

Revolutionizing Autologous Fat Transfer/Fat Grafting: VASER® Lipo System and Shippert Tissu-Trans®

By John A. Millard, MD and Ronald D. Shippert, MD

Introduction

Fat transfer, although first documented more than 100 years ago, was not generally adopted until the 1980s when liposuction became widely available.^{1,2} However, as commercial fillers entered the marketplace, interest in autologous fat transfer (AFT) waned due to technique limitations, including unpredictable results, lack of procedural standardization, and the need for time-consuming processing. Today's increased demand for mid- and large-volume procedures, including buttock, breast, and pectoral augmentation and full hand and face rejuvenation, has renewed interest in AFT and driven improved instrumentation and technique.³ The American Society of Plastic Surgery (ASPS) released an advisory in 2009 supporting AFT, stating, "Fat grafting can be considered a safe method of augmentation and correction of defects associated with various medical conditions."⁴

The combined use of the VASER Lipo System (Sound Surgical Technologies), an advanced ultrasonic body contouring technology, and Tissu-Trans® (Shippert Medical Technologies Corporation), an unprecedented fat transfer system, offers physicians the next generation in body sculpting - an efficient, simple system that eliminates mess and prep work and delivers sterile, viable fat for injection.

The VASER Lipo System - The First Step in Body Contouring

The VASER Lipo System was designed to advance liposuction procedures by improving safety and efficiency, reducing complications and physician fatigue, and allowing for faster patient recovery.⁵ VASER probes are constructed with a proprietary, solid, side-grooved design. The probes are blunt and pass through tissue easily with minimal trauma, redistributing ultrasonic energy from the tip to the region immediately proximal. This results in a 50% lower energy requirement as compared to older ultrasound-assisted liposuction systems. The minimized ultrasound output associated with VASER provides greater tissue fragmentation while decreasing the probability of complications.^{6,7}

The VASER Lipo System is an all-inclusive platform for infusion, emulsification, and aspiration of targeted tissue. VASER ultrasonic probes are available in a variety of sizes and tip grooves, allowing for versatility and precision. In general, more grooves provide greater fragmentation efficiency, while fewer grooves are more appropriate for penetration in sites with more fibrous tissue. Additionally, the VASER system offers a choice of continuous or pulsating ultrasound energy, allowing the procedure to be customized for debulking of fibrous tissue or sculpting of softer tissue.⁸

Physicians begin the procedure by infusing a treated wetting solution. Next the appropriate VASER probe is applied smoothly through the tissue, remaining parallel to the skin. The amplitude may be adjusted to assist in even penetration. Cross-tunneling may help achieve uniform fragmentation and emulsification should continue until the probe achieves minimal resistance in the target area. The VASER System effectively liquefies the fat, allowing for the use of low pressure vacuum during aspiration, which reduces trauma to the adipocytes. The uniquely designed VentX cannulas, which minimize trauma to the tissue matrix, may be used to remove the emulsified fat.⁸

The aspirate collected during a VASER procedure is a uniform emulsification of viable fat cells. This is possible as VASER utilizes acoustic forces to cause cavitation within the infused tumescent solution, resulting in displacement of adipocytes. The tumescent solution, which contains millions of dissolved microscopic bubbles at atmospheric pressure, envelopes the fat cells within the target area. The VASER probe distributes ultrasound energy, causing the individual bubbles to expand, contract, and grow. As the bubbles, known as cavitation nuclei, reach their resonant size, they collapse, dislodging fat from the matrix, and the process begins again. The displaced fat is typically released in 2-3 cell packets, ensuring abundant exposure to blood supplies upon reinjection. The resulting aspirate is uniform, clean, and bloodless, even in tight, fibrous anatomical areas. While conventional lipoplasty techniques are associated with destruction of fat cells and surrounding tissues, aspiration of large packets of fat cells, and the potential for central necrosis upon reinjection, the VASER Lipo System ensures tissue selectivity and the collection of small packets of viable fat cells for reinjection.

Shippert Tissu-Trans® - Redefining Autologous Fat Transfer/Fat Grafting

The Tissu-Trans® systems, which offer a simple, sterile, non-traumatic harvest of lipocytes and stem cells with customizable reinjection volume (10cc, 60cc, MEGA 1500, and FILTRON 2000), may be integrated with VASER lipoplasty. The Tissu-Trans® does not change the normal flow of the physician's technique during VASER lipoplasty. Standard tumescent solution is infused, fat is emulsified, and upon aspiration, the Tissu-Trans® is placed on a canister stand between the harvest cannula and the vacuum source. To reduce trauma to the lipocyte, the vacuum source is reduced to approximately 15 inches of Mercury, which is 50% of the maximum of 1 atmosphere. Fat is collected, filtered, or decanted all within the sterile Tissu-Trans® containers without transfers or exposure to ambient air. The waste (blood, epinephrine, Xylocaine, and plasma) is either filtered out during the harvest or decanted and drained after the harvest. Sterile fat is then drawn out with a luer lock syringe and is ready to inject to the recipient site without further preparation or centrifuge. Reinjection volume per site is recorded for operative records. The Tissu-Trans® is compatible with standard Luer locks, suction tubing and cannulas. A 3 mm cannula is recommended for the best fat harvest.

A 2006 study identified 12 traumatic events during AFT that result in damage to the lipocyte.³ With the Tissu-Trans® systems each of these 12 traumatic events have been eliminated or reduced, resulting in an improved fat specimen for reinjection. The reduction in time, procedure steps, lipocyte trauma, and contamination potential are a direct result of replacing the centrifuge with an effective filter system.

The Tissu-Trans® systems aid in the standardization of the two major variables in AFT - instrumentation and technique. The Tissu-Trans® systems offer the right instrumentation for every procedure, with models available based on volume- the 10cc model for rejuvenation of small areas of the face and body, the 60cc model for medium volume areas, and the MEGA 1500 and FILTRON 2000 for large-volume procedures such as buttock and breast augmentation. Additionally, the Tissu-Trans® allows the surgeon to seamlessly integrate AFT with lipoplasty, both saving time and eliminating many of the trauma-inducing steps historically associated with fat transfer.

Partnering to Revolutionize Body Sculpting

The VASER Lipo System and Shippert Tissu-Trans® products work together to simplify AFT and ensure delivery of sterile, viable lipocytes. As part of the AFT procedure, the VASER Lipo System offers the benefit of providing viable, emulsified fat that is less bulky than with other techniques and more conducive to reinjection. When combined with Shippert Tissu-Trans® products, fat is directly suctioned off, separated, and kept sterile, making reinjection simpler and more efficient.

The VASER/Tissu-Trans® technique is applicable across a wide range of procedures, including enhancement of male pectorals, rejuvenation of the face, enhancement of the shape and form of the buttocks, and as an alternative to or an addition to female breast implants. Furthermore, the technique has been utilized with VASER Hi Def™, an advanced body sculpting technique that removes both superficial and deep fat around specific muscle groups to enhance visibility of underlying musculature.

Over 20 AFT procedures have been performed by the author (Dr. Millard) using the VASER Lipo System and Shippert Tissu-Trans® technologies in combination. All procedures demonstrated transplantation of viable fat with lasting results. Long-term outcomes have been assessed for pectoral and gluteal augmentation procedures with results equal to or better than outcomes with other techniques.

Summary

Until recently, AFT technology has not kept pace with patient demand. Today, the improved technique that combines the VASER Lipo and Shippert Tissu-Trans® systems revolutionizes instrumentation and procedure, addresses cost issues associated with large volume fat transfer procedures, caters to patient requests for more natural fillers, saves time, significantly reduces lipocyte trauma, and standardizes the procedure to allow the physician to have confidence in the mechanical aspect and outcomes of the procedure. The VASER Lipo System and Shippert Tissu-Trans® products work together to create the ultimate body sculpting system. This is truly the next generation of body contouring, simplifying and eliminating numerous timely and messy steps involved in current AFT procedures

Bios

John A. Millard, MD

John A. Millard, MD is board certified by both the American Board of Plastic Surgery and the American Board of Surgery. He received his Doctor of Medicine degree from Georgetown University School of Medicine and completed both a surgery and plastic surgery residency. Dr. Millard is nationally and internationally renowned for his expertise in breast and liposuction procedures and was a pioneer of the VASER® Hi Def procedure in the United States. Dr. Millard has been named one of the world's top cosmetic surgeons by Tatler's 2008 Beauty & Cosmetic Surgery Guide.

Ronald D. Shippert, MD

Ronald D. Shippert, MD was one of the original four Cosmetic Surgeons that founded the American Academy of Cosmetic Surgery, first known as the American Society of Cosmetic Surgeons. Dr. Shippert received his Doctor of Medicine degree from the University of Illinois School of Medicine, and completed a five year residency in Otolaryngology and Facial Plastic Surgery at the University of Missouri. He practiced Cosmetic Surgery for 25 years before retiring to pursue his interest in medical device invention. Dr. Shippert currently holds over 30 medical/surgical patents and is the CEO and Head of Research and Development for Shippert Medical Technologies Corporation. He has held many past appointments including Chairman of several Academy Committees and as a Cosmetic Surgery Board Examiner. He now utilizes his education and experience to produce innovative products that save Cosmetic and Plastic Surgeons both time and money.

Sources

1. Neuber F. Fettransplantation. Chir Kongr Verhandl Dtsch Ges Chir. 1893;22:66.
2. Illouz YG. L'avenir de la reutilization de la graisse apres liposuccion. Rev Chir Esthet Lang Franc. 1984;9:36.
3. Shippert RD. Autologous fat transfer: eliminating the centrifuge, decreasing lipocyte trauma and establishing standardization for scientific study. Am J Cosmet Surg. 2006;23:21-27.
4. Gutowski KA and the American Society of Plastic Surgeons (ASPS) Fat Graft Task Force. Current applications and safety of autologous fat grafts: a report of the ASPS Fat Graft Task Froce. (In print) 2009.
5. Jewell ML, Fodor PB, de Souza Pinto EB, Al Shammari MA. Clinical application of VASER-assisted lipoplasty: a pilot case study. Aesthetic Surg J. 2002; 22:131-146.
6. Sherman MP. VASER lipoplasty. Aesthetic Trends & Technologies. May 2008.
7. DiGiuseppe AD. Ultrasound-assisted lipoplasty for face contouring with VASER. In: Shiffman MA, Giuseppe AD, eds. Liposuction: Principles and Practice. New York, NY: Springer Berlin Heidelberg; 2006:245-253.
8. Cimino WW. VASER-assisted lipoplasty: technology and technique. In: Shiffman MA, Giuseppe AD, eds. Liposuction: Principles and Practice. New York, NY: Springer Berlin Heidelberg; 2006:239-244.