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Euro Surgery 2018: Safety evaluation of vaser in liposuction surgery for body contouring improvement- Felipe Massignan, Advanced Nucleus in Plastic Surgery

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Historically, many approaches have been used to remove adipose tissue during liposuction. All through the normal refinement process, upgrades were accomplished by refining different parts of the methodology, for example, careful procedure, cannulas and the utilization of adjuvant devices. “In this perspective, it is a stroll without an end goal”. There are no specific goals, only goals to overcome. Traditional liposuction still faces the problem of being often a strenuous procedure and considered by some surgeons with as a technique without much refinement. In this sense, any initiative capable of generating load reduction and mechanical stress is a potential optimizer or results. The third-generation ultrasonic device VASER® (vibration amplification of sound energy at resonance), is intended to bring greater safety and satisfactory results, especially in the quest for higher definition and superficial liposuction. Methodology& Theoretical Orientation: A retrospective study was performed by Analyzing the medical records of patients who underwent liposuction procedure to improve body contour with the aid of VASER®, from January 2015 to June 2017, at Santa Monica hospital Centre. Surgical complications were evaluated and compared with the available medical literature. Conclusion & Significance: The medical literature, as well as our analysis, seems to demonstrate that the use of VASER® in liposuction procedures for improving body contouring presents as a safe approach with low rates of complications. The potential risks of using an ultrasonic device, such as overheating leading to tissue ischemia, are mostly believed as result of inappropriate device use.

Introduction:

Liposuction is routinely employed by plastic surgeons concerned with removing subcutaneous adipose deposits in various areas in the body to improve figure flaws and create a more balanced physique. It is one of the most commonly performed surgical procedures in aesthetic plastic surgery. In 2012, suction lipectomy was the second most frequently performed cosmetic surgical procedure, with 313,011 patients undergoing lipoplasty. In the past 15 years, liposuction has seen a 77% increase in its number of surgeries performed. Furthermore, suction lipectomy is the most common aesthetic surgical procedure performed in men. Indeed, liposuction consistently ranks among the most common aesthetic surgery procedures.

All of the technologies effectively contour excessive fatty deposits. The ultimate goals/holy grail of new technologies is often to remove excess adipose tissue while providing concomitant skin tightening. The benefits of a technique that contracts skin, without lengthy incisions for skin excision cannot be understated. The ideal liposuction device would be capable of optimizing several processes, simultaneously. First, the device removes excess fat without compromising the viability of the overlying skin envelope. Second, the soft tissue envelope contracts around the area of aspirated adipose tissue. Third, the device is safe and applicable for use on patients under local tumescent anesthesia. Fourth, the device results in minimal bruising and swelling, leading to a shorter postoperative recovery period.

Historical Perspective

The first known attempt at removal of subcutaneous fat through a small incision was performed by French surgeon Charles Dujarrier in 1921, who employed a sharp uterine curette and operated on the calves of a Folies Bèrgere dancer. The procedure was successful in fat removal; however, it eventually resulted in the amputation of a leg due to injury to the femoral artery.

Decades passed before new reports to contour fat were published. In 1972, there were further official reports and/or presentations of utilizing medical instruments primarily for removal of subcutaneous fat. German surgeon, Joseph Schrudde, reported on his 8-year experience with the technique of “lipexheresis” at the International Society of Aesthetic Plastic Surgery meeting in Brazil.

Current Devices

Traditional suction-assisted lipectomy

During the late 1970s and early 1980s, a number of surgeons were concurrently contributing to the technique and technology that later became traditional liposuction. Until that time, surgeons were using sharp curettes, which led to several unwanted complications, including excess bleeding, contour irregularities, lack of overlying skin contraction, seroma formation, and even frank skin necrosis. In 1977, brothers Arpad and George Fisher were the first surgeons to describe adding suction to assist the process of fat extraction.26 The Fisher brothers utilized a sharp instrument connected to a suction device, which led to increased efficiency of fat removal; however, the complication rate remained high. Therefore, the technique was not widely adopted.

High-intensity focused ultrasound (HIFU) delivers focused, high-intensity ultrasonic energy to deep subcutaneous tissue. This effectively produces heat capable of ablating adipose tissue and thermally modifying collagen. The optimal HIFU frequency and intensity for body sculpting, which is capable of disrupting adipocytes and contracting collage fibers to tighten skin, is 2 MHz and >1,000 W/cm2, respectively.

Future Directions:

The "holy grail" for body-sculpting technology is noninvasive technologies that minimize tissue morbidity, decrease downtime, and increase skin contraction/tightening, which lessens the need for skin excision by way of surgical intervention. This has led to a new industry: noninvasive body contouring. The technology and products are beyond the scope of this liposuction technology update report; however, these nonsurgical adipose reducing techniques are on the horizon and available. The indications and outcomes are completely different than liposuction, and therefore, are not comparable.

The emerging technologies are unified in the goal to decrease subcutaneous fat deposits while providing dermal tightening. Additionally, these instruments aim to provide this result in a single use, minimally invasive application. While all of these emerging technologies fall short in achieving superiority over one another, they seemingly all have the same side-effect profile, which includes pain and surface irregularities. There is continued interest in modifying the technique by adding technologies with energy to optimize skin tightening and fat emulsification. Furthermore, recognizing the existence of adipose-derived stem cells and the capability of autologous fat grafting has led to the desire to study harvesting/liposuction techniques to optimize graft survival.

Conclusion:

Liposuction technologies have significantly advanced over the last generation. Although liposuction continues to be one of the most widely performed cosmetic surgical procedures worldwide,5 the procedure is a relatively "young" operation in surgical terms, with the first descriptions of the modern technique occurring in the 1980s.2 Although only in existence for roughly 30 years, the procedure has quickly become one of the most commonly performed cosmetic procedures worldwide. Numerous machines/systems exist. No one system has definitively proven to be superior to the other. Liposuction is a safe and reliable method of removing subcutaneous fat in order to create a more harmonious silhouette in a disagreeable biological condition caused by excess fat deposition in relatively common distribution patterns.