

Hair Restoration Surgery

25 YEARS IN THE EVOLUTION
OF TECHNIQUES & THERAPIES

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This year marks my twenty-fifth year in the field of hair restoration surgery. During these years, like in no other time in history, my specialty evolved as far as surgical technique and medical therapeutics for those seeking our services. I shall chronicle these revolutionary improvements in this article.

Male pattern baldness affects more than fifty million men in the United States and female pattern hair loss more than thirty million women. Each of these conditions is progressive, so it is extremely important to include stabilization of continued hair loss if you are going to surgically correct the problem.

Long gone are those plugs. However, especially in patients over 45 or 50 years of age, this archaic technique often is in the forefront of one's mind as to what hair transplantation is today - **WRONG!**

Unlike most surgical procedures during the last 25 years, the actual technique of hair restoration surgery has changed dramatically. As has been similar to the tremendous miniaturization of computers from room-sized machines to tiny

handheld ones today, the same occurred in hair transplantation surgery.

In 1959 Dr. Norman Orentreich proved the theory of *donor dominance*; thus, proving longevity of transplanted hairs, transplanted hairs will maintain their genetic integrity to grow where they are moved. These large hair-bearing "plugs," ranging from 4 to 6mm in diameter, were transplanted into round holes in areas of the scalp

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that were thin or bald—and they grew! Initially, these round grafts were harvested individually, with normal tissue left between them. The resulting surgical defects in the donor area would then heal by secondary intention. A big problem with this

technique was that permanent round scars were left in the donor area which needed to be hidden by long surrounding hairs thereafter. In the early 1980s my mentor, the late Dr. C. P. Chambers, was one of the first surgeons in the U.S. to remove these plugs in a single line from the donor site, which was then

together, offering the patient a somewhat more natural-looking result.

What then happened in the 1990's greatly changed both the technique and the results. Round grafts continued to be cut into smaller-sized segments—into thirds, quarters, and sixths—giving the surgeon smaller grafts to

where we now transplant grafts mostly containing only one to three hairs. These follicular units provide our patients with an extremely natural-looking result, even after only one transplant session.

What was once old is new again – sort of. As I have indicated, everything in the method of hair transplantation has miniaturized in the past 25 years. A relatively new technique called *follicular unit extraction (FUE)* has become more popular in the last couple of years as an alternative surgical option for patients. This option is ideal for patients who want to either shave their heads or to wear their hair extremely short.

With very short hair styles, the linear scar, though typically only about a millimeter in thickness from the strip method, would be seen. The follicular unit extraction method creates no such scar. So, instead of excising a strip of donor tissue and dissecting it in to small grafts, the FUE technique is performed by encircling each follicular unit using a 0.8mm to 1.0mm, and up to 1.25mm punch. The most

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sutured, so that scarring in this area would be significantly less noticeable.

When transplanted into the recipient area these very large grafts needed to be spaced apart in order to survive; therefore, multiple surgical sessions were usually required in order to provide a natural aesthetic result. A single session with this old technique rarely was a stand-alone procedure because it often displayed that tell-tale “doll’s head” or “picket fence” appearance which was not desirable. Transplants of the past were often easily noticeable.

Move forward to the late 1980s when we began to rapidly evolve away from the plugs to the next generation technique of “split grafts,” where the round grafts were bisected, then planted into incisions rather than into holes in the recipient area. This provided slightly smaller grafts, no longer round, to be planted a little closer

transplant even more closely together. The next leap forward, instead of removing a line of round grafts, was that we surgically excised a linear strip of hair-bearing donor tissue. This allowed for a finer donor scar and a more efficient harvest of grafts because the strip was dissected under magnification now into grafts initially containing from a single hair to six to twelve hairs. As the years passed the techniques were further refined to

BEFORE



AFTER



Photos courtesy of Dr. Robert Leonard.

common FUE methods utilize manual or semi-automated devices that incise the grafts, which are left *in situ* and then are manually plucked or removed using a forceps.

NeoGraft FUE SYSTEM

The newest device for the FUE technique is the NeoGraft system (www.neograft.com), which is more fully automated in that the small harvesting punch is attached to a rotating handpiece that has suction drawn through the punch. The excitement of this device is the suction function because the encircled graft, rather than being pulled from the scalp with forceps, is suctioned out of the scalp with virtually no manipulation. The FUE method is less invasive than the strip technique, and it is also less uncomfortable post-operatively since there are no donor area sutures with which to contend. Grafts harvested from either method are planted into the recipient site in the same fashion.

NeoGraft HARVESTING & IMPLANT HANDPIECE

The NeoGraft harvesting handpiece was designed with a contra angle feature, which allows for precise visual graft extraction. With a variable speed rotating, cutting canula, the grafts are cleanly excised with a smooth core of tissue protecting each extraction. Gentle suction is used to pull the grafts smoothly through the extraction shaft and into the collection canister so that each extraction is consistent with the next. The harvesting handpiece provides the technician the ability to quickly harvest

quality grafts with no trimming, saving time on the overall procedure. A multiple diameter punch size can be chosen, and a depth limiter gives the technician the ability to extract only the necessary tissue for each graft.

Previously, the practitioner would manually open the incision and place the grafts within the incision making this portion of the procedure a “no-touch implantation” process with the handpiece, making this a marked improvement over past generation systems and techniques. The NeoGraft pneumatic pressure gently auto loads the graft into the implantation canula and smoothly advances and precisely seats the graft into the recipient site. Coupled with the multiple diameter implanter sizes, varied size grafts can fill in a lost hair line or replace areas requiring thicker patterns for a natural look with ease and automation. Unlike the traditional FUE method that

relies on a physician's or technician's understanding and skill level, NeoGraft provides absolute exact placement and consistency, delivering repeatable results. The NeoGraft system uses pneumatic pressure and precision automated controls to extract the hair follicles without damage.

Twenty-five years ago we had no medical therapy to stave off progression of these conditions. In 1988, the first FDA-approved medication (a prescription until 1996) was Rogaine®. This is a topical application of *minoxidil* which works very well to stabilize hair loss in both men and in women; it also re-grows hair in approximately 50 percent of patients. Today's improvement of this medication is two-fold. First, it is an over-the-counter medication more easily available to hair loss sufferers; and, second, it is now available as Rogaine Foam, which is far easier to apply and use.

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LOW LEVEL LASER THERAPY

The newest technology in combating hair loss in men and women is low level laser therapy. I have provided it in my practice for the last ten years. This modality provides energy directly to the scalp. It actually increases capillary blood flow to the dermis;

it also converts about 70% of the follicles in the telogen (resting) phase back into the anagen (growing) phase. The office-based clinical laser units provide stabilization in approximately 90% of patients and regrowth in about 50% of people. The more modalities that a single patient concomitantly uses, the better the results will be with non-surgical hair loss therapies. More, in this case, is better.

NeoGraft has continued the evolution in Light Therapy with the introduction of the NeoLTS. This single platform, multiple application technology incorporates 3 distinct wavelengths: Red, Green, and Blue. The Red light uses 630nm wavelength, which has demonstrated the ability to increase hair regrowth. Red light is effective because it can stimulate ATP production. The second wavelength is Green at 550nm. The advantage of Green radiation is that it is absorbed at 150 times more than red laser radiation at 670nm.

The ability of Green light to increase PO₂ in hypoxic tissue where extreme ROS production causes hypoxia. In the case of a hypoxic scalp, we can see the benefits of Red and Green to reoxygenate the tissue provided by the Green light, and the red light provides increased ATP production by removing nitric oxide. Blue at 420nm along with the Red Light provide an effective treatment for acne, whether using photodynamic therapy or light alone. NeoLTS is a Swiss Army tool in any practice.

Finally, the other huge change in my field during the last

quarter century is the major increase in women seeking both hair restoration services as well as undergoing hair transplantation.

Most men losing their hair do not at all like it; however, it truly is devastating for women to become bald. Many women report that their primary care doctors and dermatologists actually downplay, ignore, and even mock their concern about their thinning hair. Women often require a thorough medical workup prior to diagnosing them with female pattern hair loss; but once it is determined, then hair restoration procedures should be discussed with them.

Today's woman does not want to wear wigs or wiglets or hair pieces. They are active in the workplace. They want their own hair back! If they are good candidates for hair transplantation, then it should be offered to them.

I am very proud that my specialty has evolved, providing today's patients—men and women alike—with superlative aesthetic results that are, indeed, difficult to notice as “having been done.” I am honored to be among very few restoration surgeons to have held

leadership positions in my specialty, especially within the International Society of Hair Restoration Surgery. I hold high respect for pioneers and trailblazers in the worldwide medical and surgical hair restoration community who have engineered the modifications in approach and technique, making hair transplantation today an excellent choice for people wanting to restore their hair. 



About the Author

With more than 25 years of experience in cosmetic surgery and as a past president of ISHRS, Dr. Robert Leonard serves as New England's foremost authority on hair restoration, providing an honest, realistic medical evaluation of each individual patient's hair loss problem. Visit his website: www.hairdr.com.



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