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Redefining the “E” in FUE: Excision = Incision + Extraction

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Extraction in the purest form can be defined as “the action of taking out something, especially using effort or force.” In 2013, Dr. Parsa Mohebi and the FUE Research Committee published a report in the *Forum* (Vol. 23, No. 5, pp. 165-168) entitled, “Standardization of the terminology used in FUE: part I.” In it, they noted that the concept of FUE was first published in the tabloid newspaper “The Sun Herald” in Australia on October 15, 1995, in an advertisement for Dr. Woods & Dr. Campbell’s top-up microsurgical technique where the donor extraction was done one follicular unit at a time. The advertisement described the concept of FUE as “Hair Follicle Single Unit Extraction.” In 2002, Drs. Bill Rassman and Bob Bernstein published “Follicular Unit Extraction: Minimally Invasive Surgery for Hair Transplantation” (*Dermatol Surg.* 2002; 28(8): 720-727). They described the term FUE as “the removal of individual clusters of follicles from the donor area using a sharp dissecting punch or trephine.” Drs. Rassman and Bernstein described the way 1mm-diameter punch incisions were made to separate the hair follicles and remove them.

In those early years, the key question for surgeons was: How do we remove the follicles? Hence, the word “extraction” was appropriately used. This term also provided a significant marketing advantage as

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Determining Safe Excision Limits in FUE: Factors That Affect, and a Simple Way to Maintain, Aesthetic Donor Density

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Overharvesting and difficulties measuring variables affecting donor coverage

The explosive worldwide popularity of the Follicular Unit Extraction (FUE) method for donor harvesting (recently re-defined to reflect the more appropriate surgical description, Follicular Unit Excision) has contributed to an increase in patients affected by donor area overharvesting. This has resulted in serious cosmetic defects ranging from minor degrees of visibly moth-eaten donor areas to almost complete donor alopecia. A separate, but related, problem occurs when areas of focal donor necrosis are created by overly aggressive FUE. Figure 1 illustrates examples of various donor defects that have been seen post-FUE. Safe excision guidelines to educate doctors to avoid these complications do not currently exist. In an effort to guide medical practitioners toward safe limits of FUE, the Hair Diameter Index^{1,2} and the Hair Coverage Value³ have been proposed to aid in predicting FUE harvest limits based on hair shaft diameters and hair count/square centimeter.

FIGURE 1. Donor areas in A and B illustrate focal scarring and alopecia following FUE; C illustrates a “mottled” donor area appearance.



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it did not imply surgery and was advertised in 1995 as it is today as “no scalpel, no stitches, no scar.” However, as Dr. Mohebi and the Research Committee concluded, “In strict terminology, the term ‘follicular unit extraction’ is inappropriate and misleading because it is a histological term rather than an accurate anatomical surgical term.”

So why do doctors continue to use the word extraction? The answer is simple. It’s routine and accepted as the standard. It is very clear with simple mathematics what FUE surgeons do. We perform surgery to excise full-thickness skin grafts containing hair follicles. It all adds up, $\frac{1}{2} + \frac{1}{2} = 1$, or: Incision + Extraction = Excision.

Hence, a more appropriate and accurate term is **Follicular Unit Excision**. (The good news is that we can continue to refer to this procedure as “FUE,” and it will always remain.)

Over the past 20+ years, there has been less focus on true extraction techniques and more focus on the incision aspect of the equation to minimize damage and transection rates and to obtain a better-quality graft. We have seen an explosion in the variety of “incision techniques” using handmade punches from 18- and 19-gauge needles, and sharp, serrated, non-serrated, dull, hybrid, Upunch, Trumpet punches, and more. A variety of automated devices also has evolved to assist with the speed of incisions, such as the S.A.F.E. System™, ARTAS®, NeoGraft®, SmartGraft®, Vortex, PCID, WAW system, Atera, 3 Step FUE, RotoCore, Mamba, and other international devices. These devices, as well as many manual punch handles, have the ability to limit the depth of incisions.

As we continue to evolve and develop better-quality incision techniques, why do we continue to use inappropriate or misleading language? Simply put, it’s a bad habit. The ATOE (Cole Instruments)—or Aide to Extraction—is one instrument that is appropriately named. To be precise and accurate in our communication, we should use the term “extraction” only when we are using techniques to physically manipulate and handle the graft to remove it from the body AFTER the incision is made. This can be done by suction, ATOE, the one-handed or two-handed technique, wiping grafts out using gauze, or other techniques that safely avoid damage to the graft. I see conferences and workshops advertising “extraction techniques” when all they are discussing is the way to properly cut the skin with the above incision techniques.

We are in the habit of using this term—extraction—and it will not be easily forgotten or changed. However, to use language in a precise, technically accurate way, we are advocating the change to Follicular Unit Excision. Excision embodies the true aspect of what we do as surgeons in both the academic and clinical aspect as it focuses on the two aspects of the equation: incision and extraction.

In addition, we have a responsibility for truth in advertising. Over the past 15 years, the term extraction has been minimized by many across the world to imply a non-surgical procedure that only involves “extracting” hairs as if they were being plucked out of the scalp without surgery. We continue to see advertisements that promise “no scar” or that use phrases such as “harvesting grafts,” which minimize the procedure as if we are non-surgically gathering crops

from a field. Given the worldwide expansion of this technique by non-medical and unlicensed personnel, the term extraction often is used to falsely mislead individuals so the procedure can be performed by non-medical personnel and to justify these actions to the public and legislators.

This is why I have proposed that hair transplant surgeons adopt Follicular Unit Excision as the new medical term. In a recent personal communication regarding the name change, both Drs. Rassman and Bernstein agree. Dr. Bernstein noted, “Times have changed and it will give more clarity to the term FUE and hopefully it will be more respected for the surgical procedure that it is.” Many international FUE surgeons with whom I have discussed this also agree.

So how should we define FUE? We should define it to reflect the accuracy of the surgical implications:

Follicular Unit Excision is the surgical technique that refers to circumferential incision of the skin around the follicular unit bundle or group of hair follicles for the purpose of extracting a full-thickness skin graft containing hair follicle(s), intradermal fat, dermis, and epidermis.

The ISHRS Board of Governors has reviewed this new terminology and agreed that the above definition more accurately reflects the true nature of the procedure. It also prevents any type of misleading or fraudulent information that may be conveyed to the public. We have heard from leading physicians and textbook authors across the world that this updated terminology “makes sense,” and that they are already making plans to incorporate the new culture and terminology into future textbooks. The ISHRS is also on board with making this part of our communication dialogue. Consequently, we are suggesting that the membership adopt this new terminology. Follicular unit incision and extraction techniques will never go away, but at least we can be more academically and clinically precise with our language and communication. I hope that each of you will join us in this transition as we bring in the New Year with Follicular Unit Excision for 2018 and beyond.

On page 6, please see what your colleagues are saying about this change from Extraction to Excision.