

Smartlipo™ Improves Male Gynecomastia Outcomes with Minimal Scarring

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Introduction: Liposuction is currently one of the most frequently performed invasive cosmetic surgical procedures. Although effective in removing localized fat, liposuction and other invasive fat removal procedures do not tighten skin and are associated with significant downtime, operator effort, bleeding and bruising. The development of laser lipolytic devices has been a major advance in ease of use, reducing downtime, increasing skin contraction, and lowering the frequency of adverse effects in fat removal.

Currently 36% to 40% of men have gynecomastia (Carlson 1980). Most cases involve excessive glandular development, an enlarged subareolar region, and adipose cells. Obesity complicates gynecomastia because glandular breast tissue is interwoven with enlarged adipose cells, leading to pseudogynecomastia (Schafer 2005).

The use of laser-guided liposculpture has gained momentum for removing adipose and glandular tissue in gynecomastia and causing skin contraction. Although direct excision has been the standard technique for fat removal, this approach is often accompanied by perioareolar scars, skin laxity, and other adverse events. The purpose of this study is to evaluate the efficacy and adverse effects of laser-guided liposculpture for the removal of glandular and adipose tissue in gynecomastia. The protocol of this study has been introduced by the author (Schafer 2005).

Cynosure's Smartlipo™ is the first and only commercially available laser-guided liposculpture device. This revolutionary yet minimally invasive device disrupts adipose tissue with a high peak-powered laser that both sculpts body contours and tightens skin. Compared with current treatment options, the Smartlipo can more easily treat fibrotic and vascular areas, offering reduced downtime and fewer adverse effects.

The mechanism of laser-guided liposculpture has been described by Goldman (2006). A 1064-nm Nd:YAG laser disrupts adipocytes through thermal and photomechanical effects. When adipocytes absorb laser light energy, they

convert it to thermal energy which causes the fat cells to expand their volume and rupture. Small blood vessels are also destroyed by coagulation and skin is tightened through tissue coagulation resulting in stimulation of new collagen formation. Based on the author's experience, laser-guided liposculpture can be used in various areas of the body and face, including the mandibular border, sub-mental region, upper and lower abdomen, back, flanks, hips, love handles, pubic area, inner and outer thighs, buttocks, knees, ankles, and breasts.

Methods

The breasts of 27 men (aged 30 to 35 years) with gynecomastia were given a single treatment with the liposuction and the SmartLipo device for laser assisted lipolysis. Most patients were overweight but in generally good health with no history of significant medical problems. Urinalysis and complete blood count were performed before surgery. Patients were restricted to a low sodium diet with no alcohol consumption.

Figure 1



The procedure and expected outcome were explained in detail to each patient during presurgical consultation. Breast areas to be treated were mapped, with the innermost concentric circle indicating the deepest subcutaneous adipose tissue. After IV sedation with meperidine and midazolam, a 1-mm incision was made at the inframammary crease of the

axilla.

A cannula was introduced subcutaneously to infuse a solution of saline, lidocaine, epinephrine, and sodium bicarbonate. The purpose of this solution (1 liter per breast) was to induce hypertumescence, making the treated tissue less dense for easier removal. Warming the tumescent solution avoided the pain produced by the difference in temperature between the fat tissue and infiltrate.

Fifteen to 20 minutes were allowed for the anesthesia to diffuse and for vasoconstriction to occur. The areas to be treated were morselized using the Blugerman cannula or the Microaire-power cannula for 3-5 minutes on each side until soft. The Smartlipo system was then used on the subareolar bud and remaining fatty and fibrous breast tissue. Once the adipose tissue in the subdermal layers showed minimal resistance to the cannula, energy was then delivered to the dermal layer to create tissue coagulation and skin contraction.

The Smartlipo™ uses ultrashort pulses and very high peak power. The laser energy is conducted to subcutaneous tissue by a 300-micron optical fiber threaded through a 1-mm diameter stainless steel micro-cannula. When the cannula housing the fiber is inserted in the incisions made for anesthetic administration. The distal portion of the fiber optic was extended 1- 2 mm beyond the end of the cannula during treatment. The laser is activated and the cannula is moved slowly and evenly at various depths of the adipose tissue, including the subdermal layer. A He:Ne laser source emitted at the tip of the fiber provided transillumination that permitted the physician to visualize the location the tip of the fiber optic during treatment.

When treatment was complete, components of the destroyed adipocytes were removed by negative pressure (350-450 mm Hg) through a 2.5- to 3-mm cannula. The small incisions did not require sutures.

After the removal of the destroyed adipocytes, the patients were examined for symmetry between the treated breasts. Diluted triamcinolone (Kenalog) was injected beneath the nipples to reduce swelling. Patients were garmented with a compression and vest to minimize swelling and improve shaping. Nipples were covered with Tegaderm to minimize chafing. Patients were awakened in the recovery room and discharged when vital signs were stable. Patients were evaluated on day one and then at one week, two weeks, one month, and three months after surgery, while a subset of patients was evaluated six months post treatment. Patients

were photographed before the procedure and at follow up visits. Photographs were not graded and measurements were not made on patients before or after treatment. Efficacy and adverse effect assessments were qualitative and based solely on clinical observations. Patient satisfaction was graded on a scale of 0 to 10.

Results

Postsurgical photographs showed reductions in breast tissue volume and more masculine-appearing chests compared to presurgical photographs. Clinical examples are shown in Figures 1-3.

Swelling and nipple circumference decreased during the 6-month follow-up period. Patient expectations for outcome were met, satisfaction was generally 8 or higher, and patients said they would recommend the procedure to friends.

Scarring was limited to a faint 2mm incision at the anterior axillary line. Neurovascular damage to the areola or surrounding tissue was not observed.

Laxity of skin was significantly reduced and skin contraction was observed over the six month period.

Figure 2



Discussion

The photographs and patient satisfaction data show that the minimally invasive Smartlipo procedure reduced breast tissue in gynecomastic men with skin contraction, minimal scarring and without a chest or areolar incision. The treating physician removed only as much glandular and adipose tissue as needed without damaging the epidermis, musculature, or neurovasculature. The result was an attractive masculine appearance and a high level of patient satisfaction in all patients. The effect of the laser within the subcutaneous

bed creates a more homogenous effect which results in soft palpable tissue. This provides a much smoother appearance that has significantly reduced revision rates to less than 1%.

Glandular gynecomastic tissue has traditionally been removed by direct excision (Barksy, Pitman, Pitanguy) which, unlike the tumescent lipolytic procedure with the Smartlipo device, has resulted in periareolar scars (Schafer 2005). With power-assisted cannulas and liposuction with hypertumescent infiltration, revision rates have been reduced to 1% and all surgeries are all closed (Schafer 2005). The Smartlipo tends to reduce and eliminate the sub areolar bud and the need for direct areolar incision and excision of the tissue is not necessary.

Goldman (2006) has reported the efficacy of laser-guided liposuction in the destruction of fatty tissue and the stimulation of new collagen formation in the neck and jowls (Goldman). Ichikawa and colleges have provided histologic evidence of the effects of the Smartlipo on human fat tissue. It is difficult to compare the results of the present study with those of these earlier studies due to difference in study design, evaluation techniques, and populations analyzed. However, the two earlier studies and the present study show that the use of laser-guided lipolysis results in cellular lysis and collagen neoformation.

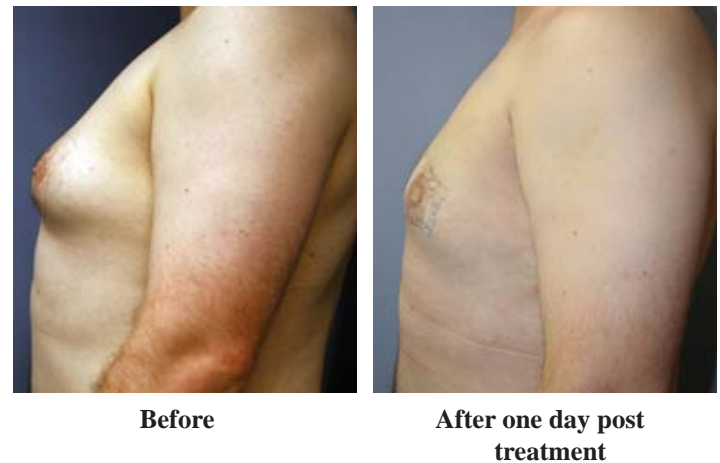
The author believes that a 6-W, 100- μ s pulsed laser at 40-Hz repetition rate and 150-mJ energy could also be used for laser-guided liposculpture of most anatomical regions. With the 10 -W system, the power, laser action time, or both may be decreased for the treatment of small or superficial areas.

The encouraging results of this study justify additional investigations to evaluate the long-term efficacy and safety of laser-guided liposuction in body contouring.

Conclusion

Laser guided liposculpture with the Smartlipo™ is an effective adjunct to the treatment of gynecomastia. The application of the laser creates a smoother result with a significant decrease in revision rates and results in minimal scarring.

Figure 3



References

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