

## Side-Effects from Follicular Unit Extraction in Hair Transplantation

Dear Editor,

Since the mid 1990s, elliptical donor harvesting has been the preferred method for obtaining follicular groupings for hair transplantation.<sup>[1]</sup> Over the past decade, follicular unit extraction (FUE) has become an increasingly popular method for obtaining donor hair.<sup>[2,3]</sup> FUE uses manual, motorized or robotic devices to remove individual follicular groupings from the donor region.<sup>[4-6]</sup> The primary advantage of FUE over elliptical donor harvesting is the lack of a linear scar where the donor hair is harvested and then sutured or stapled closed [Figures 1 and 2]. This can be a major advantage in patients who wear their hair short, as in a military cut. While FUE has the advantage of no linear scar, it presents other challenges and potential long-term side-effects.

Some patients and physicians have the misconception that there are no scars associated with FUE. This is however not the case. As with a full-thickness cutaneous incision, a scar is created with the 1 mm punch utilized

to harvest each follicular grouping. The majority of scars are not visible to the human eye, but some scars are visible as pinpoint white atrophic macules [Figure 3]. They are of no practical concern and are aesthetically far less noticeable than a linear scar for most patients, but patients should be made aware that these pinpoint white scars may be visible on close inspection with short hair.

In an attempt to harvest the maximum amount of donor hair, some physicians harvest follicular units from areas of the scalp that are vulnerable to future hair loss, such as the upper and lower posterior occiput [Figure 4]. If physicians harvest follicular groupings from these high-risk areas and transplant these follicles together in a given location, there is a chance that these recipient areas will thin out or bald completely in the future. To minimize the cosmetic impact of this, all harvested grafts, from both high- and low-risk regions, should be mixed together. This way, there will not be an unnatural distribution of transplanted hair as the hair is lost.



Figure 1: A single linear scar from donor strip harvesting



Figure 2: Staples or sutures are used to close the donor area following the strip method



Figure 3: White atrophic macules can be seen in the donor area following follicular unit extraction

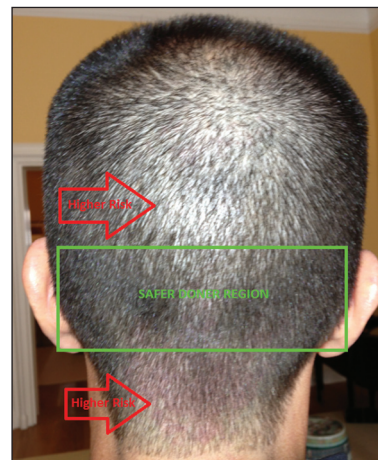


Figure 4: Safe donor area remains just above and below the nuchal ridge in the occipital scalp

**Table 1: Potential side-effects of FUE**

Pinpoint white scars in donor region
Harvesting of grafts from donor area with increased risk of future loss
"Moth-eaten" "pseudosyphilitic" appearance in donor region
Necrosis or cyst formation in donor region
Infection
Temporary or long-term numbness in posterior scalp

Furthermore, irrespective of whether FUE is performed by manual, motorized or robotic punches, there is the risk of a clinically apparent depletion of hair from the donor region as with donor elliptical harvesting. This may create an iatrogenic "moth-eaten" or "pseudo-syphilitic" appearance. In addition, proper spacing and removal of harvested follicular groupings is vital to reduce the risk of necrosis and cyst formation.<sup>[7,8]</sup> No one knows how many follicular groupings can be safely harvested from the donor region with FUE. The incisions with FUE are more widespread than those with

an ellipse. It is unknown how this will affect the clinical appearance of a patient's hair in the donor region over time as hair loss progresses. As a result, physicians should be cautious about the total number of follicular groupings harvested from the donor region. By trying to create maximum density in the frontal scalp, physicians can paradoxically create thinning, see-through hair in donor area.

FUE is an effective and useful modality for obtaining donor hair. It creates less-visible scarring than elliptical donor harvesting. As with any surgical technique, there are limitations and side-effects from the procedure, but it is the preferred method for patients who wear their hair short or simply do not want a linear scar on their scalp. Patients and physicians who are aware of the short- and long-term risks of FUE are less likely to be disappointed when they occur. See Table 1 for a summary of the potential side-effects of FUE.

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