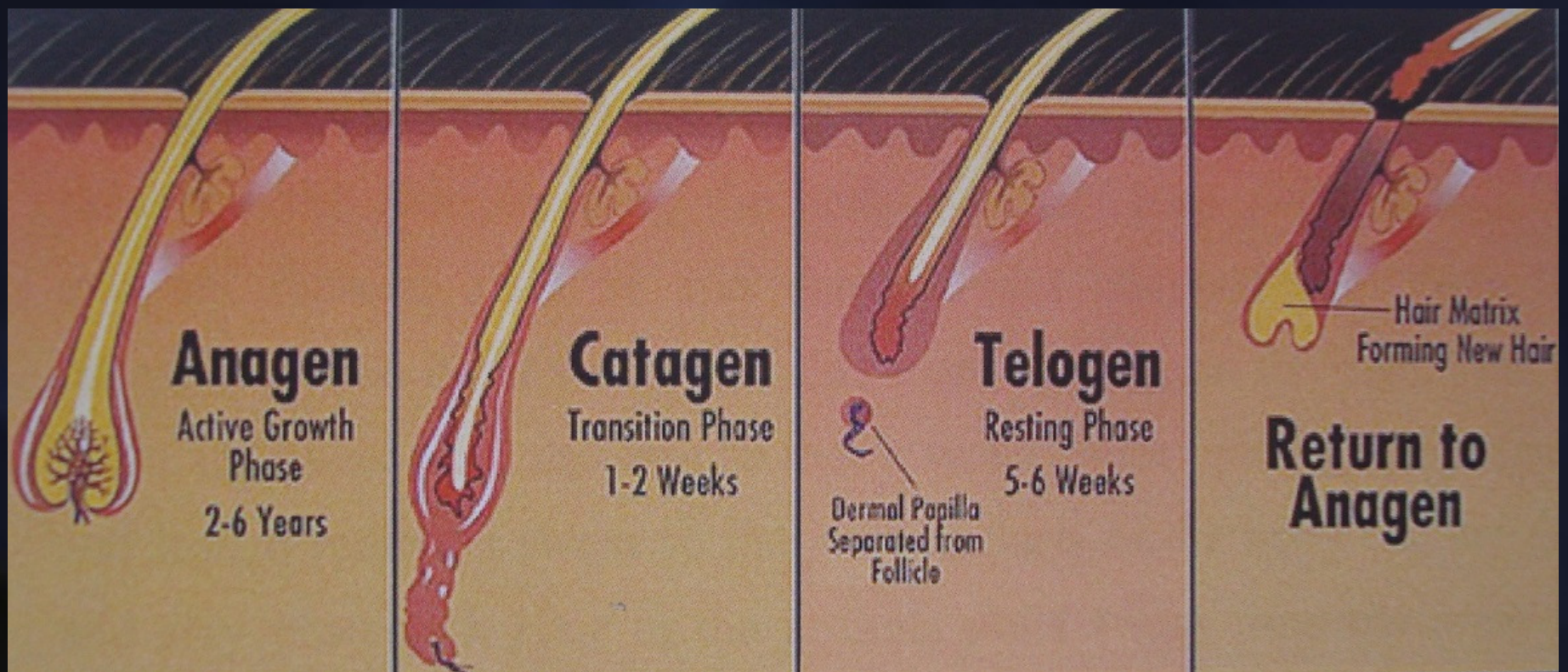
- The average scalp contains **90000-140000** terminal coarse, medullated & pigmented hairs and many more vellus and indeterminate fine hypopigmented unmedullated hairs.
- At any time approximately **90%** of terminal hairs are in the **anagen** (growing phase) lasting around 1000 days up to 7 yrs and the rest is in the **catagen** (regression) phase lasting typically 2-3 weeks ending the formation of a club hair which is shed in the third phase **telogen** (resting) phase lasting 3-4 months.
- The shedding of around 100 hairs daily is normal











Causes of Alopecia

Non Cicatricial Alopecia

- **Androgenic Alopecia**
- **Cicatricial Alopecia**
- Alopecia Areata (or Totalis)
- Telogen effluvium
- Hair Abuse: Traction Alopecia, Chemicals & Heat
- Trichotillomania (Trichotillosis)
- Medical Causes
- Drugs & Irradiation
- Hypervitaminosis A

Cicatricial Alopecia

Secondary

Burns, Trauma, Scalp Infections

Primary

With Lymphocytic Infiltration

Lichen planopilaris, Frontal fibrosing alopecia, Central centrifugal alopecia & Pseudopelade (Brocq)

With Neutrophilic Infiltration

Folliculitis decalvans, Tufted folliculitis & Dissecting cellulitis

With Mixed Infiltration

Folliculitis keloidalis



Management of Cicatricial Alopecia

Random Flaps

- Rotational Flaps
- Tansposition Flaps
- Bipedicled Flaps
- Expanded Flaps (BAT & TAT Flaps)

Axial Flaps

- Juri Flap

Scalp reduction & Scalp lifting procedure

Scalp Extension

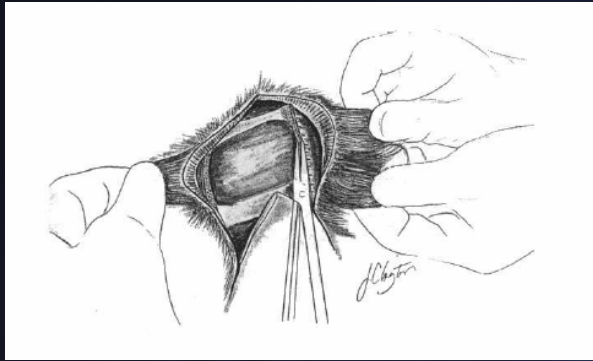
Tissue Expanders

- BAT & TAT Flaps

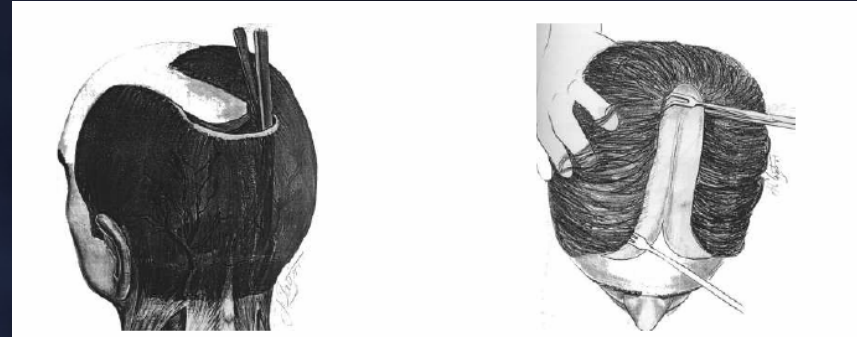
Free Flaps

Hair Transplantation

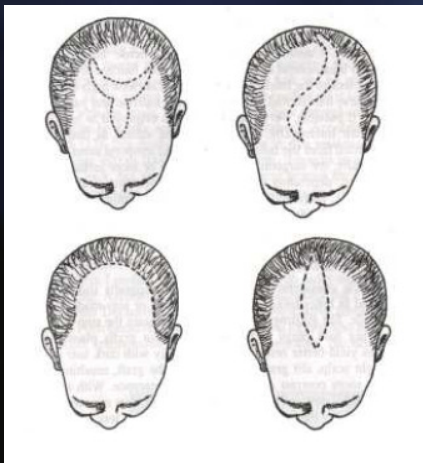
Scalp Extension



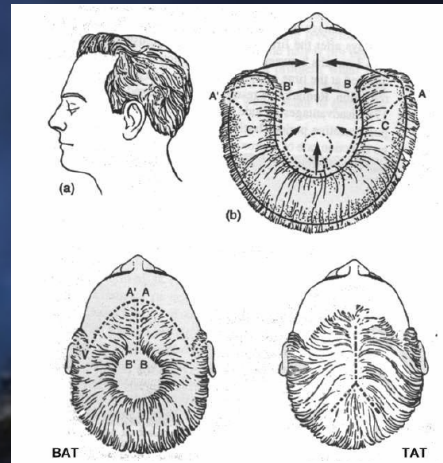
Scalp Lift



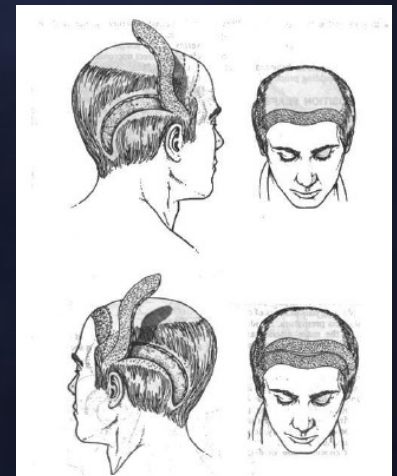
Alopecia Reduction



Alopecia Reduction With Expansion



Scalp Flaps



Androgenic Alopecia

Androgenetic alopecia remains the main cause of male pattern baldness (MPB) & female pattern baldness (FPB).

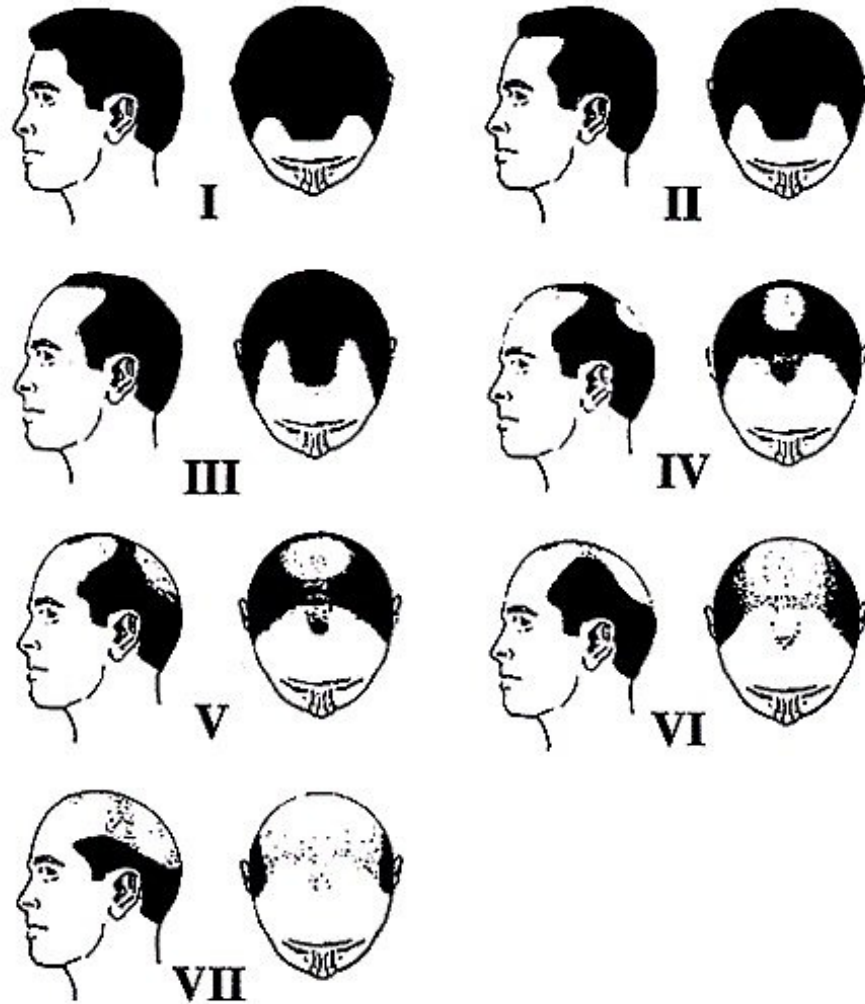
Both types of alopecia are caused by dihydrotestosterone (DHT) which is the metabolite of testosterone produced by 5- α reductase enzyme. DHT acts on androgen binding receptors on the genetically susceptible hair follicles.

Although the genetic basis of androgenetic baldness is confirmed, the relatively strong concordance of the degree of baldness in fathers and sons is not consistent with simple Mendelian trait and a polygenic basis is therefore most likely



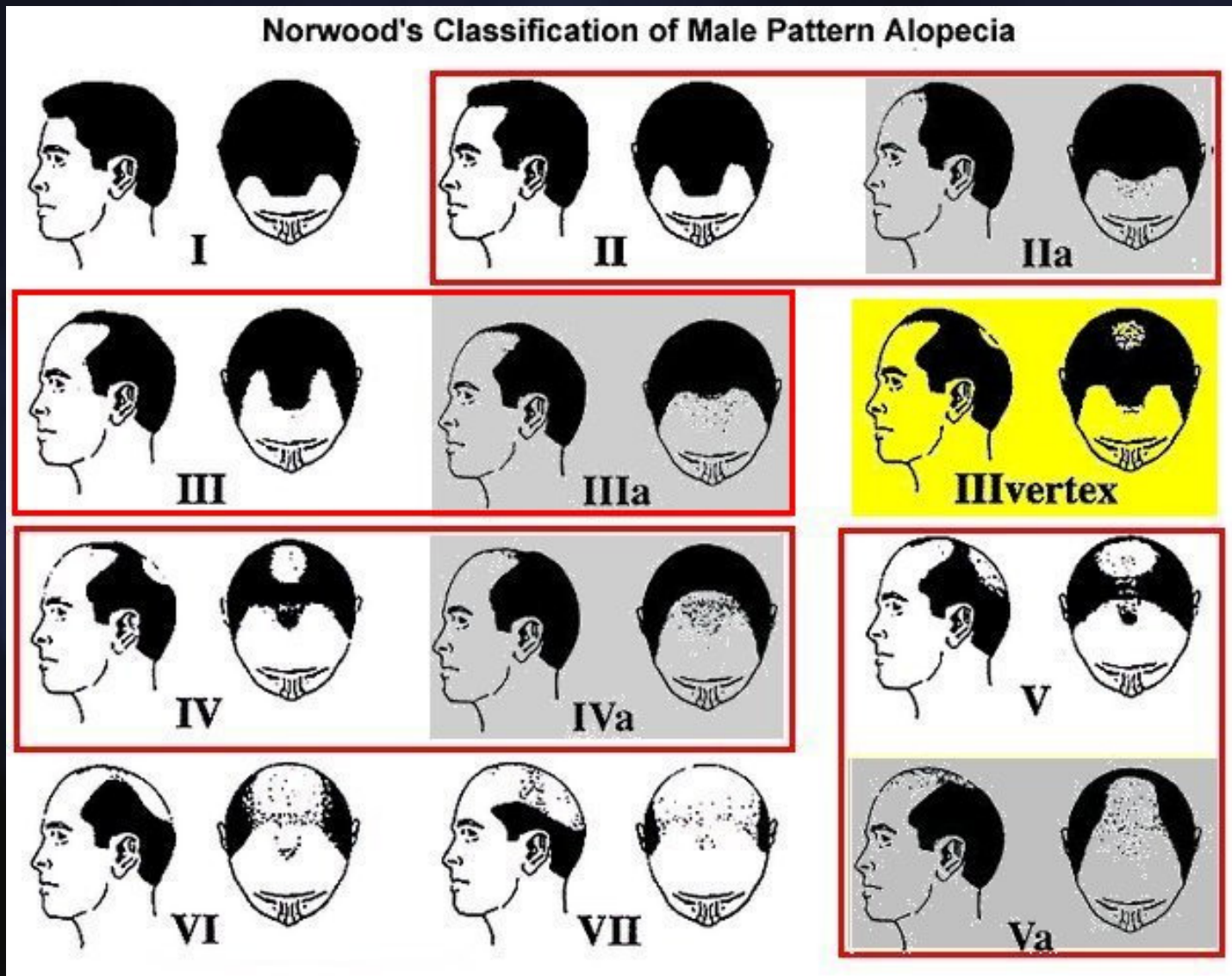
Norwood's Classification of MPB

Norwood's Classification of Male Pattern Alopecia

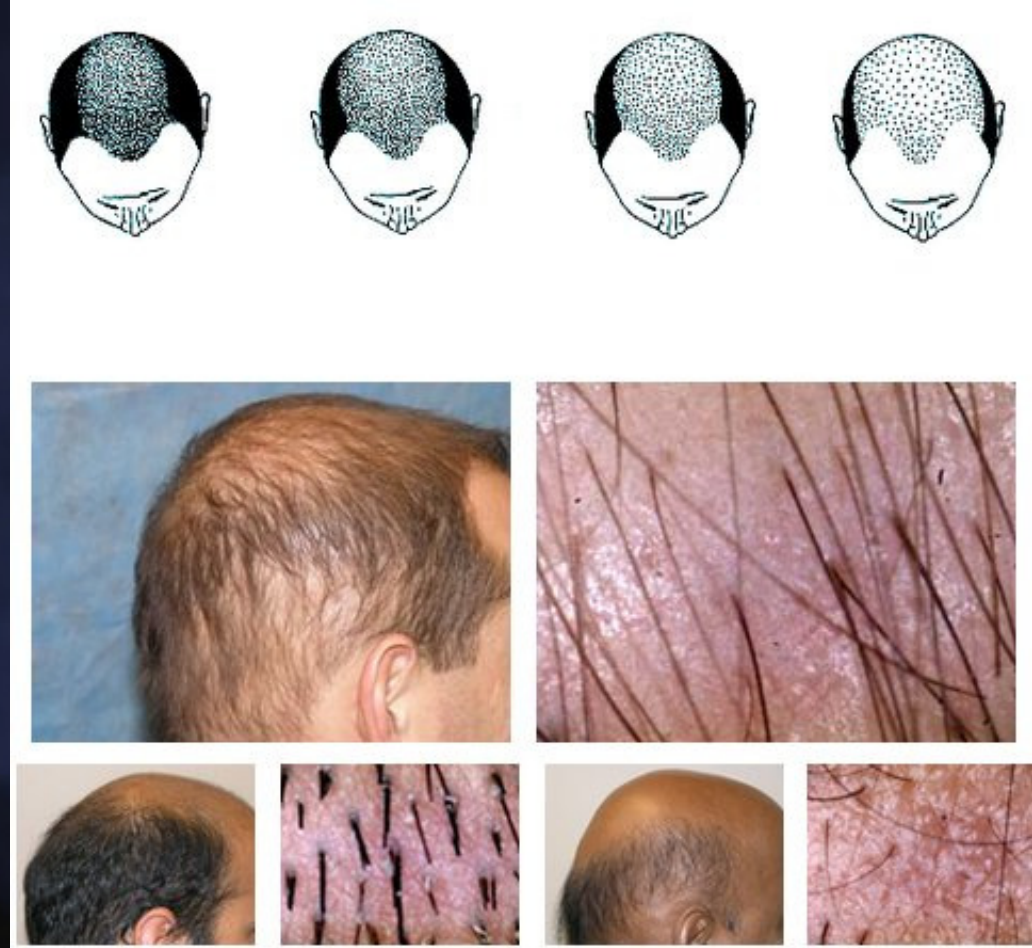


Norwood's Classification of MPB

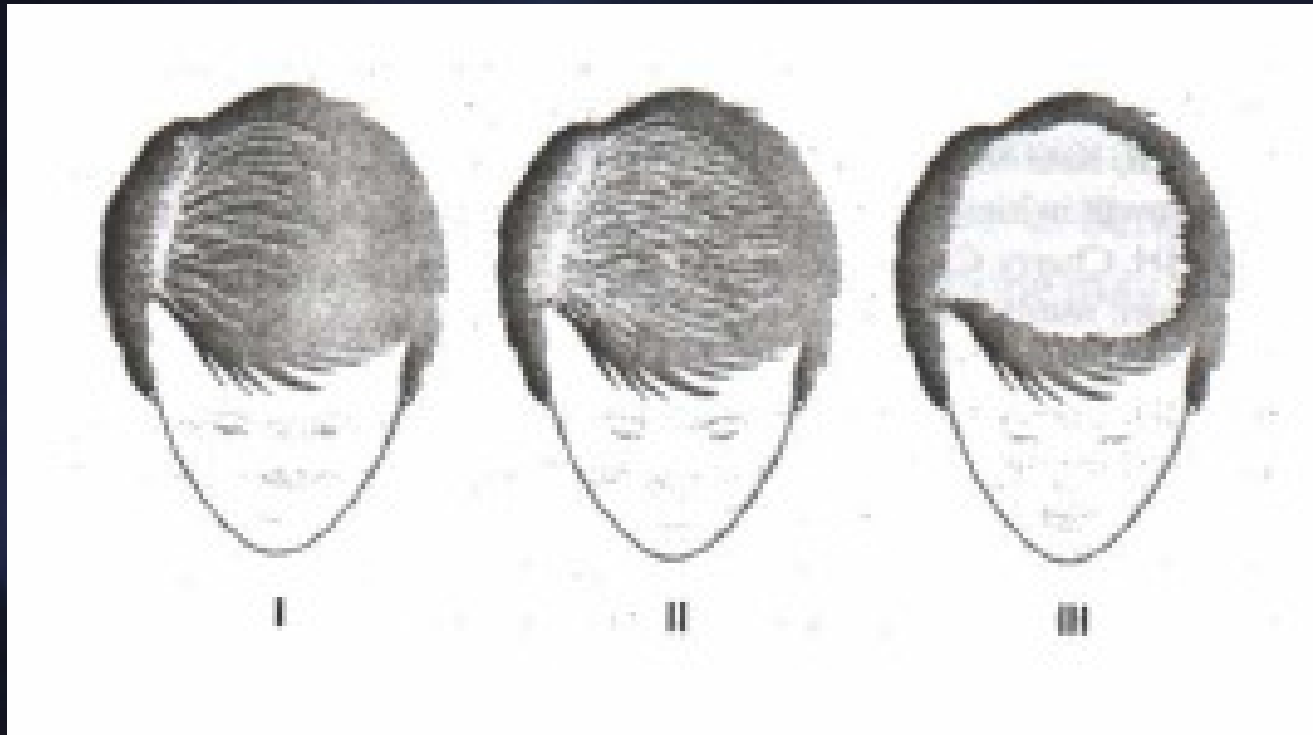
Norwood's Classification of Male Pattern Alopecia



Diffuse Alopecia Patterned (DPA) & **Un**-patterned (DU**U**PA)



Ludwig's Classification of FPB



Management

- **Hormonal**

Finasteride (*Propecia*) (*Proscar*)

Spirolactone

- **Topical +/- Scalp Roller**

Minoxidil (Rogaine & Performa)

Caffeine (Alpecin)

Propecia??

Combinations

- **Mesotherapy +/- Scalp Roller**

Biotin, Pyridoxine, Azelaic Acid, Zinc, D-Panthenol & Ginkgo Biloba
(Keractive / MesoActive / Hairactive / Andropecia)

5AR inhibitors Dutasteride / Finasteride (Mesohair / Mesopecia)

Minoxidil (MesoAge)

****STEM CELLS??**

- **Hopeful Research**

Hair Cloning; Stem Cell organ replacement

WNT protein Grateloupia elliptica Prostaglandin D2 L-Carnitine-Tartrate

- **Surgery**



Mesotherapy for Hair Loss

- **Minoxidil:** Vasodilator that lengthens the Anagen phase by increasing Blood supply to the follicles
- **Dutasteride or Finasteride:** 5-AR inhibitor
- **Azelaic Acid:** 5-AR inhibitor
- **Zinc:** 5-AR inhibitor
- **Pyridoxine:** Vit B6 which potentates Zinc inhibitory Effect
- **D-Panthenol:** Vit B5 increases energy production in the follicles
- **Biotin:** Vti B7 or Vit H increases production of Fatty acids
- **Ginkgo Biloba:** Increases blood supply to follicles



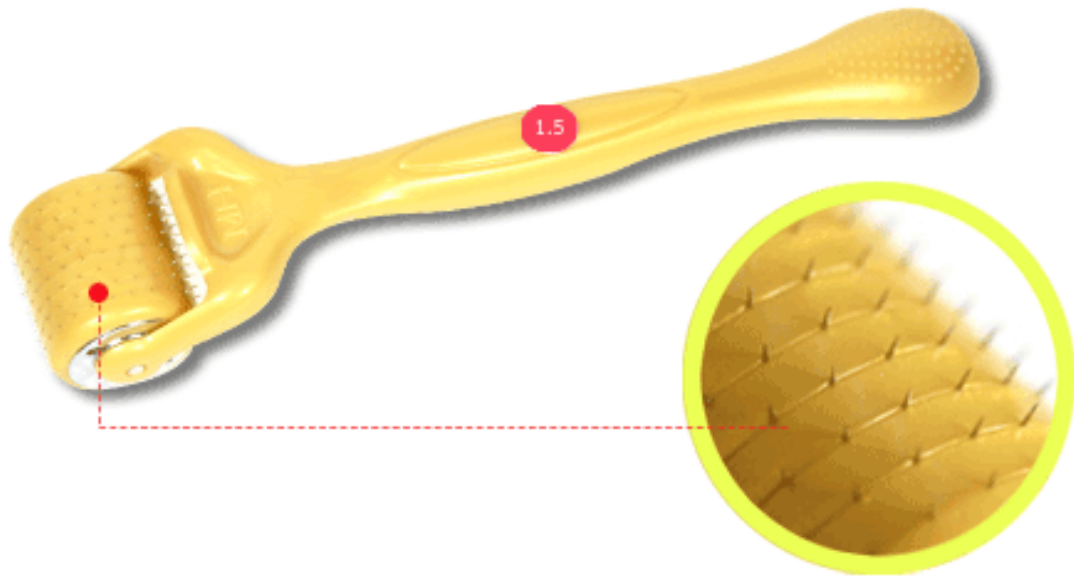
Mesotherapy for Hair Loss

**Biotin, Pyridoxine, Azelaic Acid, Zinc, D-Panthenol &
Ginkgo Biloba (Keractive / MesoActive / Hairactive / Andropecia)**

+/-

5AR inhibitors Dutasteride / Finasteride (Mesohair / Mesopecia)

Minoxidil (MesoAge)



Scalp Roller

- Creates tiny channels through stratum corneum which facilitate the passage and absorption of Minoxidil into the dermis to maximize it's absorption by the hair follicles.
- Stimulates blood flow to the hair follicles via direct scalp massage
- Gently exfoliate excess skin cells which accumulate in the hair follicles, contributing to hair follicle malnutrition



Surgical Treatment

1-HAIR TRANSPLANTATION

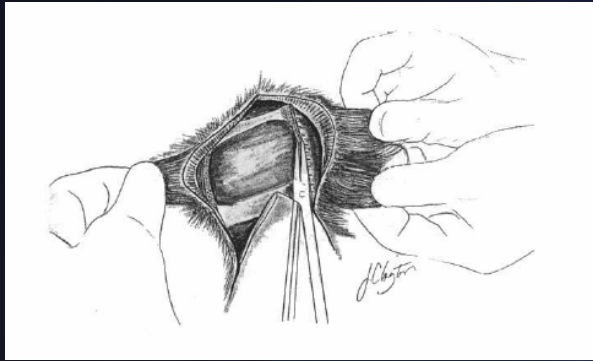
2-Alopecia (*Scalp*) Reduction (AR)

- Simple AR
- Major AR (*Scalp Lifting*)
- With* Prior Scalp Expansion
- With* Prior Scalp Extension
- With* Intraoperative Stretching

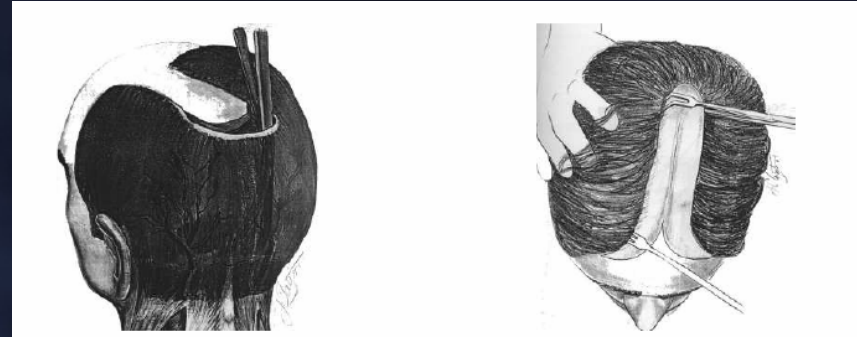
3-Scalp Flaps

- Rotational
- Transposition
- TPO Juri Flap
- Others

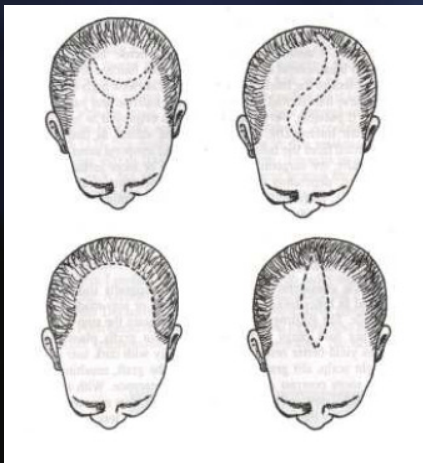
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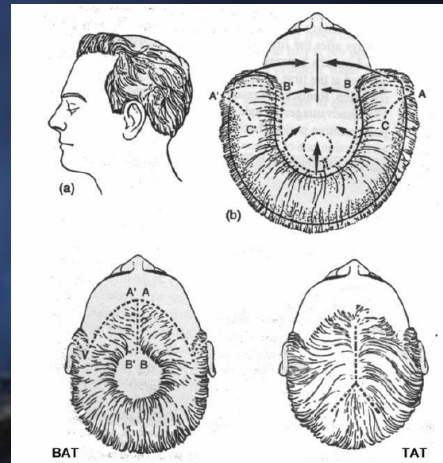
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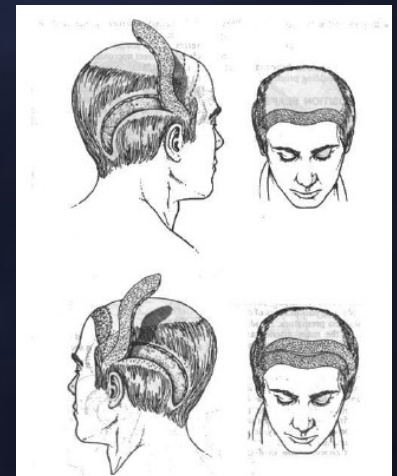
Alopecia Reduction



Alopecia Reduction With Expansion



Scalp Flaps



Surgical Treatment

HAIR TRANSPLANTATION

Natural Hair

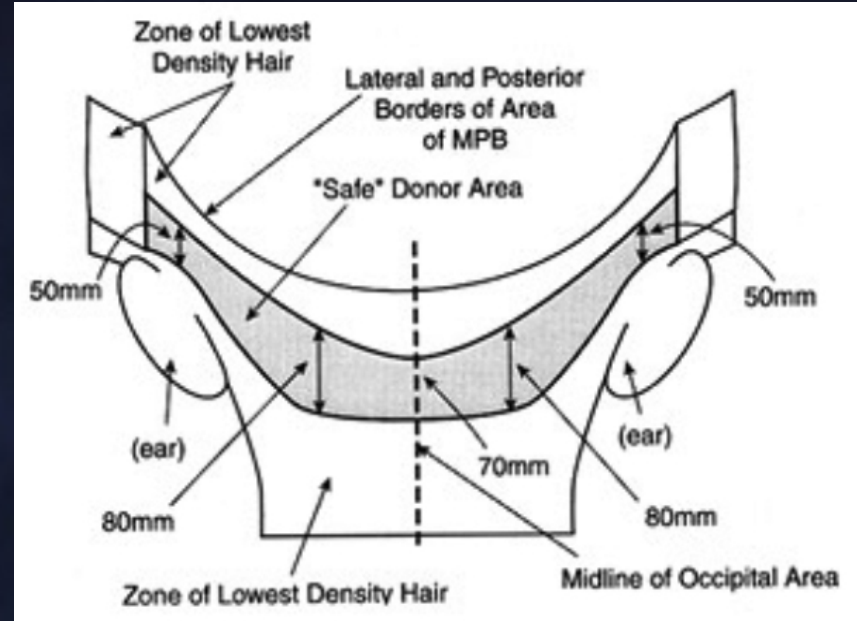
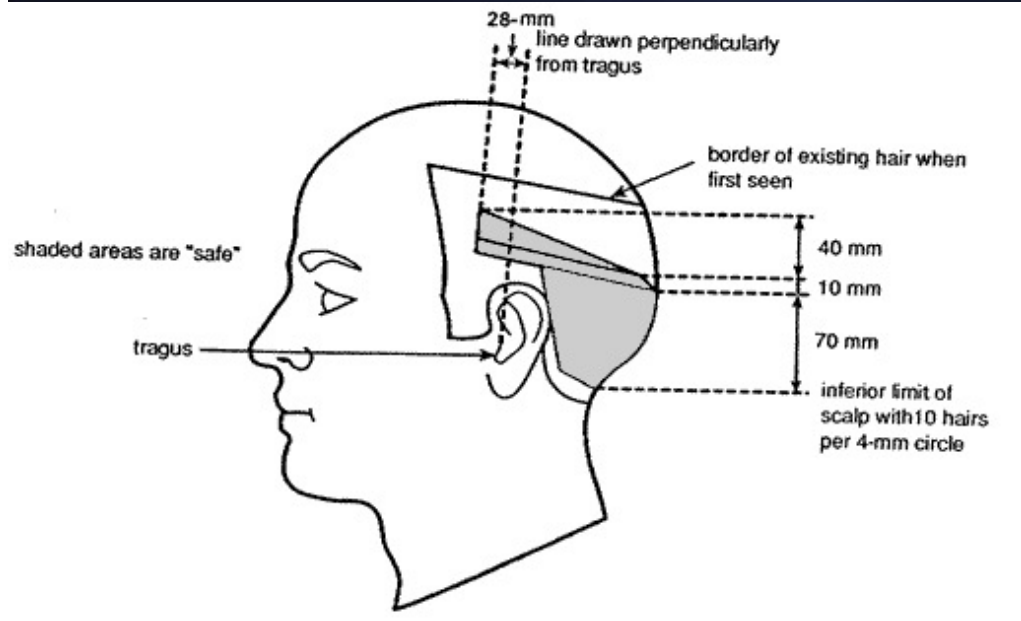
Follicular Unit Transfer (FUT)

Follicular Unit Extraction (FUE)

Artificial Hair *BIOFIBRE*

Surgical Treatment

Safe Donor Area (SDA)



- SDA is on the average 25% of Scalp area. Half of it can be harvested without affecting the appearance of donor area so 12.5% of scalp is harvestable
- 2-3 cm should be left below superior border to cover resulting scar
- 2-3 cm should be left above posterior hair line

Surgical Treatment

HAIR TRANSPLANTATION

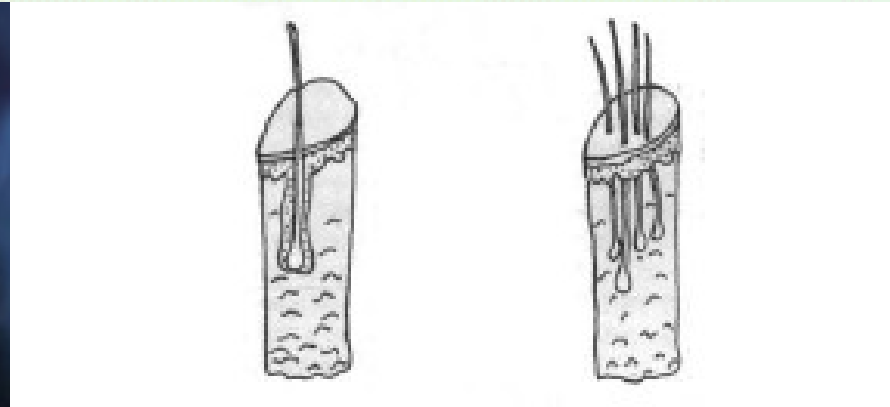
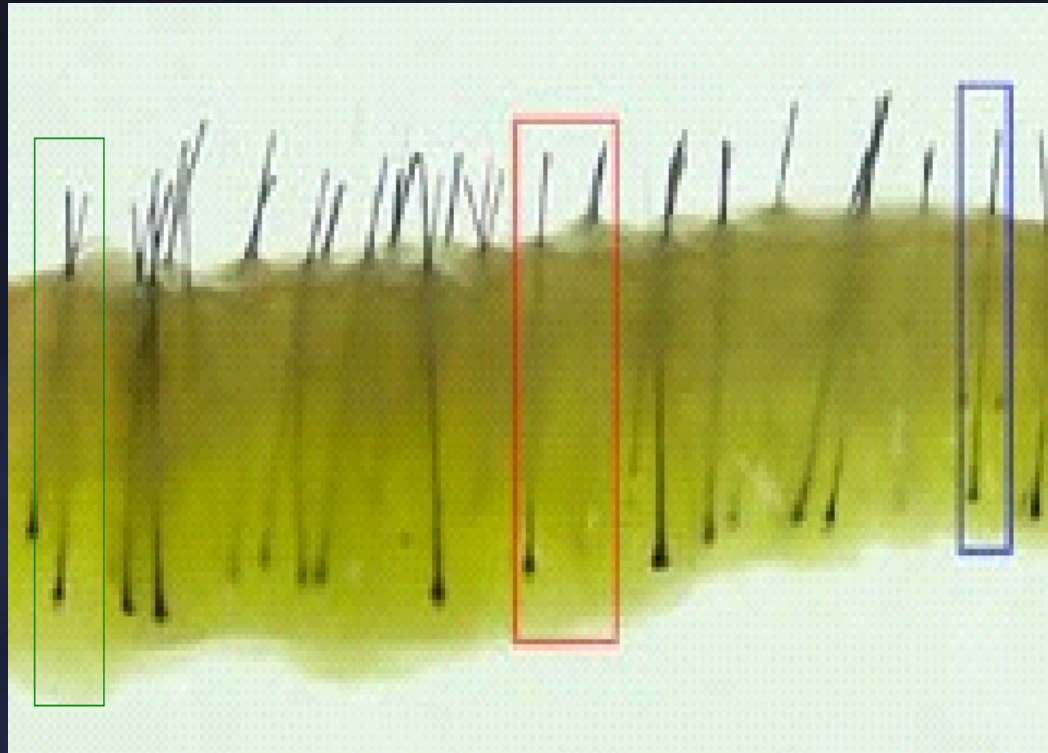
Density

Coverage

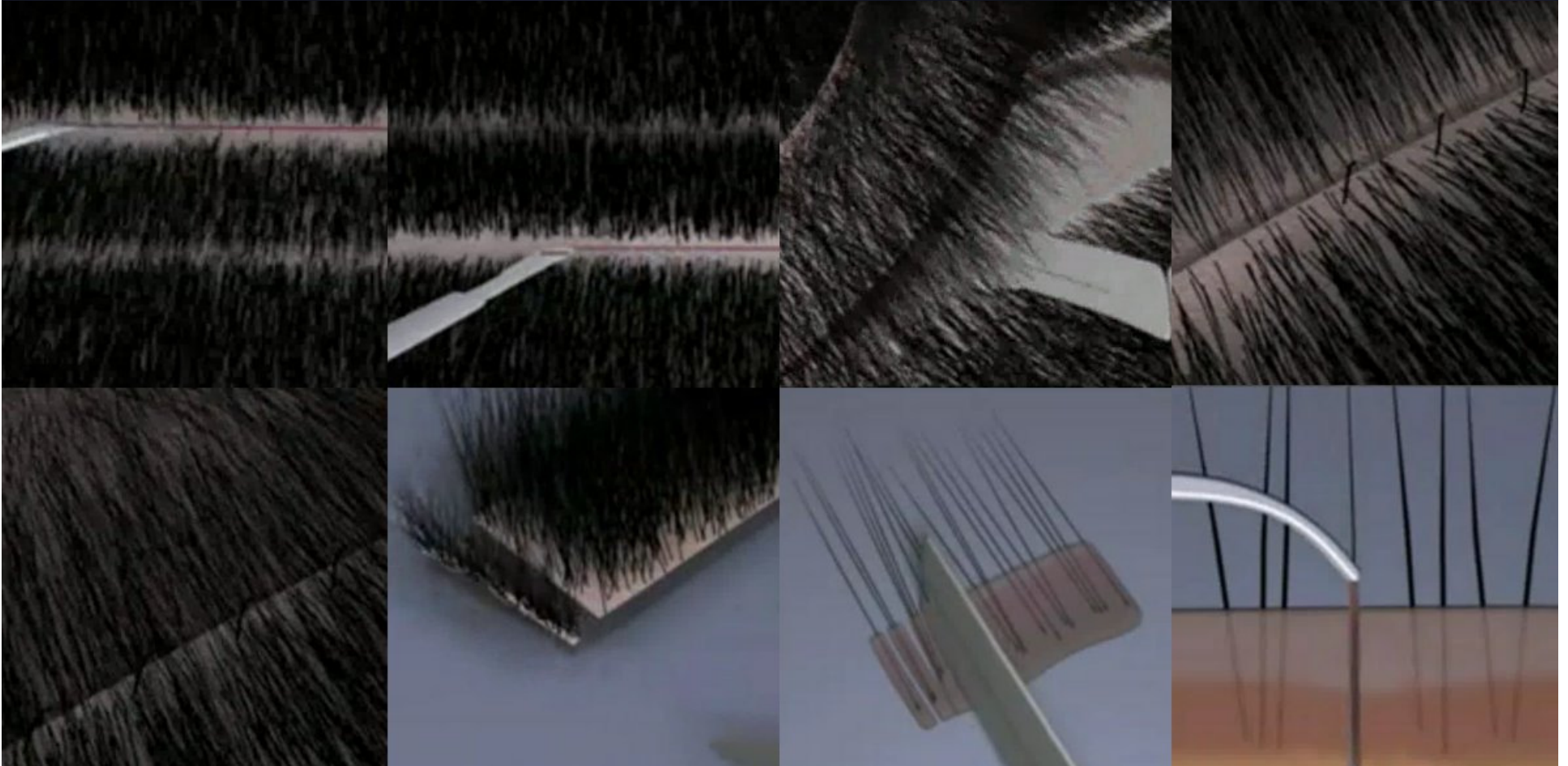
Angle Control

Naturalness

Follicular Unit Transfer (FUT)



Follicular Unit Transfer (FUT)



Follicular Unit Transfer (FUT)

Patient selection

- Age
- Expectations
- Chronic Sun Exposure
- Medical Conditions: DM, Bleeding Tendencies, HIV & Hepatitis C, Anticoagulant treatment, Arrhythmias
- Psychological Factors & Diseases

&

Patient Assessment

- Donor Area Assessment
- Recipient Area demand
- Size of Strip Needed



Follicular Unit Transfer (FUT)

Donor Area Assessment

Alopecia Assessment: Diffuse Patterned Alopecia **DPA** & Diffuse Un-Patterned Alopecia **DUPA**

Hair Characteristics: Colour, Texture, Curliness & Hair/Scalp Contrast

Scalp Assessment: Laxity & Thickness

Donor Reserves: Previous FUT &/or Scalp Scarring

Donor Density

Follicular Unit Transfer (FUT)

Donor Density Assessment

Hair Density: Number of hairs/mm²

Follicular Unit Density (FUD): Number of Follicular Units/mm²

Calculated Density: Number of hairs/Follicular Unit

Density measured in 3 **Reference Points**: *Occipital Protuberance, 3 cm above Helix and a point half way between both*



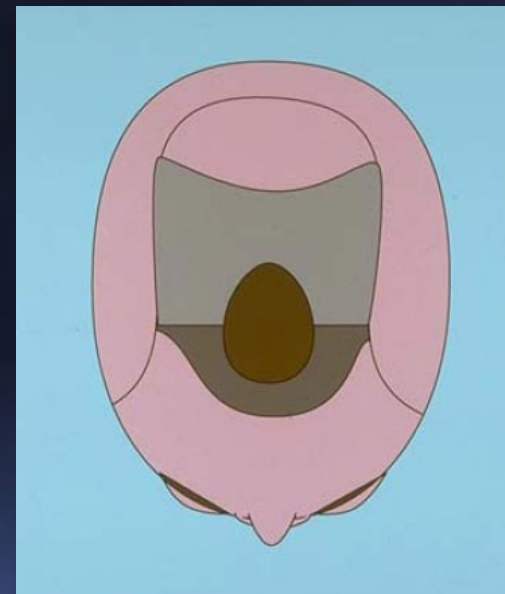
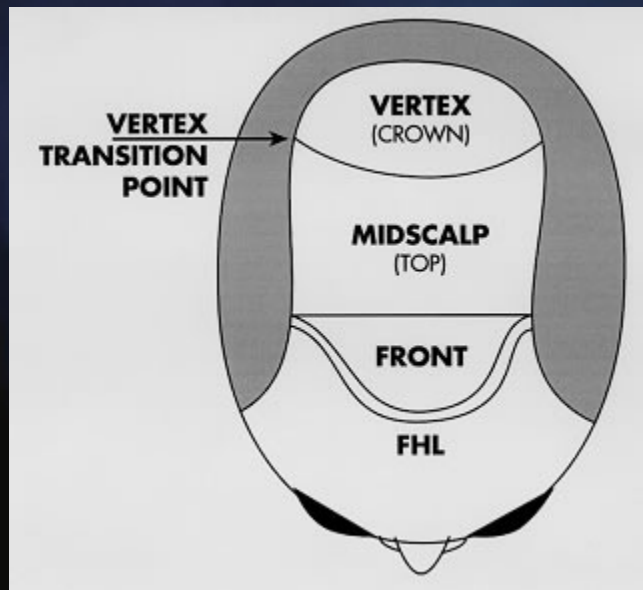
Follicular Unit Transfer (FUT)

Recipient Area Demand

Balance present and future needs with present and future donor availability

Farjo calculates recipient area size by dividing it into geometrical shapes

- Hairline design (Shape & Position)
- Graft Distribution



Follicular Unit Transfer (FUT)

Stop Smoking for at least a week

Stop any medication that enhances bleeding

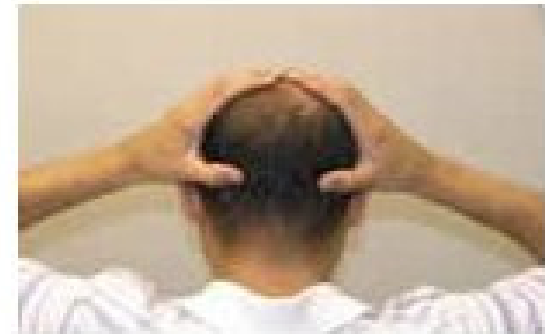
If scalp is tight or patient had a prior session, he can do scalp relaxing exercises



Position 1 - palms in back of scalp with thumbs overlapping



Position 2 - palms on sides of scalp with thumbs touching in the back



Position 3 - palms and thumbs on the sides of the scalp

Harvesting a Longitudinal Strip from The Scalp

From Mid-part of the permanent zone

The strip should be Just above the occipital protuberance:

A lower harvest has a greater risk of scarring from the wound stretching, since it is too close to the muscles of the neck.

With a higher harvest, the hair may not be permanent and may fall out as the baldness progresses.



Harvesting a Longitudinal Strip from The Scalp

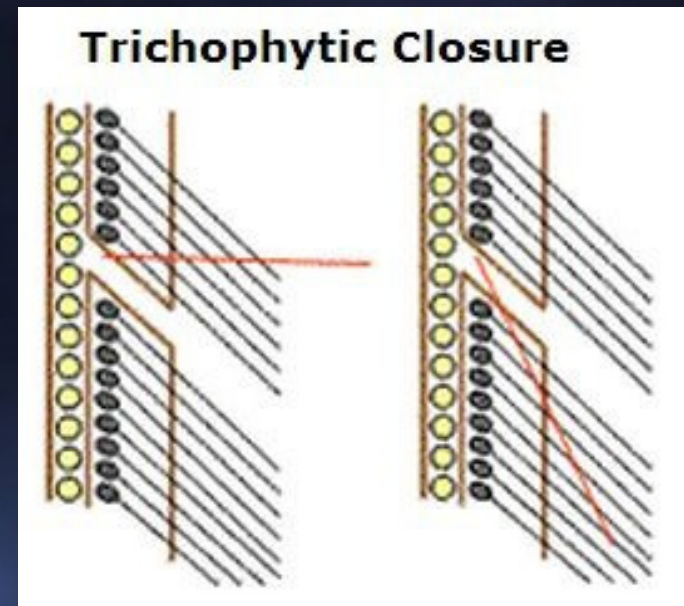
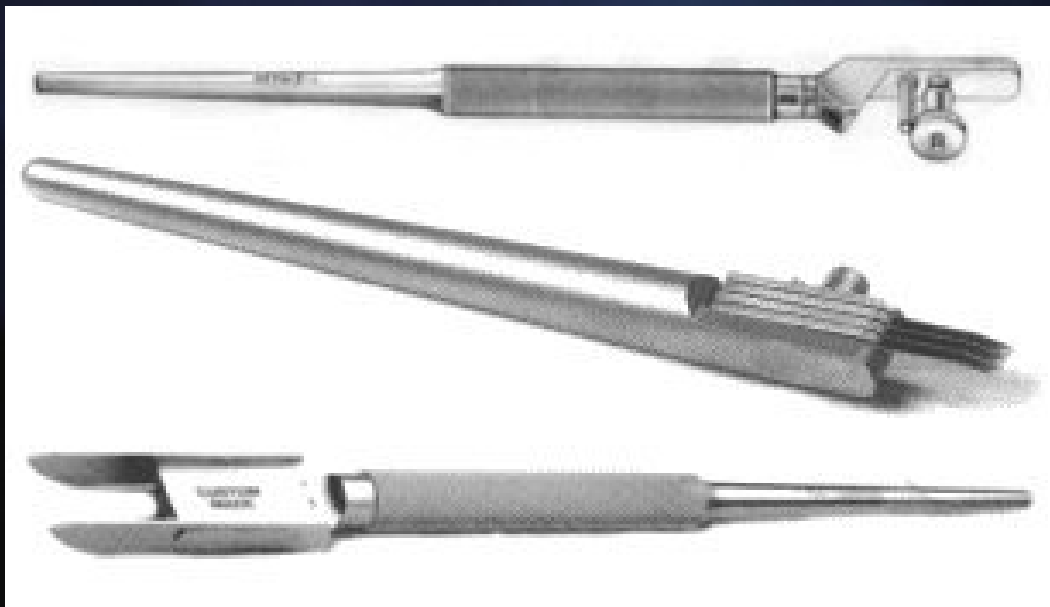
Tumescent Technique

Double-bladed or Multi-bladed Knife

Dissection should include a layer of fat below hair follicles

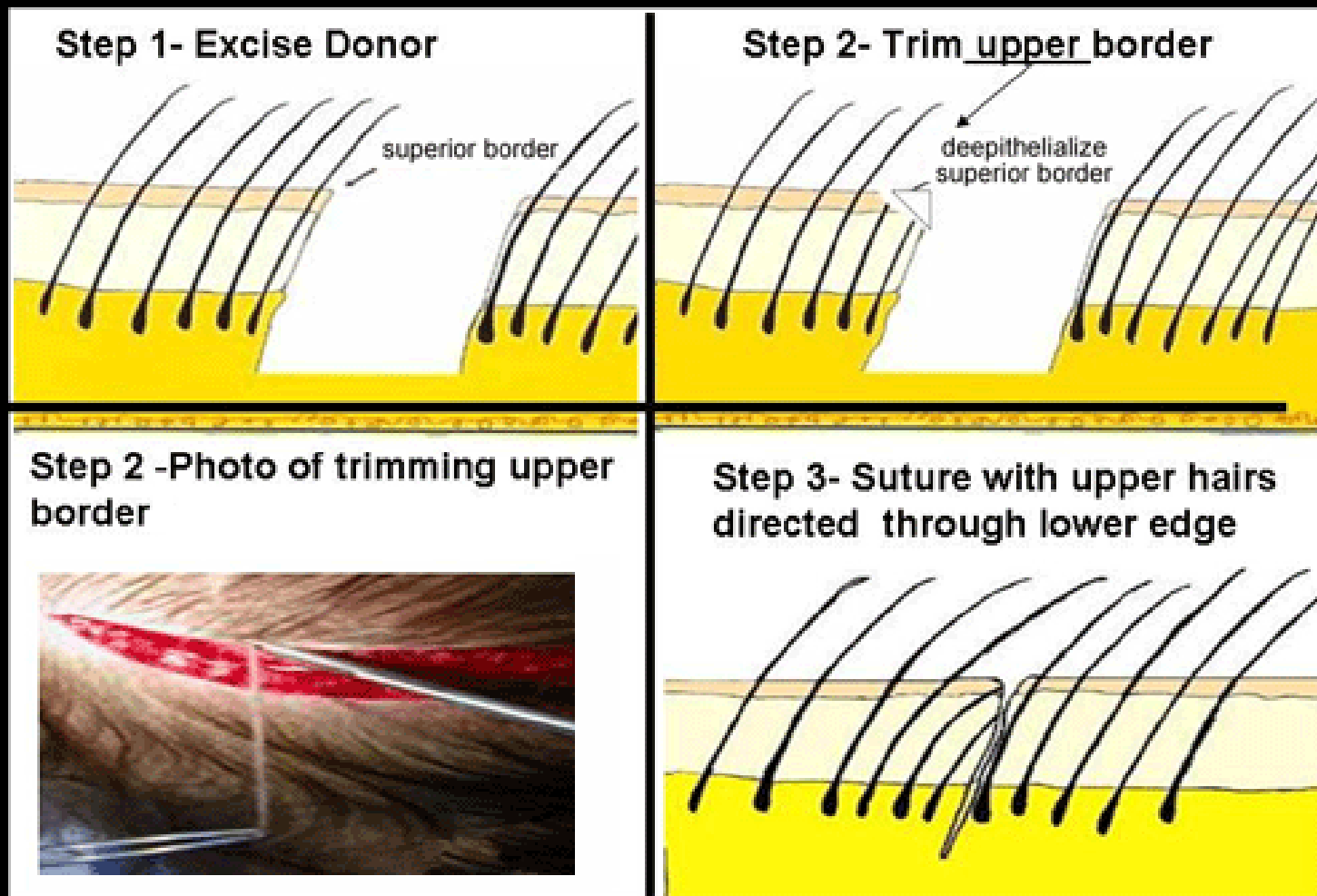
Closure by Staplers or a running suture

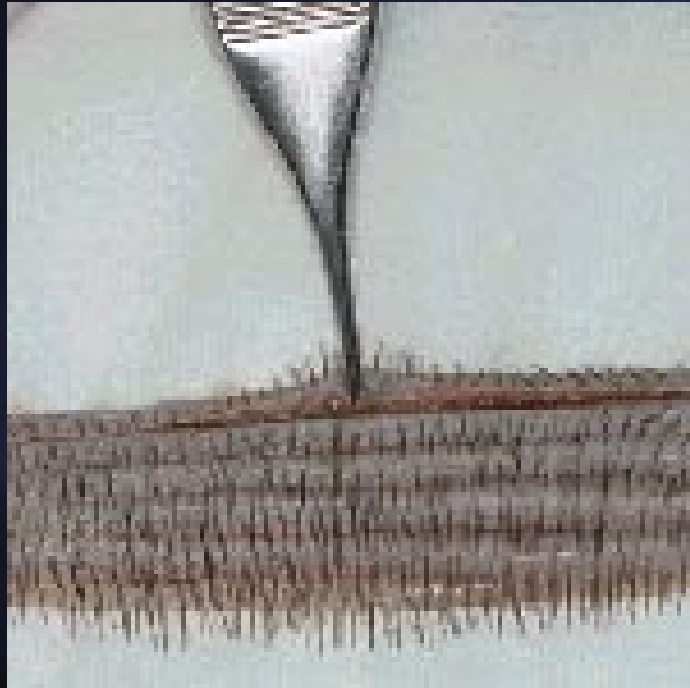
Trichophytic Closure



Harvesting a Longitudinal Strip from The Scalp

Trichophytic Closure





Graft Dissection

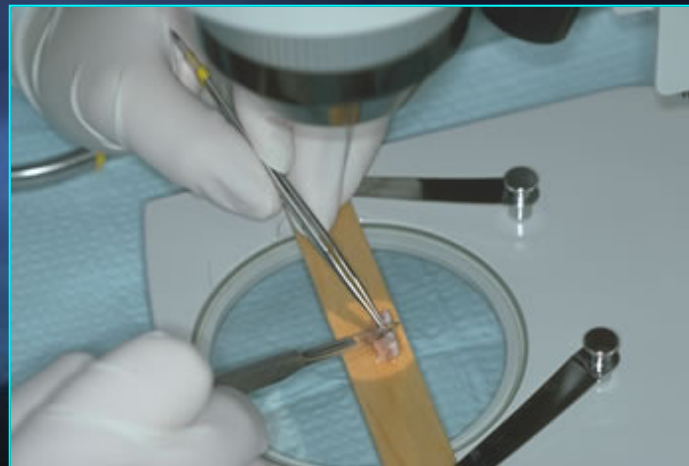
Vertical Sectioning

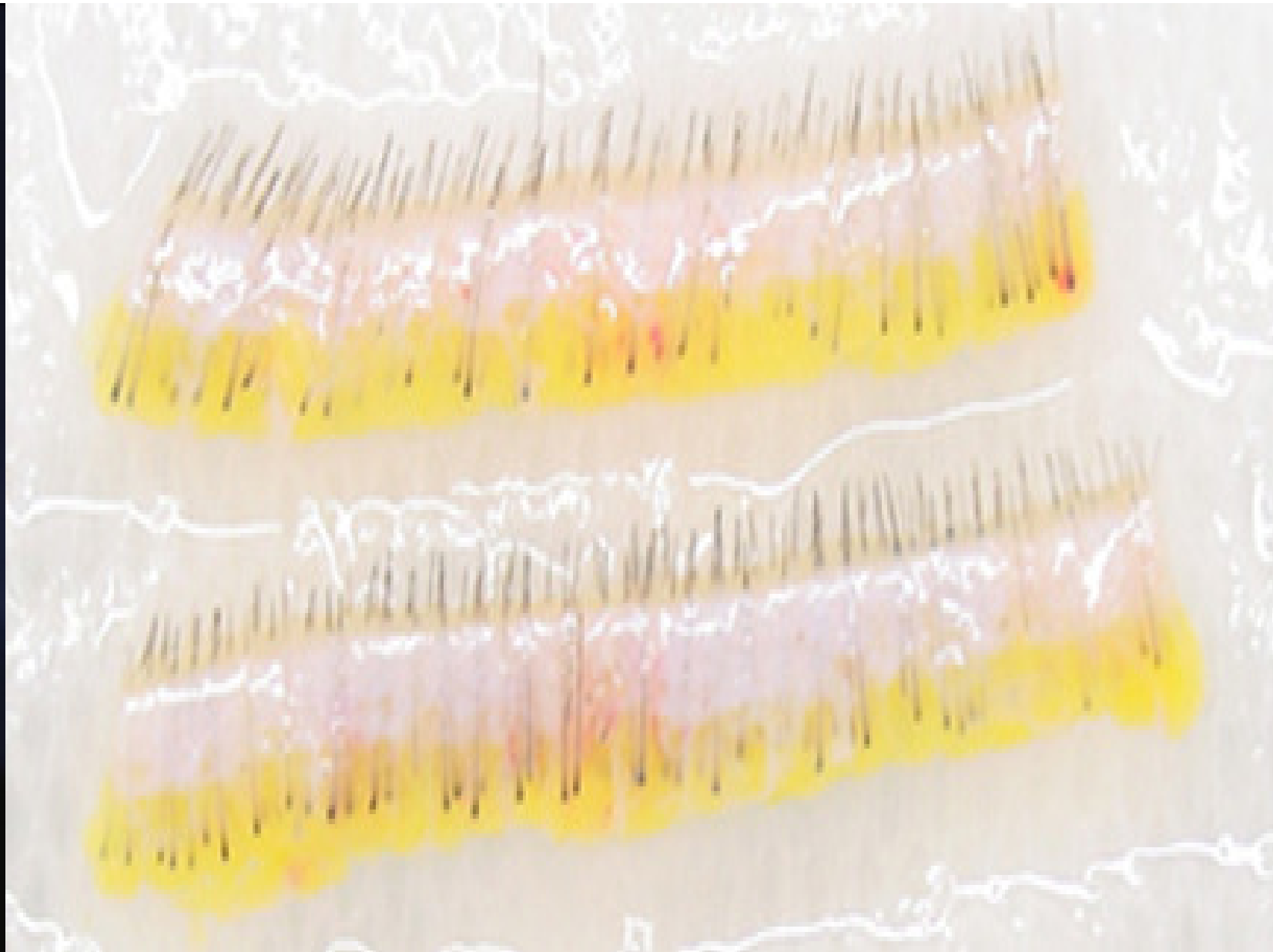


Mini/Micrografting Technique



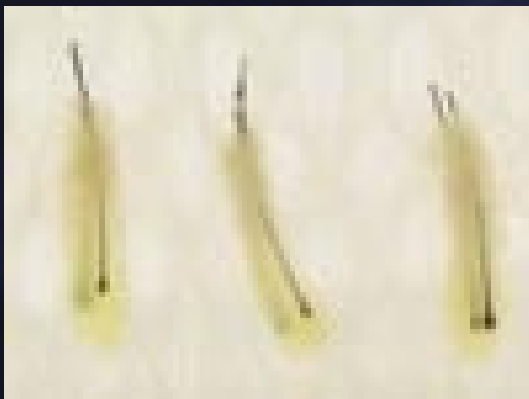
Slivering Technique



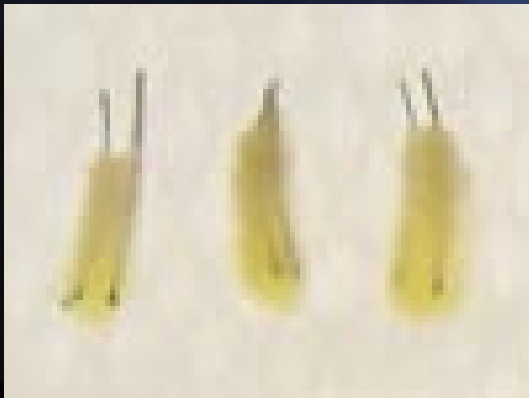




Single Hair Follicular Units- used primarily for the hairline area to create a softer more natural appearance. **(14%)**



Single Follicular Units - Usually consists of 2-3 hairs. Used right behind the hairline to create a more dense appearance. **(53%)**



Modified Follicular Units - Usually consists of about 3-4 hairs and are primarily for adding density to the recipient area. **(33%)**

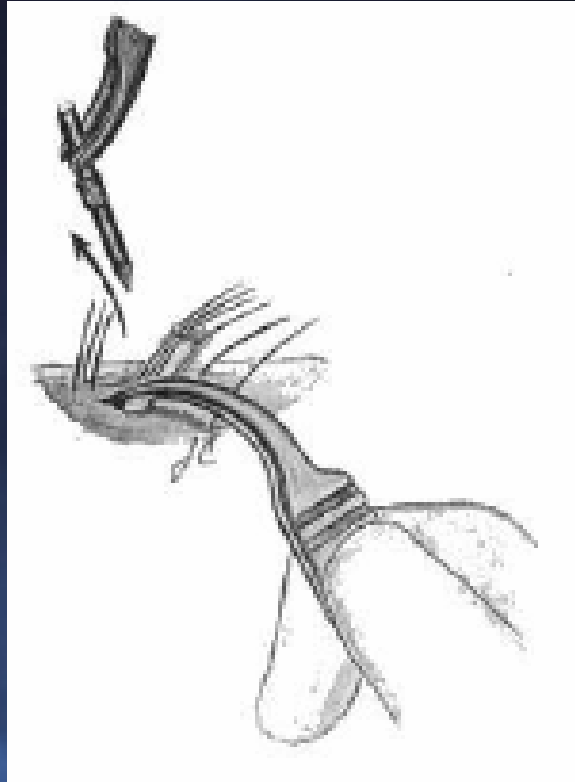






Grafts are cooled and perfused with saline

Graft Insertion



Vertical or Lateral Slit Technique??
Stick & place or pre-made incisions

Graft Insertion

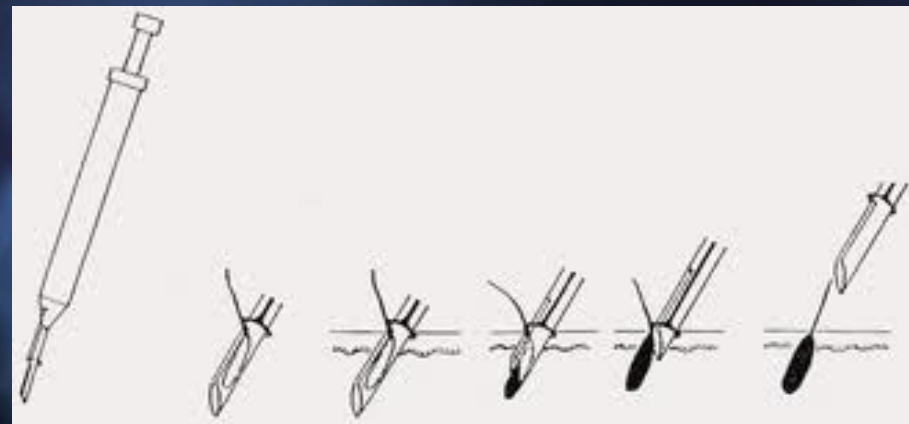
Lateral (*Coronal or Horizontal*) slit technique



***Follows normal follicle arrangement and allows fanning of hair
More Control on Angle & Depth
More Superficial Slit = Less trauma to Scalp vascularity
Less Mutual Pressure Allows for More Dense Packing***

Graft Insertion

Choi Needle





Follicular Unit Extraction (FUE)

NO SCAR IN DONNOR AREA

FOX test

Sharp Punch

- Fox technique
- FIT Technique

Safe System (Blunt Punch)

- Sharp Scoring incision by a sharp punch then Blunt punch
- Single Serrated dull punch
- Powered Safe System (Blunt Punch)

Robotic FUE (ARTAS system)

Follicular Unit Extraction (FUE)





Follicular Unit Extraction (FUE)

FUT is still the golden standard for hair restoration

Better Graft Yield

Minimal division of hair follicles

Proper dissection of a layer of fat around the follicles

Rapid Harvesting allows a larger graft number

Better Graft Take

Better Graft Quality

Rapid Harvesting allows Faster Graft Insertion

More Permanent result

Allows maximum utilization of mid-permanent zone donor Area

Better Donor area scar concealment with multiple sessions

No additive scarring with subsequent sessions

Donor scar remains hidden whatever the degree of baldness reached

Less Expensive

Mega-sessions need limited preoperative Hair trimming

Follicular Unit Extraction (FUE)

Unlike FUE, FUT is restricted to the safe mid-permanent Zone



Follicular Unit Extraction (FUE)

Who is Candidate for FUE?

Patient who wants to cut hair very short
Athletes and muscular patients
Patients who needs to return to work next day

Very Tight or Very Loose Scalp
Previous FUT sessions
To conceal the scar of previous surgeries

To refine hairline

Body Hair Transfer

Follicular Unit Extraction (FUE)

ROBOTIC FUE (ARTAS System)



Follicular Unit Extraction (FUE)

ROBOTIC FUE (ARTAS System)



The Post-Operative Period

- 1 day Bandage??
- Gentle shampooing from the next day
- Refrain from strenuous activity for a week
- Avoid Prolonged exposure to sun
- Stop smoking for at least a week
- Careful combing of hair
- Wait for crusts to fall out

Grafted hair is likely to be shed off
Grafted hair will enter into a resting phase
Hair will start to grow within 3-6 Months

Minoxidil and/or Propecia??

THANK YOU

