

# Chapter 60

## Beard Hair Transplantation



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### 60.1 Background

Beard transplantation has been discovered back in the “Okuda Papers” published 1939 [1], but his practice was exclusively for reconstruction. Nowadays the appearance of the unshaved beard is in fashion and “cool” because information is available in the media and people are attracted to the unshaven Hollywood celebrities. In addition, the innovations in modern hair transplantation have achieved both naturalness and optimal coverage; hence, aesthetic beard transplantation has become popular.

According to the 2014 ISHRS Practice Census, the global demand for surgical hair restoration in non-scalp area is 10.9% in all surgical procedures, and among them 3.7% was for beard, and this is a remarkable increase compared to that of 1% in 2004 and 1.5% in 2006. Also in all non-scalp areas, 63.8% of male and 0.7% of female patients were most interested in discussing beard transplant at the initial consultation [2].

### 60.2 Candidacy

Beard transplantation is performed both for reconstruction for congenital absence and scarring alopecia due to trauma, burn, infection, and iatrogenic causes. It is also performed for aesthetic purposes for patients who want to thicken their normal beard to look more masculine or for female to male transgenders. The largest demand is in West and Middle East Asia because a thick beard is important for a strong image of masculinity and allows social status (Table 60.1).

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**Table 60.1** Indication of beard transplantation

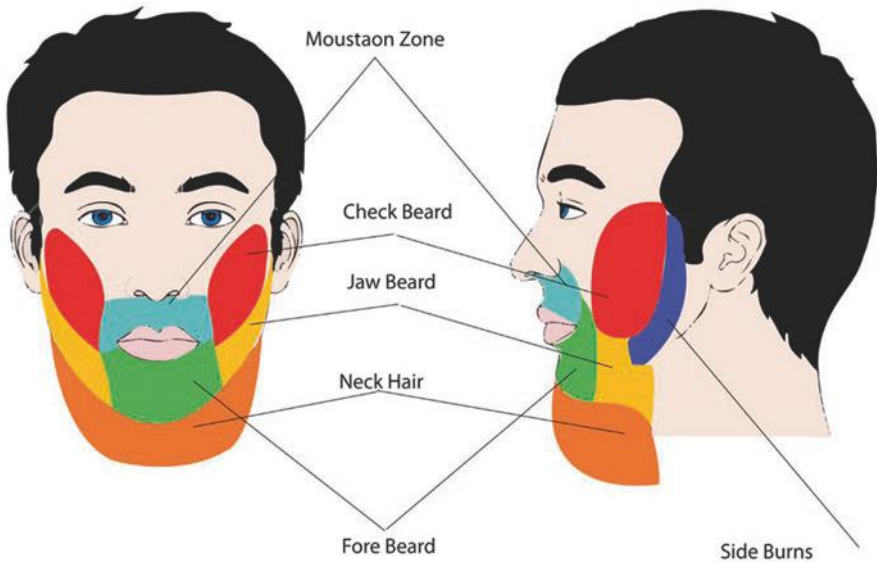
Reconstructive	Congenital hypotrichia/atrichia Traumatic alopecia prior trauma/burn/surgery/laser Primary cicatricial alopecia (folliculitis) Long-standing alopecia areata Traction alopecia
Aesthetic	Enhancement of normal beard Female-to-male transgender

### 60.3 Facts About Beard Hair

Except for small areas of beard reconstruction where beard hair is used, scalp hair is routinely used as the donor, and understanding the anatomical features of beard hair and its difference in characteristics from scalp hair is critical to obtain optimal results.

#### 60.3.1 Distribution of Beard

There have been a few articles on the distribution of facial hair. Yu JM divided facial hair into eight sections but gave no name [3], while Dua K. classified it into six zones and named them as sideburns, cheek beard, jaw beard, fore beard, neck beard, and moustache [4] (Fig. 60.1). However in this chapter, the author has roughly and



**Fig. 60.1** Distribution of beard (Fig. Courtesy: Kapil Dua)

commonly classified it into three zones: moustache, goatee (fore beard and neck hair), and cheek beard (cheek beard, jaw beard, and sideburns).

### **60.3.2 Morphology of Beard Hair**

Tolgyesi et al. performed a comparative study on the morphology and chemistry of beard and scalp hairs in Caucasian, African, and Chinese populations. They concluded that beard hairs in all ethnicities are more elliptical and irregular in shape compared with the more circular or oval shapes of scalp hair. The beard caliber is also the largest of all human hairs and is 70–100% larger than scalp hairs with almost twice its cuticle layer [5].

### **60.3.3 Hair Cycle**

When compared with other body hairs, beard hair has the longest anagen phase and shortest telogen phase, which is most similar to scalp hair [6]. The growth rate of beard hair is 0.35–0.38 mm/day, which is the fastest among all body hairs and almost the same as scalp hair [7].

### **60.3.4 Follicular Unit**

West and South Asians have thick beards, while East and Southeast Asians have the sparsest beards even though the blood level of testosterone is the same.

Two hairs is the dominant follicular grouping in scalp hair, but most beard hair grows as a single follicle.

Follicular density varies widely in individuals as well as ethnicities, e.g., 20–50 FUs/cm<sup>2</sup> in Caucasians and 20–40 FUs/cm<sup>2</sup> in Asians as stated by Akaki and 45–50 FUs/cm<sup>2</sup> to 150–160 FUs/cm<sup>2</sup> in South Asians by Dua [8]. In addition, there are variations according to zones, e.g., the moustache is thicker than other areas, with the philtrum having the maximum follicular density.

## **60.4 Procedure**

### **60.4.1 Initial Interview**

Selection of a good candidate is important, and the underlying medical and mental problems should be assessed. Evaluating the patient's expectations is crucial because of the discrepancy between unrealistic expectations and actual outcome of the surgery, which might result in litigation.

### 60.4.2 Surgical Planning

There are numerous beard patterns, and it is crucial to determine the patient’s preferred shape and density. There is no standard design; hence, every case should be customized (Fig. 60.2). Patients often bring in photographs of unshaven celebrities as examples, which should provide useful information. After the patient decides on his preferred design, the size of recipient area ( $A \text{ cm}^2$ ) is calculated by covering the area with plastic wrap, tracing the outline with a marker, and placing it on a graph paper to count the number of squares. The symmetry of the design can be checked when the plastic wrap is turned over and placed on the opposite side.

The average beard density is 25–35 FUGs/cm<sup>2</sup> in the cheek beard and goatee and 35–45 FUGs/cm<sup>2</sup> in the moustache. Assigning FUGs/cm<sup>2</sup> to be determined as  $D$ , then the required number of FUGs will be  $A \times D$ , which is 400–500 grafts for moustache, 400–600 for the goatee, and 800–1000 for the cheek beard.

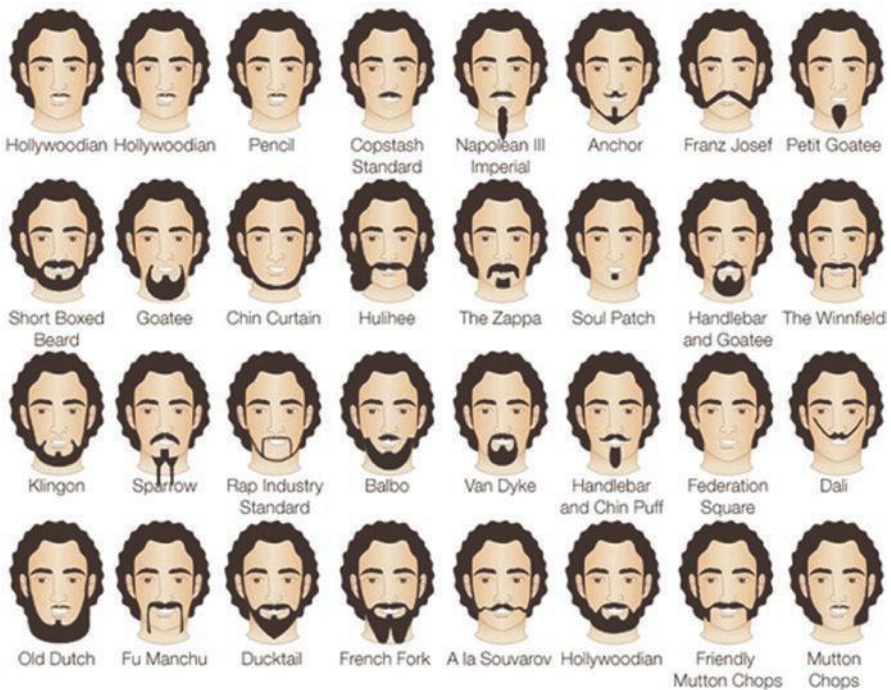


Fig. 60.2 Variation of beards (Fig. Courtesy: Kapil Dua)

### **60.4.3 Anesthesia**

Infraorbital and mental nerve blocks with 2% lidocaine are recommended. For local infiltration, 1% lidocaine with 1:100,000 epinephrine in a ring block and 0.3% lidocaine with 1:300,000 epinephrine over the whole area are combined. Tumescence solution is not necessary. The face is a very sensitive area, and diazepam 10 mg PO or midazolam 5–7 mg IV with ice cube and vibrator are used to alleviate the pain.

### **60.4.4 Graft Preparation**

Strip or FUE is employed depending on the patient's request. Donor hairs are routinely harvested from the mid-occipital area to obtain coarse hair and trimmed longer than those for the scalp. The harvesting process is similar to scalp hair transplantation.

FUT donor scalp is cut into one and two hair grafts, with the majority as one hair grafts. In FUE the author does not intentionally harvest one hair and two hair follicles, but rather two and three hair follicles are taken and are split into one hair graft under stereoscopic microscopes. Grafts are then kept in chilled saline.

Kuelachi advises using two hair grafts and paired FU grafts because scalp hair is thinner than beard hair [9], but the author prefers single hair grafts in Asian coarse hair.

### **60.4.5 Placing**

Recipient sites are created with 22 or 21 G hypodermic needles for single hair grafts and 20 or 19 G for two hair grafts with loupe magnification. Two hair grafts should be placed only in the central area of moustache or goatee and blended with one hair grafts, and peripheral feathery zones should be covered with exclusively one hair grafts. Needles are covered with silicon sheaths for depth control. Most of the grafts are placed into premade slits, and then the remaining grafts are placed into the vacant spaces with stick-and-place as touch up. The direction and angle of the slits should follow the residual hairs. Stretching the skin by traction and countertraction facilitates this process because facial skin is very loose and mobile (Figs. 60.3, 60.4, 60.5, 60.6 and 60.7).

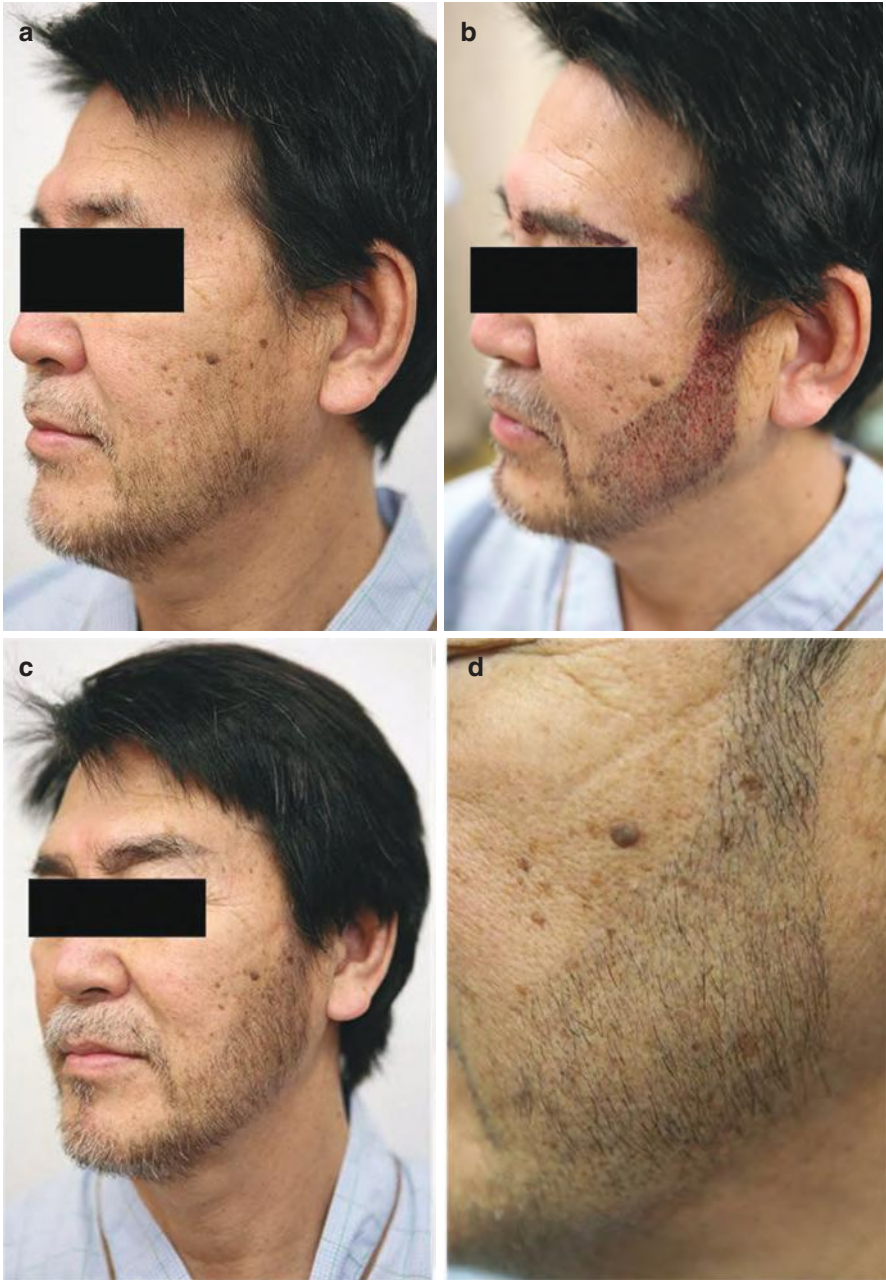
**Fig. 60.3** Graft placement by hypodermic needle with silicon sheath



**Fig. 60.4** Before (*upper picture*) and after (*lower picture*) in scarring alopecia prior cleft lip surgery



**Fig. 60.5** Before (a), immediate post-op (b), and 1 year after transplantation of 1488 grafts (c)



**Fig. 60.6** Before (a), immediate post-op (b), and 8 months after transplantation of 1434 grafts (c)



**Fig. 60.7** Before and after hair, eyebrow, and beard transplantation

#### **60.4.6 Postoperative Care**

- Check up at 3–6 months
- Antibiotics as prophylaxis
- Analgesics for strip surgery
- No dressing in recipient sites
- Restriction on eating and chewing
- Shaving after 10 days

#### **60.4.7 Complications**

- Swelling and bruising are common but self-limited.
- There is always a chance of contamination though the incidence of folliculitis is rare.
- Pitting and ingrown hairs are not seen.

### **60.5 Conclusion**

Aesthetic beard transplantation was not performed until follicular unit grafting was developed, due to the difficulty in obtaining pleasant results with large grafts. Currently, optimal aesthetic results can be achieved with specialized techniques coupled with a skilled team.



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