

### Commentary on Robotic Follicular Unit Extraction in Hair Transplantation

In their excellent article, “Robotic Follicular Unit Extraction in Hair Transplantation,” Avram and Watkin<sup>1</sup> give a review of the salient aspects of the newly evolving field of robotic hair transplantation. A significant contribution of this article is the data on transection rates. The authors found that the mean transection rate of robotic extraction is 6.6% in their 20 cases. This compares favorably with manual extraction techniques. They stress the need for well-designed long-term studies comparing the various harvesting techniques currently being used.

The authors, who perform both follicular unit transplantation (FUT) and follicular unit extraction (FUE) in their practice, point out that robotic FUE is an additional option for donor harvesting in patients who would like to be able to wear their hair short, or just prefer not to have a linear scar on their scalp. They still see a role for both types of procedures but note that FUE has expanded the number of male patients eligible for a hair transplant procedure, particularly younger patients.

It is important to stress that long-term planning in FUE can be complex because of the need for a donor area significantly greater in height than with traditional FUT strip surgery. This is a particular challenge in younger patients—the population most interested in wearing their hair short and who would benefit most from extraction. In younger patients, the long-term size and stability of the donor area is difficult to predict, even after a careful assessment of donor miniaturization using densitometry. With time, the candidacy of a patient for FUE can more easily be determined.

The field of robotic hair transplantation is changing so rapidly that even as this article is going to press, significant changes are occurring in the existing

technology. For example, the newest robotic system has 2 punch-width options to accommodate different hair shaft diameters. It also has a larger tensioner and can harvest grafts about 20% more quickly. Both of these modifications contribute to a shorter total extraction time. The physician is also now able to program the robot to select out the larger follicular units to minimize wounding and to more closely mimic what is generally done using a hand-held device.

Before the end of the year, the robotic system will be able to create recipient sites. With this technology, the doctor delineates the surgical plan directly on the patient’s scalp. This is photographed and converted to a 3D computerized model of the actual patient. Using the software, the physician then specifies the angle, direction, density, and randomness of the recipient site incisions, which can be made at a rate of up to 1,500 sites per hour.

As the authors state, the appeal of robotic FUE is part of the “inexorable trend” toward minimally invasive surgical procedures. As with any new technology, it is up to the practicing physician to make sure that it is used appropriately and to the maximum benefit of our patients.

#### Reference

1. Avram MR, Watkins SA. Robotic follicular unit extraction in hair transplantation. *Dermatol Surg* 2014;40:1319–27.

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