Scalp biopsy technique for the hair surgeon

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Hair transplant surgeons are often faced with diagnostic uncertainty with regard to hair loss etiology. Patients presenting for surgical options may have scalp conditions that preclude surgery, and it is incumbent upon the surgeon to be able to properly diagnose these conditions. In addition to a careful history and examination of the scalp and hair shaft, it is helpful and often necessary to obtain a biopsy to assess histopathologic changes. Hair transplant surgeons without a dermatology background are often unsure about proper biopsy technique, and sometimes there are no convenient or willing dermatologists to see these patients. Therefore, to properly and more fully be considered an expert in hair loss, all scalp surgeons should be comfortable obtaining these specimens. The purpose of this article is to summarize the scalp biopsy technique to maximize diagnostic accuracy. Only a small subset of scalp conditions will be discussed, since mastery of the basic technique will allow specimen collection of virtually any disease process. An accompanying instructional video will be available in the near future in the ISHRS online Members Only Video Library.

Scalp conditions that usually require biopsy include all forms of scarring alopecia such as the following:

- Chronic cutaneous lupus erythematosus
- Lichen planopilaris
- Frontal fibrosing alopecia
- Graham-Little syndrome
- Pseudopelade of Brocq
- Central centrifugal cicatricial alopecia
- Alopecia mucinosa
- Keratosis follicularis spinulosa decalvans
- Folliculitis decalvans
- Dissecting cellulitis/folliculitis

Scalp conditions that infrequently require biopsy consist of non-scarring alopecias including telogen effluvium and alopecia areata. Scalp conditions that only rarely benefit from biopsy include hormone-mediated male and female pattern hair loss. In any patient where there is diagnostic uncertainty and where therapeutic options will be altered by an accurate diagnosis, a biopsy should be performed. One example is what would appear to be a non-scarring alopecia in a patient with lupus or lichen planus or other condition known to cause scarring hair loss. Another example is suspected trichotillomania where alopecia areata is a likely alternative.

The most important step in a scalp biopsy is determining the correct biopsy location. Selecting a site without diagnostic histologic features is a waste of time. The ideal site should be neither burnt out nor intensely inflamed. Captured tissue should include active inflammation if present and at least several hair follicles, and should generally be located at the periphery of an active area of hair loss.

**Case 1**

This 19-year-old girl presented to me with a diagnosis of discoid lupus on plaquinil therapy. She had presented to her primary care physician with new onset hair loss, and labs were obtained revealing an elevated ANA, triggering the diagnosis and treatment. My examination revealed a well-demarcated area of hair loss without evidence of scarring, but with inflammatory pustules (Figure 1).

![Figure 1. Alopecic area showing inflammatory pustules.](image1)

![Figure 2. Closeup showing selected biopsy site. Note exclamation mark hairs and absence of apparent scarring.](image2)