Advances and Challenges in Hair Restoration of Curly Afrocentric Hair

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KEYWORDS

• Hair restoration • Hair transplantation • Follicular unit extraction (FUE)
• Follicular unit transplantation (FUT) • Ethnic hair • Central centrifugal cicatricial alopecia (CCCA)
• Traction alopecia

KEY POINTS

- Although the biochemical composition of hair is similar among racial and ethnic groups, the hair structure between them varies.
- Individuals with curly hair pose specific challenges and special considerations when a surgical option for alopecia is considered.
- Hair restoration in this population should be approached with knowledge on the clinical characteristics of curly hair, hair grooming techniques that may influence the management, unique indications for the procedure, surgical instrumentation used, and the complications that may arise.

INTRODUCTION

Hair transplantation offers a permanent and dramatic effect for patients with thinning hair. The technique was originally conceived in the early to mid-1900s by hair transplant pioneers Dr Shoji Okuda[1,2] of Japan and Dr Norman Orentreich[3–5] of the United States. Since then, the cosmetic results of hair transplantation have improved with the refinement of graft size from punches of 4 to 5 mm to single follicular unit grafts of 1 to 4 hairs. Dr Bobby Limmer,[6] in his landmark article, revolutionized the field with the application of stereoscopic magnification for the separation of follicular units. Since then, the field has continued to evolve with surgical procedures such as follicular unit extraction (FUE) and the use of robotic technology as an efficient method of graft harvesting.

Most hair transplant surgeries are performed on persons of white ancestry with male or female pattern hair loss. According to the 2013 International Society of Hair Restoration Surgery practice census results, more than 310,000 hair transplant surgeries were performed worldwide: 86.3% in men and 13.7% in women.[7] As the demographics of the United States and developing world change, more persons of Afrocentric background will present for surgical treatment of their hair loss. Early pioneers of hair restoration realized that differences exist that must be understood before proceeding with surgery in this population.[8,9] These differences relate to the structure of the hair follicle, the role of hair grooming techniques, and the need to consider other factors such as scarring or keloid formation. This chapter considers the most common causes of hair loss in patients of African descent and focuses on the differences in surgical technique.

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CANDIDATE SELECTION

The most common type of hair loss in Caucasian women is female pattern hair loss, a form of nonscarring alopecia. However, in women of African descent, most patients with hair loss have either central centrifugal cicatricial alopecia (CCCA) or traction alopecia. CCCA is an idiopathic primary scarring form of hair loss and is thought by the authors to have a genetic component, because it frequently runs in families (**Fig. 1**). In addition, it can potentially be worsened by environmental factors such as the use of chemical relaxers or heat-related treatments.[10–14] For this reason, patients with CCCA should first undergo medical therapy to minimize and control any active inflammation before surgery. In addition, proper hair grooming techniques should be followed. **Fig. 2** shows the dermatoscopic appearance of hair follicles before and after treatment with oral doxycycline and topical clobetasol to suppress the inflammation. A decrease in perifollicular erythema can be seen. Most hair transplant surgeons recommend a minimum of 9 to 12 months of medical therapy before hair transplantation.

Nonscarring causes of hair loss in patients of African descent are traction alopecia (TA) and female pattern hair loss. TA generally occurs as a result of traumatic grooming practices.[10–14] Tight braids, ponytails, dreadlocks, tracts, and weaves can cause loss of follicles along the frontal hairline, sideburn area, and occiput (ophiasis pattern). There is usually little inflammation and an absence of scarring in these two forms of hair loss. TA represents a secondary form of hair loss, as opposed to the primary inflammatory process of CCCA (**Table 1**).

MAJOR CONSIDERATIONS/DIFFERENCES

Table 2 lists the major differences between Afrocentric and Caucasian hair. Besides the obvious difference of curly hair in the African population, it has been observed that they have a smaller number of follicular units per square centimeter (lower density) and a slightly higher number of hairs per follicular unit. Because of these major differences, a larger recipient site must be created during hair transplant surgery. Also, more caution is needed in choosing surgical candidates given the higher risk of keloid formation in patients of African descent.

Fig. 1. Two sisters with early and late forms of scarring hair loss in the vertex area, shown on biopsy to be CCCA.

THE TEST TRANSPLANT

The authors have found the test transplant to be a valuable tool in identifying whether patients with scarring areas of hair loss may benefit from hair transplantation. Although it may seem counterintuitive, the use of larger punch grafts is not only cosmetically acceptable in patients of African descent (because of the curly nature of the surrounding hair) but seems to allow better survival of the transplanted grafts, especially in areas of scar tissue. It can also theoretically help to improve the quality of the recipient area by allowing the transfer of healthy stem cells found in sebaceous glands and adipose cells of the donor subcutaneous tissue.

Test transplanting may also be valuable for patients with a known history or strong family history of keloid formation. By harvesting a small group or number of grafts from the back and transplanting them to the affected areas of hair loss, the surgeon can make sure that the patient does not have any thick scar formation in either the donor or recipient areas. This technique should not be limited to patients of African descent; any person at risk of keloid formation may benefit from test transplantation.

The authors perform test transplantation by harvesting one or more 2-mm to 5-mm punch grafts of hair-bearing skin from the occipital scalp. After closing the defects with suture or staples, the punch grafts are then placed into recipient sites created with a slightly smaller (by 0.5–1 mm) punch trephines (**Fig. 3**) in areas of hair loss. If a biopsy has not already been done, the tissue removed from the recipient site can be sent to a pathologist to assess the degree of inflammation present. **Table 3** provides a guide for test punch graft donor and recipient size planning.

After the punch grafts have been removed, and depending on how well they stay in place, sutures may be needed to hold the larger grafts in place. Other doctors have used Steri-Strips with benzoin to hold the grafts in place. Smaller punch grafts generally stay securely in place and do not require sutures or Steri-Strips. Patients are then