

# Robotic Surgery: With New Technology Come New Opportunities?

Cosmetic practices can capture the male market if they move beyond facial rejuvenation to hair restoration. Robotic technology may enhance the practice opportunity.

BY PAUL WINNINGTON, EDITORIAL DIRECTOR

**W**ith all the press surrounding health care reimbursements and related topics, it's easy to forget that there are still new and exciting procedures to offer for the benefit of both your patients and your practice.

Robot-assisted hair restoration is one such procedure. The ARTAS System enables physicians to offer their patients a minimally invasive procedure that leverages image-guided robotics to deliver permanent, natural-looking results. Demand for a less-invasive hair restoration solution has seen a substantial increase over the past few years, and patients are willing to pay a premium price for the benefits.

## EXTRACTION TECHNIQUES

Hair restoration has been the number one cosmetic procedure among men for several years, and it continues to grow in popularity.<sup>1</sup> Hair restoration procedures involve taking follicular units from "permanent" regions, such as the back and sides of the head, and transplanting them in the thin or bald areas on top of the head and hairline. Currently, strip harvesting represents the most common process for extracting follicles to be transplanted. Strip harvesting involves the use of a scalpel to remove a strip of hair-bearing tissue from the donor region and then the incision is closed with either staples or sutures. Using a microscope, the individual follicular units are then dissected from the tissue and transplanted to the area of hair loss.

Follicular unit extraction (FUE) presents an alternative to strip harvesting. Following surgical trends toward less-invasive procedures, single follicular units are extracted with small dermal punches so that the donor site does not require sutures or staples. Interestingly, while FUE seems like an obvious minimally invasive option for patients, practitioners have been slow to adopt the procedure. James Harris, MD, Medical Director of Hair Sciences Center of Colorado

and an FUE pioneer, explains the reason behind this industry-wide reluctance. "If physicians want to become proficient at FUE, they need to undergo special training and along with this, there's a significant time commitment. Analysis of the angle, direction, and type of skin is a complex process requiring extensive experience. Until the surgeon has acquired this experience, the process is very tedious and slow."

Mark A. Bishara, MD, of Bishara Cosmetic Surgery & Hair Restoration, concurs. "Right now, strip harvesting is the most commonly used technique, and it's an efficient means of harvesting large quantities of follicles. But I stopped offering it as a primary modality for a number of reasons, including patient recovery time and wound morbidity. It took me six months of training to fully learn FUE, and for many surgeons, that acclimation period can serve as an entry barrier."

This less-invasive procedure is beneficial for both patient and surgeon. Patients require less post-operative pain medications; healthy grafts with ample protective tissue can be transplanted; and the procedure does not result in linear scarring so patients can wear their hair very short post-procedure. Furthermore, patients typically undergo a quick recovery, returning to normal activity in three days or less. "Following strip-based surgery, the donor site isn't healed for seven to 10 days or until sutures are removed. It's not uncommon for strip-based surgery patients to report a sense of tightness and some degree of numbness for two to three months after a strip harvest. There is a very real potential for discomfort. With FUE, pain is largely mitigated—or absent entirely—post-procedure," says Dr. Bishara.

## BENEFITS OF THE ARTAS SYSTEM

Robotic technology is used in a variety of surgical and diagnostic procedures and is a good match for FUE. The ARTAS System is the first and only FDA-cleared technology that allows physician-controlled, image-guided, robotic-assisted

FUE. The ARTAS System utilizes specialized cameras and the latest in digital mapping to automatically assess the angle and direction of each follicular unit. Sophisticated algorithms then determine the hair density as well as the proper angle and depth of incision required to effectively harvest the units. The system can also determine a random extraction pattern.

The ARTAS System can harvest follicular units in a random pattern, according to distance limitations, or as a percentage of the total number of follicular units in a designated area. Under physician control and direction, targeted units are dissected at rates of over 500 grafts per hour. “I make minor adjustments to dissection depths and angles during the extraction process, to ensure the patient receives optimal results,” says Dr. Bishara. “So there’s still an element of physician interaction. But overall, the robotic technology alleviates much of the burden.”

While in general FUE is less invasive, one drawback is its traditionally slow method for extracting hair follicles. “An average physician performing FUE may only be able to extract 200 to 300 grafts in an hour. This presents somewhat of a problem, as an average surgery requires 1,500 grafts. With the ARTAS System, we are able to extract 500 or more grafts per hour,” says Dr. Harris.

“Initially, I was concerned that I would not be able to provide my patients the larger surgery session with the robot, but that concern was quickly shattered after we were able to extract 3,500 follicular units in one day,” adds Craig Ziering, DO, FAOCD, Founder and Medical Director at Ziering Medical.

Additionally, comparisons of traditional FUE to robotic-assisted FUE also reveal the computer’s ability to produce better grafts.<sup>2</sup> Newcomers to FUE often experience follicle transection rates of 20 to 30 percent when first learning the procedure. The ARTAS System, by comparison, consistently shows a follicle transection rate of about eight percent independent of operator experience. “The ARTAS System provides physicians a very safe method for consistently extracting a high volume of healthy, intact hair grafts in a short amount of time,” reports Dr. Harris. “Follicular units require little or no trimming and are ready to implant immediately after harvesting. This bolsters graft success rates and reduces technician time, facilitating more efficient appointment scheduling.”

## PRACTICE GROWTH

According to the International Society of Hair Restoration Surgery (ISHRS), the total market size for hair restoration surgery has increased almost 50 percent since 2008, with a worldwide market close to \$1.9 billion.<sup>1</sup> ISHRS members performed an average of 16 surgical hair restoration procedures per month, with 77.5 percent using the strip harvesting technique and only 22 percent using FUE. “When FUE first came out, doctors were obtaining bad grafts and giving their patients less than acceptable results, so a lot of potential patients rejected an FUE

procedure,” recalls Dr. Harris. “The beauty of the ARTAS System is that you can take a physician with very little experience and after a couple of hours of training, the doctor can produce grafts as good as those achieved with several years of experience. It’s a remarkable achievement for the entire hair restoration industry.”

This less-invasive method represents a new way to attract prospective patients who would not normally consider hair restoration surgery, due to its traditional recovery time and visible scarring, among other factors. Dr. Ziering further explains how the ARTAS System can be instrumental in growing and strengthening a practice. “Introducing new technology for the sake of just having the latest, greatest technology is not a reason for me to invest in something like the ARTAS robot. However, technology that improves my patients’ overall hair restoration experience or meets a patient need, addresses a concern, or solves a problem—is worth it.” Dr. Ziering says, “My Beverly Hills practice attracts patients from all over the world, and we’re busier now than ever, because of my association with the ARTAS robotic-guided system that has already drawn in patients who would otherwise be apprehensive about the traditional drawbacks associated with FUE. My practice has always provided patients top-quality services, and ARTAS currently represents the state-of-the-art in less-invasive surgery. During the ARTAS procedure, I can devote more time to the artistry behind quality hair restoration, as the robotics eliminates a great deal of the operational tedium. There is a huge patient population waiting to be served.”

Much like in other areas of medicine, such as all-custom laser eye surgery, patients are willing to pay more for value. The ARTAS System marks a significant investment for a practice, but patients will perceive the greater service and better results and be willing to pay it, specialists say. Dr. Bishara says, “Simply put, my patients—many of whom travel great distances to undergo this cutting-edge procedure—are willing to pay a premium for comfort and results. At a minimum, I’m doubling my business—largely because of how happy my patients are coupled with the impressive results I’ve been seeing. Through word of mouth alone, these satisfied patients are driving my business and establishing a global reputation for my practice.”

“Hopefully, one day, I will have multiple systems doing robotic hair transplants,” he adds. “I anticipate that robotics will lead the future of several medical fields outside of hair transplantation. The way I see it, I could embrace this technology early in my career, or wait ten years to hop on board. I chose to seize the opportunity to be one of this new technology’s first adopters and subsequently become a world leader in my field. Without a doubt, I would encourage other practitioners to implement the ARTAS System. The benefits are too numerous and too important to ignore.” ■

1. ISHRS 2011 Practice Census Results. [http://www.ishrs.org/PDF/FinalPracticeCensusReport7\\_11\\_11.pdf](http://www.ishrs.org/PDF/FinalPracticeCensusReport7_11_11.pdf).

2. Data on file. Restoration Robotics.