Follicular unit extraction (FUE) is a harvesting procedure where hair is removed directly from the posterior and parietal regions of the scalp (donor area) as individual, naturally occurring groups of 1-4 hairs. The groups of 1-4 hairs harvested are referred to as the “follicular unit”. FUE is an instrument dependent procedure, and therefore, the tool utilized for harvesting the grafts may significantly affect the results.

The FUE technique consists of two main steps:

1) Separation of follicular units from the surrounding skin, and
2) extraction of the follicular units from the scalp. Step one of an FUE procedure, the separation of the follicular units from the surrounding donor tissue, is a highly repetitive and labor intensive process that requires great precision and accuracy. This step, which must be repeated manually hundreds to thousands of times in a typical FUE procedure, subjects the patient to significant human error and variability.

The robotic system, ARTAS® system (Restoration Robotics, Sunnyvale, CA), was introduced in 2011 to automate the punch mechanism, which is the crucial first step of a FUE procedure. The robotic system increases the accuracy of graft harvesting, which in turn minimizes damage to hair follicles and reduces harvesting time. Each of these factors potentially contributes to increased graft survival. Additionally, a more recent advancement of the robotic system is its ability to perform automated recipient site creation. Preliminary observations suggest that it can accomplish this function with greater precision and consistency than when performed manually.

The ARTAS® Robotic system is an image-guided system composed of a robotic arm, dual-needle punch mechanism, video imaging system, and a user interface. Its extraction technique consists of a double-punch arrangement with an inner (sharp) punch and outer (dull) punch. The inner punch has cutting capabilities to score the upper most part of the skin and the outer punch has a blunt edge used for dissection of the follicular units from the surrounding tissue that minimizes injury to the grafts. The image-guided system allows this step to be accomplished with great precision. The patient lies on a specially designed operating table that allows access of the robotic arm to the donor area of the scalp. The robotic arm is monitored and controlled from a computer system and there is a wall mounted control that is visible to the physician and staff.

Biography

Michael B Wolfeld, M.D. is a board certified plastic surgeon and an Assistant Clinical Professor of Plastic Surgery at the Icahn School of Medicine at Mount Sinai Hospital in New York. At Bernstein Medical he performs hair transplants using the newest technologies including the ARTAS Robotic Hair Transplant system. He has nationally published and has lectured extensively on cosmetic surgery and aesthetic surgery, new advances in hair restoration and robotic hair transplant surgery.

He received his Bachelor of Science degree from Cornell University and earned his medical degree from SUNY Downstate Medical School. He completed the highly competitive six year training program in the specialty of plastic and reconstructive surgery at the Mount Sinai Medical Center, where he served as Chief Resident. In addition, he pursued an aesthetic fellowship at Lenox Hill Hospital and the prestigious Manhattan Eye, Ear & Throat Hospital. He has participated in international plastic surgery missions including traveling to South America to treat children with various congenital deformities. In addition to his work at Bernstein Medical, he helps to train the next generation of plastic surgeons at Lenox Hill Hospital, Manhattan Eye, Ear, & Throat Hospital, and the New York Eye & Ear Infirmary.

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