

Noninvasive Abdominoplasty



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KEYWORDS

- VASER • BodyTite® • Morpheus8® • Radiofrequency micro needling • Liposuction • UAL
- Ultrasonic assisted lipoplasty • Abdominoplasty

KEY POINTS

- New energy-based technologies may supplant invasive surgery for mild to moderate skin laxity.
- New energy based technologies may reduce the extent of surgery and resulting scars.
- Access to effective and safe energy based technologies provides a wide range of options for consumers interested in noninvasive and minimally invasive techniques.
- New energy based technologies can have a reasonable return on investment by increasing referrals for traditional body-contouring procedures.



Video content accompanies this article at <http://www.plasticsurgery.theclinics.com>.

INTRODUCTION

For decades in the senior author's practice, the most frequent aesthetic surgery request has been for improvement of abdominal contour. Patient presentations vary from thin with wrinkles to obese with a hanging pannus and oversized girth. Additionally, patients are frequently concerned with oversized flanks and backs, and sagging mons pubises and buttocks. Once surgical options, which involve removal of excess skin and fat, are discussed, patients' responses range from abhorrence to surgery and/or scars to acceptance of whatever incisions it takes to obtain the desired result. Most inquirers for contouring of the torso not only welcome but are intrigued by noninvasive and minimally invasive treatments to supplant or augment anticipated or revision abdominoplasty.

Patients readily grasp that in the process of correcting their abdominal contour deformities, their entire torso can be recontoured. To obtain the optimal result, the authors favor oblique flank-plasty and lipoabdominoplasty supplemented with ultrasonic assisted liposuction,

radiofrequency skin tightening, and electromagnetic energy muscular enhancement.

Comprehensive contouring of the torso involves up to 8 interactive tools. Complex and lengthy excisions are complimented with preoperative weight reduction and intraoperative energy-based technologies.

1. *Human choriongonadotropin (HCG)/500 calorie a day diet* to reduce high body mass index^{1,2}
2. *VASER* ultrasound-assisted lipoplasty to de-bulk fat, undermine flaps, and harvest adipose tissue^{3,4}
3. *BodyTite* bipolar radiofrequency to tighten subcutaneous tissue⁵
4. *Morpheus8* bipolar radiofrequency to tighten and rejuvenate skin⁶
5. *Lower body lift* with abdominoplasty when flank laxity is absent
6. *Oblique flankplasty with lipoabdominoplasty (OFLA)* to narrow a sagging waist, tighten the torso, and lift the buttocks and lateral thighs⁷
7. *J Torsoplasty with breast reshaping* to complement an OFLA or lower body lift⁸

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8. *EmSculpt* high-frequency electromagnetic energy for muscular development and toning⁹

This article now focuses on noninvasive and minimally invasive energy-based treatments that supplant, minimize, or compliment abdominoplasty. For optimal delivery of patient care and to stay competitive, plastic surgeons should embrace appropriate supportive technologies.

Nonplastic surgeons often working in noncertified clinics and spas are usurping patients through marketing of energy-assisted technologies for improved abdominal contour. Their message is that advanced, expensive technology offers scarless, painless, rapid recovery and a safer alternative to abdominoplasty. Having only 1 or 2 machines, these clinics are tempted to expand their limited therapeutics beyond the appropriate indications. Given their depth of training in traditional body contouring techniques, plastic surgeons are in the best position to provide quality care using these newer technologies. This is clearly in the best interest of our patients. Based on our conscientious effort to sift through competing manufacturers' claims and clinical cases, this article presents the technology we

have chosen and how we apply it into our patients concerned about their torso aesthetics.

**EXTERNAL APPLICATION OF ENERGY
(SculpSure, TruSculpt)**

The most popular noninvasive application of energy is the external freezing of adipose. Aware of the saturation of Coolsculpt machines in the Pittsburgh market, and its occasional side effect of paradoxical adipose hypertrophy, we have purchased both the laser (SculpSure) and radiofrequency (TruSculpt) alternatives. Our TruSculpt from Cutera is too new to comment on. However, the Hurwitz Center has about an 80% patient satisfaction in more than 50 patients with using SculpSure. The set of three 20-minute applications of the penetrating CO₂ laser with immediate skin cooling requires mild sedation, while obtaining subtle improvements. We have had no incidences of paradoxical adipose hypertrophy in our small series.

Frustrated body builders have an alternative to enhancing strength and tone to both core and extremity muscles (**Fig. 1**). We are applying EmSculpt to early postoperative abdominoplasty and VASERlipo patients and have seen encouraging

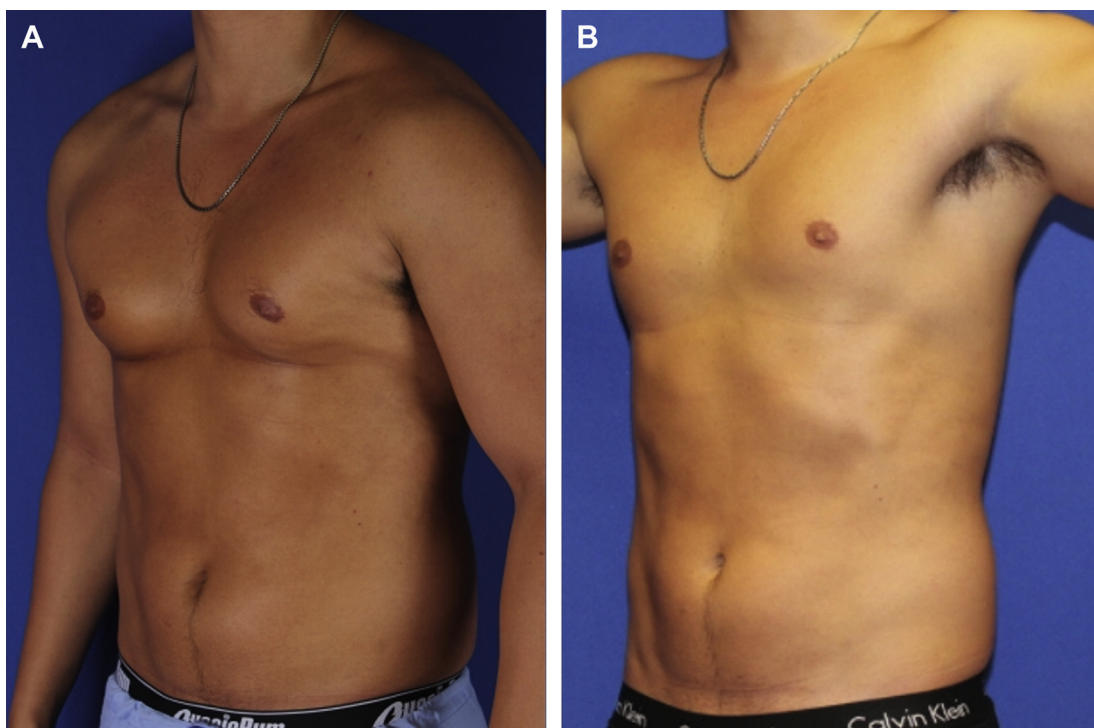


Fig. 1. The effect of EmSculpt on a muscular 27-year-old man. (A) Pretreatment left anterior oblique view of the torso. (B) Three months after four 40 minute applications of EmSculpt shows mild decrease in subcutaneous adipose and increased muscular definition of the rectus abdominus muscles.

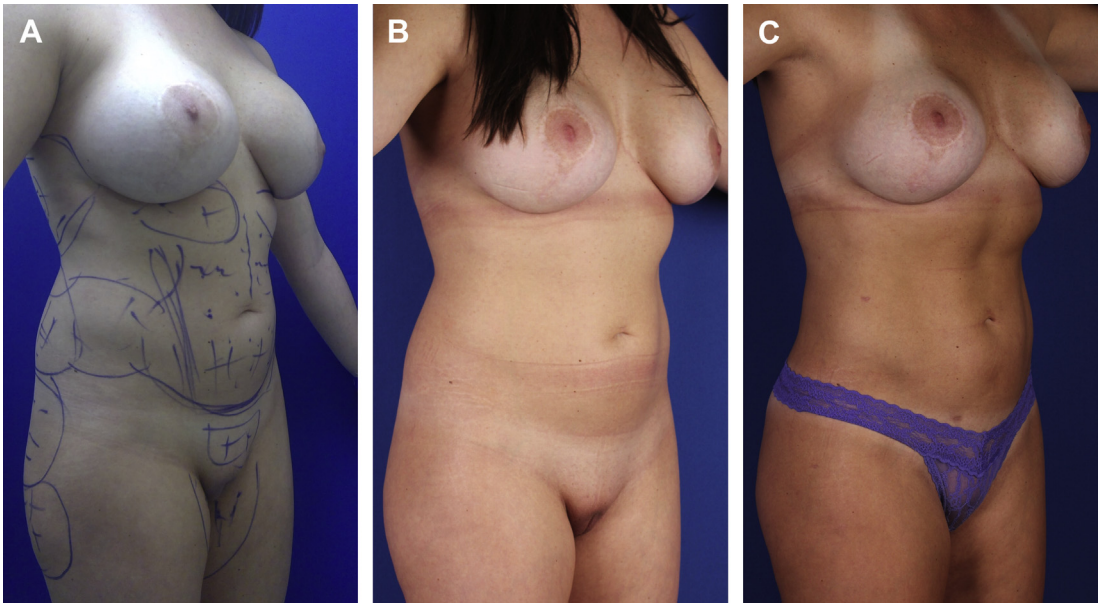


Fig. 2. Combining VASERlipo with BodyTite for a minimally invasive abdominoplasty in a 27-year-old overweight woman, along with VASERlipo of her flanks and saddlebags and lipoaugmentation of her lateral gluteal areas. Three months later, she underwent 4 EmSculpt high-frequency electromagnetic energy treatments. Right Oblique views. (A) Presenting condition with preoperative markings for VASERlipo, BodyTite. (B). Presenting condition without surgical markings. (C) Four months after, she has a smoothly sexy proportional and naturally muscular appearance.

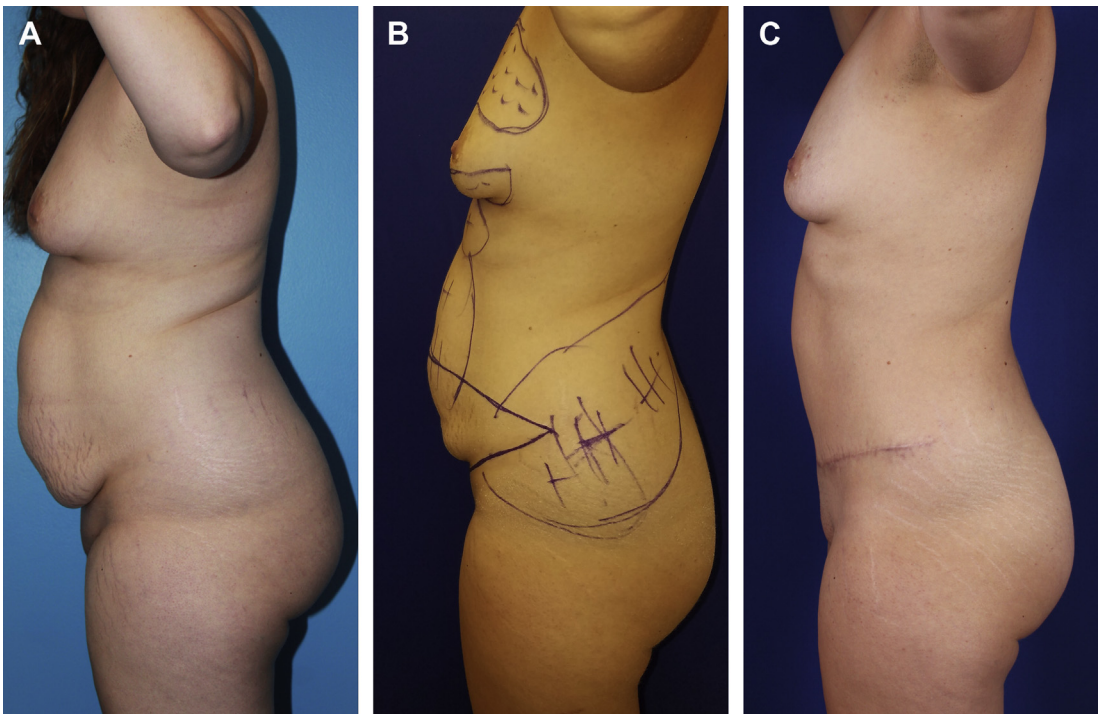


Fig. 3. Reduction of obesity with HCG/500 calorie a day diet before lipoabdominoplasty and VASERlipo of the flanks as seen on left lateral views. (A) Presentation of 32-year-old woman with a body mass index of 31 for abdominoplasty and repair of the diastasis recti. (B) After a loss of 30 pounds, the patient is marked for lipoabdominoplasty and VASERlipo of the flanks. Notable is the reduction of abdominal protuberance and absence of back rolls. (C) Two years after her lipoabdominoplasty, VASERlipo of the flanks and 150 mL lipoaugmentation of the breasts.

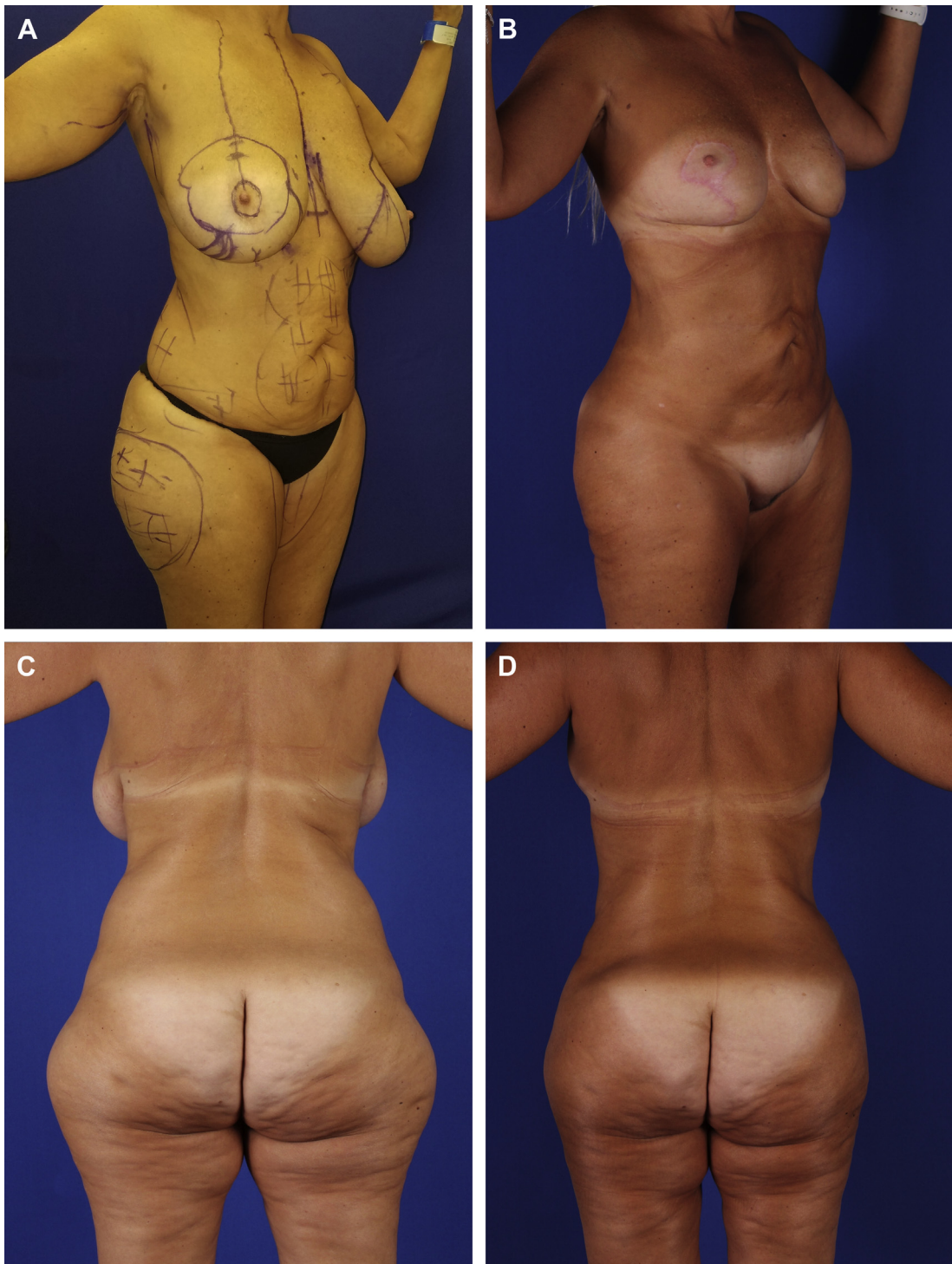


Fig. 4. Combining VASERlipo with BodyTite for a minimally invasive abdominoplasty, and reduction of saddlebags, medial thighs, and flanks in a 64-year-old woman having a circumvertical, superior pedicle breast reduction. (A) Before. (B) Six months after (right anterior oblique view). (C) Before. (D) Six months after (posterior view). Her abdomen, medial thighs, and saddlebags were both bulging with adipose and lax skin; hence the VASERlipo followed by BodyTite, except for the flanks which did not have loose skin. After images show complete resolution of her saddlebags and medial thigh bugles without loose skin. Her generalized wavy loose abdominal skin is being treated with Morpheus8.

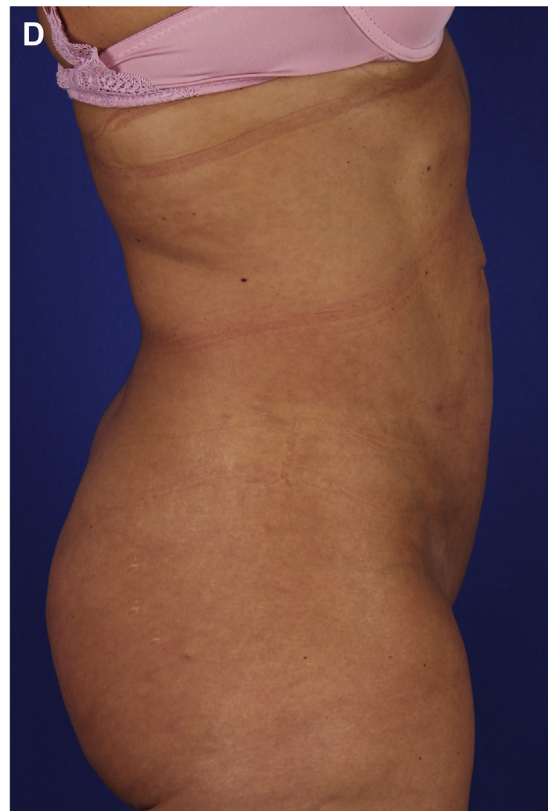
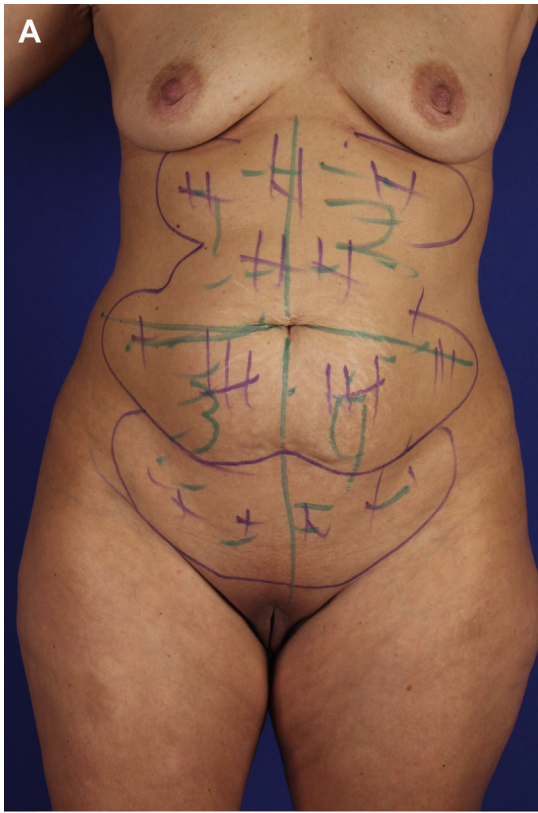




Fig. 6. Combining VASERlipo with BodyTite for a minimally invasive abdominoplasty in a 32-year-old with depression superior to her ptotic mons pubis and VASERlipo of her flanks. The surgeon performed implant exchange and Wise pattern mastopexies, while assistants performed the minimally invasive surgery. (A) Before presenting condition with presurgical markings for the mastopexies and VASERlipo and BodyTite of anterior abdominal wall and VASERlipo of her flanks and (B) 6 months after right anterior oblique images. She has a “gap” deformity that has annoying adipose-laden skin laxity, but not enough to warrant an abdominoplasty. She receives a flat, smooth abdomen with a raised mons pubis. Her smaller breasts with raised nipples are no longer ptotic.

improvement in core strength and shape (Fig. 2). Abdominal etching can also be created naturally through muscular development.

Through the use of electromagnetic external pulses including 6 treatments of 30 minutes per treatment over 3 weeks duration, the electromagnetic external pulsations has resulted in stronger and more toned abdominal and gluteal muscularity in both young patients and postabdominoplasty patients with 85% satisfaction (see Fig. 1). Should patients be dissatisfied with the technique, we provide a 50% credit of their cost to other Medi

Spa services or plastic surgery. EmSculpt has recently also been approved by the US Food and Drug Administration for extremity muscles.

PREOPERATIVE RAPID WEIGHT LOSS HUMAN CHORIOGONADOTROPIN 500 CALORIES A DAY 6-WEEK DIET

Overweight and obese individuals, especially those with excessive abdominal girth, requesting abdominoplasty are at risk for delayed wound healing and poor aesthetic results. Rather than

Fig. 5. Combining VASERlipo with BodyTite for a minimally invasive abdominoplasty in a 54-year-old woman. (A) Before presenting condition with presurgical markings for VASERlipo and BodyTite of anterior abdominal wall and (B) Four months after frontal images. (C) Before presenting condition with presurgical markings and (B) Four months after right lateral images. She has a “gap” deformity that has annoying adipose laden skin laxity, but not enough to warrant an abdominoplasty. She has a flat, smooth abdomen with naturally appearing muscular etching.

rejecting these patients, for the past 14 years our center has offered the HCG 500 calories per day diet. This diet consists of a high-protein diet and HCG injections for 6 weeks.^{1,2} The HCG hormone encourages visceral fat metabolism and reduces hunger for loss of nearly a pound a day. Preoperatively treating hundreds of patients, more than 80% have lost enough weight to successfully proceed with extensive body contouring operations. The demonstrative patient is a 32-year-old woman who lost 30 pounds on the HCG program to lower her body mass index from 32 to 27 (**Fig. 3**). Her lip-oabdominoplasty included imbrication of her diastasis recti and umbilical herniorrhaphy, plus VASERlipo of the flanks and lipoaugmentation of her breasts. Two years later, she has gained only 5 pounds and maintained her figure (see **Fig. 3**).

BIPOLAR RADIOFREQUENCY (BodyTite, MORPHEUS8)

Radiofrequency devices offer patients with mild skin laxity a minimally invasive option. It also

expands the patient population by allowing the plastic surgeon to treat those with mild laxity who either will not consider surgery or whose deformity is as of yet too mild for surgical correction. BodyTite bipolar radiofrequency tightening offers this technology. After entry through a 14-gauge needle stick, a blunt 3-mm probe on a scissor-like bipolar handpiece emits a steady stream of energy directed to the disc receiving electrode in contact with the skin surface (**Video 1**). The probe is passed forward and the energy is applied on the slow back stroke for multiple passes until predetermined external and internal temperature limits are achieved. Preset temperature high limit cutoffs prevent overheating. Care in proper tissue level placement prevents burns. The end points are observable skin shrinkage, achieving designated high temperature levels, and predetermined levels of kilojoules per area. Liquefied fat is then evacuated by gentle liposuction. Incompletely damaged collagenous supporting connective tissue heals in a shortened and rejuvenated state. When properly performed, min-

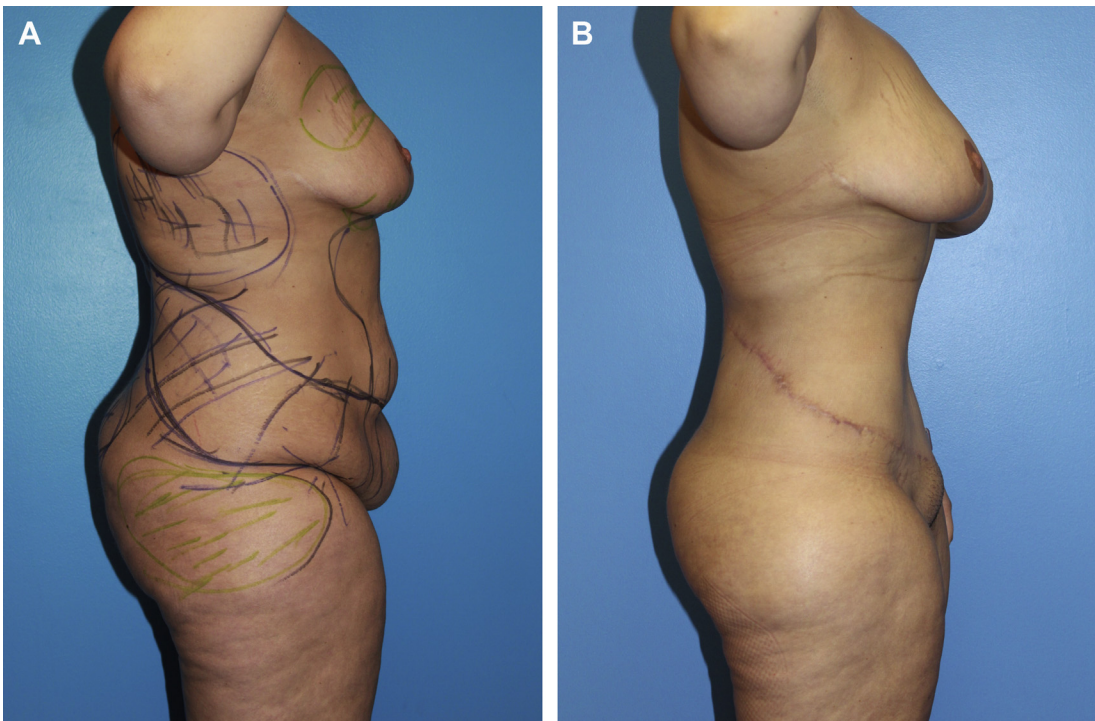


Fig. 7. Combining OFLA with strategic VASERlipo of the lateral chest, lower back with lipoaugmentation of the breasts and lateral gluteal areas to achieve an incredibly narrow and tight skin waist in a 28-year-old overweight woman, who desired to be as curvaceous as possible. (A) Before presenting condition with surgical markings for OFLA and VASERlipo and lipoaugmentation and (B) 5 months after right lateral views. Her early OLFA scars are fading within a smoothly transitioned and broadly narrowed waist. VASERlipo, which included the Flankplasty donor site and undermining neighboring areas, provided 1200 mL of processed fat for her lateral buttocks and breasts.

imal scar tissue develops, which allows for repeat BodyTite treatments to incrementally tighten tissues. Patients are informed at the outset that a second treatment may be needed for optimal skin tightening.

Sun-damaged, severely aged, and wrinkled skin may become more wrinkled after BodyTite. The immediate application of Morpheus8, a coated tip radiofrequency enhanced percutaneous microneedling, smooths out the skin. Morpheus8 has a comfortable pistol grip hand-piece with 24 retractable pins that penetrate 2 to 4 mm below the skin surface to damage deep and subdermal collagen (Video 2). Over the next several months of healing, the retracted skin is less wrinkled. InMode has termed the combination of BodyTite and Morpheus8 Embrace.

The next patient demonstrates the synergism of VASERlipo and BodyTite in a 54-year-old woman who requests a flatter abdomen, narrower waist, and elimination of saddlebags (Fig. 4). While accepting the scars for her breast

reduction to treat symptomatic macromastia, she refused an abdominoplasty owing to pain, down time, and lengthy scar. While 1 surgical team performed her breast reduction, a second team performed VASERlipo of her abdomen, medial thighs, and saddlebags followed by BodyTite of abdomen, medial thighs, and saddlebags. VASERlipo of her flanks did not require a change to prone position because a large gel roll was placed under her midline back. With adequate rotation of the operating room table, abdominal viscera descends away from the liposuction with each flank could be fully visualized and palpated for smooth evacuation of excess adipose. These tightly packed flanks did not need BodyTite. The complex procedure was performed in less than 2 hours as an outpatient under laryngeal mask anesthesia.

The next patient is a 49-year-old woman with a history of 2 pregnancies who desires correction of her oversized and sagging abdomen. She refused abdominoplasty and elected to undergo VASERlipo with BodyTite and Morpheus8. After 500 mL

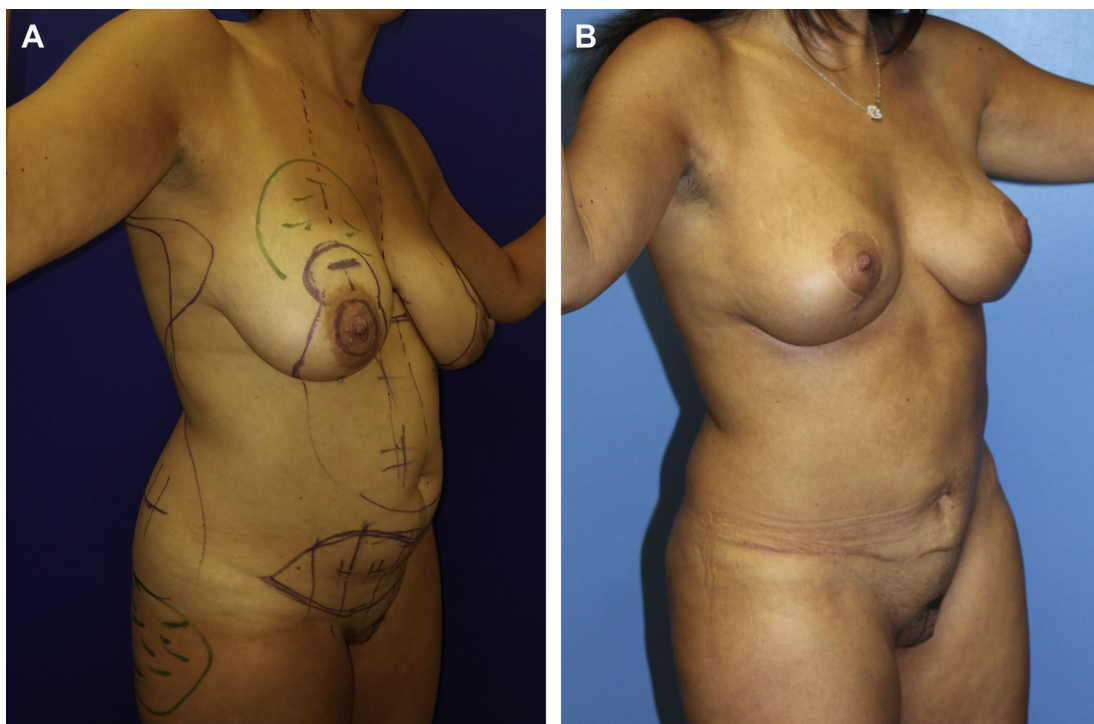


Fig. 8. Combining VASERlipo with BodyTite of the epigastrium and lateral torso with a limited abdominoplasty in a 36-year-old mother with a depressed C-section scar, and VASERlipo of her flanks and fat grafting of her lateral buttocks and superior poles of the breasts. (A) Before presenting condition with presurgical markings for the mastopexies, limited abdominoplasty and VASERlipo and BodyTite of anterior abdominal wall and VASERlipo of her flanks and (B) 6 months after right anterior oblique images. Her epigastrium is not loose enough to complete a full abdominoplasty with a low-lying scar, but loose enough to need BodyTite. She receives a flat, smooth abdomen to her mons pubis. Her smaller breasts with raised nipples are no longer ptotic. Her lateral breast roll was removed.

of tumescent (saline, xylocaine, and epinephrine) was infused into the subcutaneous tissue of her abdomen, a 3-ring VASER probe was applied at 90% for 4 minutes and 30 seconds. Then BodyTite was applied for a total of 24 kJ with subsequent evacuation of 300 mL of emulsion through liposuction. Finally, 2 passes of Morpheus8 was performed to reduce dermal laxity and stria. Her early postoperative swelling was reduced by weekly Hyvamat electrophysiologic and VASER-shape ultrasonic lymphatic massage. **Fig. 5** shows her result at 3 months with additional contraction expected with time.

A younger patient with sagging skin and a ptotic mons pubis also declined a lipoabdominoplasty at the time of her implant exchange with mastopexy. Instead, she underwent VASERlipo of the abdomen followed by BodyTite that extended across the mons pubis (**Fig. 6**). Four months after the procedure, she has a reduced and well-contoured abdomen and mons pubis.

VASERlipo OF REGIONS NEIGHBORING OBLIQUE FLANKPLASTY AND LIPOABDOMINOPLASTY

Strategic VASERlipo evacuation of adipose from the lateral chest, middle and low back, and epigastrium extends the reach of OFLA to reshape the entire torso. For mild to moderate localized fat deposits, VASERlipo evacuates the fat and undermines the tissues (**Fig. 7**, see [Video 1](#)). Because OFLA disrupts all but the posterior spine adhesences of the torso, closure of the flank and abdomen allows circumferential skin tightening to reveal desirable body contours. Aspirated adipose is filtered to lipoaugment her buttocks and breasts as needed.

EXTENDING THE IMPACT OF A MINIABDOMINOPLASTY

Indicated for abdomens with predominantly infraumbilical excess, limited abdominoplasty without an umbilicoplasty may nevertheless leave behind epigastric laxity. BodyTite corrects the residual epigastric skin laxity to leave an overall tight result (**Fig. 8**).

SUMMARY

Candidates for abdominoplasty present a wide variety of complaints and deformities. Through searches of the Internet and the experience of friends, most patients are aware of many noninvasive and minimally invasive alternatives to open surgery. Moreover, increasing numbers are

presenting with minimal deformity amenable to the limited capabilities of energy delivered alteration of tissues.

Our presentation selects a wide range of clinical scenarios for independent and complimentary use of ultrasonic assisted lipoplasty and both topical and subcutaneous use of bipolar radiofrequency tissue tightening. When adipose bulk needs to be removed, we prefer pre aspiration application of VASER ultrasonic energy to dislodge the fat, followed by BodyTite and then traditional liposuction. Because BodyTite functions best when the connective tissue is naturally stretched to length by the fat cells, we do not perform a thorough aspiration of fat before application. When there is little to no adipose excess or VASER is unavailable, preliminary liposuction is not performed.

Tissue response to properly applied radiofrequency energy is not entirely predictable. Furthermore, patients may have unrealistic expectations of result. Plastic surgeons are responsible to contrast radiofrequency tightening with the effect of more costly traditional excisional surgery. A secondary radiofrequency procedure 6 months later can have an additive effect and is easily executed owing to the limited amount of scarring from the initial procedure. Simply informing patients of the possible need for a secondary BodyTite application emphasizes the uncertainty of results. The secondary procedural cost should be about one-half the charge for the original treatment. This offer further grounds the patient and is economically reasonable. In our practice, secondary BodyTite has been performed in approximately 25% of patients.

As an isolated procedure, BodyTite of 1 or 2 regions is performed in our office operating room under super wet local anesthesia and mild oral sedation. When BodyTite compliments major excisional body contouring, it is performed in the operating room in conjunction with the invasive operation.

The availability and use of VASER and bipolar radiofrequency provide a broad menu of options for the consumer, savvy patient and the artistic plastic surgeon. Despite the high cost of acquisition, this expanded offering is a definite practice enhancement.

DISCLOSURE

Dr D.J. Hurwitz was a paid investigator for InMode from 2010 to 2013, and has unexercised stock options. He has accepted \$5000 in fees for lectures. He has received no editing or direct financial support for this article.

SUPPLEMENTARY DATA

Supplementary data related to this article can be found online at <https://doi.org/10.1016/j.cps.2020.03.005>.

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