

A Report of 736 High-Definition Lipoabdominoplasties Performed in Conjunction with Circumferential VASER Liposuction

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Background: Several innovations and modifications to the abdominal lipectomy procedure have been performed through the years. Despite recent improvements, the lack of natural results, including high scars, navel deformities, and “tense” abdomen, are still challenging. The objective of this study is to present an alternative technique of combined 360-degree truncal liposuction with abdominal definition, abdominoplasty, and neoumbilicoplasty.

Methods: From January of 2005 to June of 2017, 736 VASER-assisted lipoabdominoplasties were performed. Only healthy women with a body mass index below 33 were included. A three-step procedure was performed: (1) truncal liposculpture, (2) dermolipectomy and plication of the rectus abdominis muscle, and (3) neoumbilicoplasty through a butterfly technique. The following included photographs and medical assessment with a mean of 2 years (up to 5 years). A nonstandardized survey was performed to self-evaluate the results.

Results: Six hundred seventy patients answered the survey (91 percent). Six hundred fifteen patients were satisfied with the procedure (91.79 percent). Minor complications were reported: seroma in 7.3 percent, prolonged bruising in 10 percent, and swelling in 18 percent. Neither flap necrosis nor infections were reported. Neoumbilicoplasty was performed in all patients. Additional procedures were required in 4.6 percent.

Conclusions: Ultrasound-assisted assisted lipoabdominoplasty is an alternative lipectomy technique that prevents stigmata of the procedure. The abdominal definition improves the shape and recreates the superficial anatomy. Neoumbilicoplasty shape, form, and choice of its position over the abdominal wall gives significant improvements in results. (*Plast. Reconstr. Surg.* 142: 00, 2018.)

CLINICAL QUESTION/LEVEL OF EVIDENCE: Therapeutic, IV.

The first reported lipectomy was performed as an aid to a hernia repair.^{1,2} In 1899, the term “abdominal lipectomy” was coined.³ Since then, the technique has been evolving, diminishing trauma, lowering mortality rates^{4,5} including those associated with liposuction techniques,⁶ and preservation of perforating vessels.⁷⁻⁹ The current tendency is to combine abdominoplasty and liposuction to improve reproducibility and to yield aesthetically pleasing outcomes^{10,11}; also, there is acceptable evidence of the safety of combining these procedures.¹²

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Nevertheless, results are still far from being consistent or optimal. Several findings stigmatize patients who have undergone abdominoplasty. Lockwood described them as (1) a “tense” appearance in the central abdomen, (2) excess skin and laxity in the lateral and inguinal regions, (3) suprapubic scar depression, (4) upward displacement of the pubic hair, (5) poor waist definition, and (6) hypertrophic and asymmetric scars.¹³ We add to the list (7) “tense” abdomen lacking normal concavities and convexities, (8) short distance between the navel and the scar, (9) umbilical scarring either with larger than normal navel or constricted scar, (10) navel hyperchromia, and (11) residual umbilical hernia (Fig. 1).

The high-definition lipoplasty techniques take advantage of the fat emulsification performed with third-generation ultrasound (VASER; Valeant Pharmaceuticals International, Inc., Quebec, Ontario, Canada) to facilitate extraction, preserve vascularization and improve the long-term aesthetic results.^{14,15} By including this technique

in the abdominoplasty, the natural superficial light and shadows of an athletic and natural abdomen can be achieved and most of these concerns can be prevented. In this article, we present our experience using high-definition techniques for abdominoplasty.

Anatomy

The ideal abdomen is a combination of convexities and concavities following the anatomy of the bones and muscles underneath. There are three areas of concavities recognized as shown in Figure 2.

Neumbilicoplasty

The umbilical scar is the foremost stigma of lipoabdominoplasty. Its appearance changes through life because of aging and pregnancy: stretching, distortion from vertical to horizontal, presence of hernias, and hyperchromia¹⁶ (Fig. 1, *below, left*). These factors and its prime visible location give the umbilicus an important role in abdominal aesthetics.

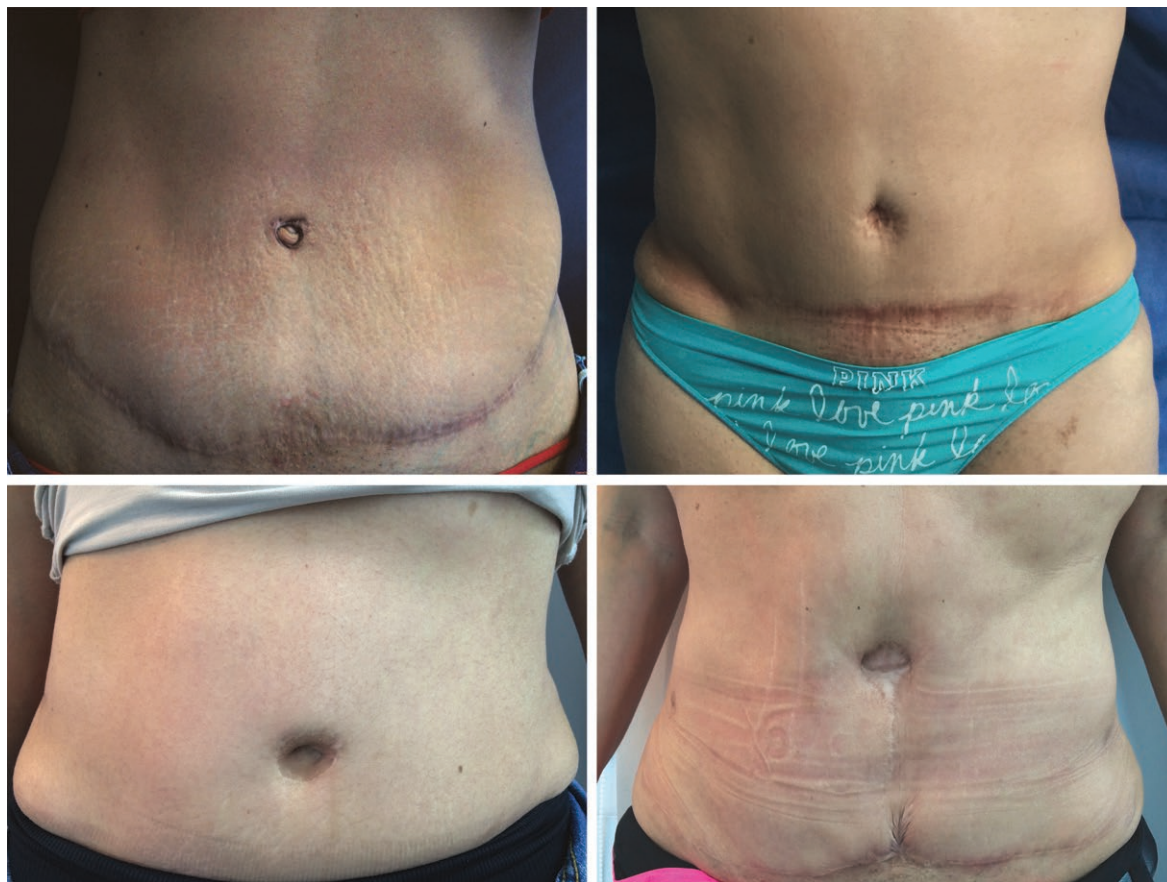


Fig. 1. The five aesthetic pitfalls in abdominoplasty: visible umbilical scar (*above, left*), short distance and/or high scar (*above, right*), hyperchromic navel and/or umbilical hernias (*below, left*), vertical residual scar (*below, right*), and poor waist-line definition (*below, right*).

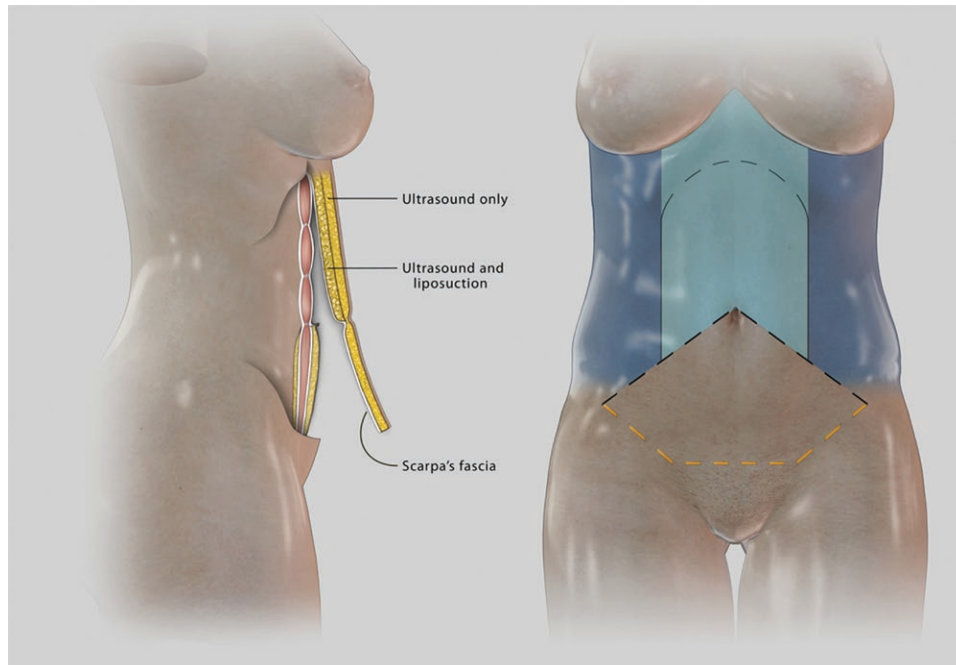


Fig. 2. Areas of concavities: (1) the subcostal area, between the lateral border of the rectus abdominis and the lower costal margin; (2) between the inguinal ligament and the lower border of the semilunar line; and (3) the midline above the umbilicus. Liposuction over the abdominal area (*right*): in *light blue* just deep liposuction, lateral to the rectus abdominis muscle deep and superficial suction. Afterward, level of dissection of the flap (*left*) shows infraumbilical dissection in the sub-Scarpa plane.

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Lipoabdominoplasty affects the navel by changing its position and shape in the abdominal wall.

The first description of umbilical reconstruction was reported in 1905; however, it was not until 1960 that the research focused on improving abdominal contour,^{1,17–21} highlighting the benefits of a lower location of the incision, making the umbilicus smaller and achieving acceptable long-term results.

Umbilicoplasty methods have been widely described,^{22–27} but most use the original umbilicus and relocate it. The standard location of a woman's umbilicus remains controversial. Three main locations have been described:

1. Located 60 percent down the distance of a line between the xiphoid and the pubis.²⁸
2. At the point at which the midline crosses a line between the anterosuperior iliac spines.²⁹
3. Fifteen centimeters measured from the midpoint of the pubic bone upward.³⁰

Methods for localizing the umbilicus with a set distance are not accurate because they fail to consider the longitude of the torso, the patient's

height, and/or the iliac shape. The measurement from xiphoid to pubis is variable; thus, the definition of an “umbilical zone” rather than a single point is more versatile (Fig. 3).

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PATIENTS AND METHODS

From January of 2005 to June of 2017, patients with severe skin laxity were identified as candidates for third-generation ultrasound-assisted lipoabdominoplasty. The patients were classified using Matarasso³¹ type IV, where abdominoplasty with suction-assisted lipectomy is needed. All patients were healthy women, with a body mass index less than 33 kg/m². High tobacco consumers (>10 pack/year) were rejected for surgery. Postbariatric and diabetic patients under poor control (hemoglobin A1C >7 percent) were also excluded.

The Procedure

The third-generation ultrasound-assisted lipoabdominoplasty was performed as a three-phase procedure that includes (1) liposculpture, (2) abdominoplasty, and (3) neoumbilicoplasty. In some cases, the third stage was performed in

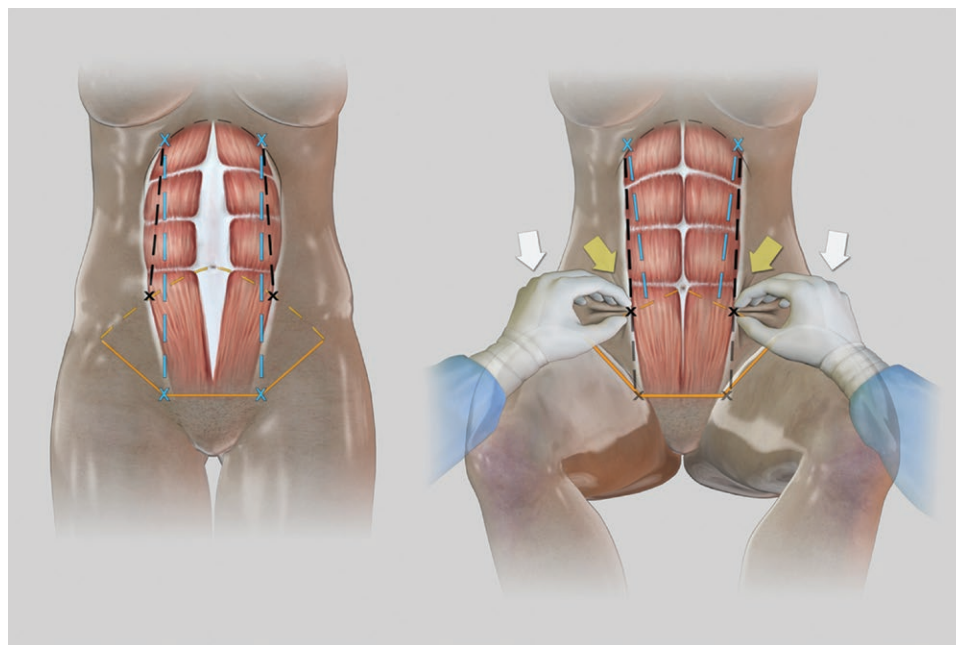


Fig. 3. (Left) Markings for lipectomy flap and prediction of the muscular positioning for liposuction. (Right) Maneuvers for the prediction of the rectus abdominis muscle position after plication and lipectomy. Following the origin and insertion of the rectus abdominis (dashed blue lines) will give us the real position of the muscles after plication. However, to establish the superficial anatomy of the muscles after both plication and dermolipectomy, we perform a pinch-and-pull test (dotted black lines), which is more medial than the original blue dots, predicting the movement of the flap inward and downward.

the same surgical procedure or delayed. All of the procedures were performed by the main author in three clinics in Bogota, Colombia (Dhara Clinic, Santa Barbara Clinic, and Evolution center). All patients signed an informed consent that included a specific authorization for the use of images for academic purposes. This study was performed in adherence to the Declaration of Helsinki and local guidelines for studies in human subjects.

Statistical analyses were carried using IBM SPSS Version 21 (IBM Corp., Armonk, N.Y.) and Epidat Version 4.1 (Consellería de Sanidade, Xunta de Galicia, Spain). The kappa index was used to test interobserver agreement. Statistical significance was defined at a value of $p < 0.05$.

General Considerations

The venous thromboembolism risk was assessed using the Caprini score. Mild compression anti-deep vein thrombosis elastic stockings and low-molecular-weight heparin, enoxaparin (Clexane; Sanofi-Aventis, Gentilly, France), 0.5 mg/kg/day for 6 days, were used in all patients 24 hours after surgery.³² Cephazolin (1 g), ondansetron (8 mg), diclofenac (75 mg), and tramadol (50 mg) were also administered to all patients during the procedure.

Follow-up was performed at 24 and 48 hours and later (1, 2, 3, 6, 12, and 24 months) after surgery. Postoperatively, seroma assessment was performed by the surgeon, using physical examination on every postoperative control.³³ The postoperative evaluation was performed by means of clinical and photographic assessment and a nonstandardized survey for satisfaction index.

The photographic assessment was performed by comparing photographs from patients with reconstructed versus unoperated umbilici. The evaluators were adults from different ages and different social, academic, and economic conditions, and none of them were physicians, which allowed us to consider the sample diverse, like the general population. The nonstandardized survey question was performed as follows: How is your overall satisfaction with the procedure on a scale of 1 to 5 (where 1 = poor results, 2 = below expectations, 3 = average, 4 = good results, and 5 = above expectations)?

Preoperatively

The preoperative planning included anesthesiologist evaluation and laboratory tests following

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the American Heart Association guidelines.³⁴ Patients with anemia (hemoglobin <12 mg/dl) received preoperative supplements until they reached this number.

Markings

The marking was performed with the patient in the standing position, considering the muscular changes between the resting and active state. A straight line was drawn between the rectus abdominis muscle origin and insertion. The rectus lateral superficial landmark was not considered when drawing the lateral edge because of the muscular diastases (Fig. 3). Three main “shadow” areas were marked for extra liposuction to recreate the superficial anatomy: below the costal margin, the midline, and lateral to the rectus abdominis lower insertion (Fig. 4).

Surgical Technique

The procedure consists of a 360-degree liposculpture, followed by lipectomy, and immediate or delayed umbilicoplasty. Liposculpture was completed as a three-step process:

1. The patient is in prone position first and later in supine position. Start with infiltration of tumescent solution (1000 ml of saline, 10 ml of 1% lidocaine, and 1 ml of epinephrine 1:1000), with an infiltration/removed volume ratio of 2:1 to 1.5:1.
2. Fat emulsification is performed by third-generation ultrasound using 3- and 3.7-mm grooved probes.
3. Extraction is performed using power-assisted liposuction (POWER X Lipo; Valeant Pharmaceuticals North America LLC), following the preoperative markings, blending deep, intermediate, and superficial fat layers using 4.6- and 3.7-mm canulas. The third-generation ultrasound is used in pulsed mode with 70 to 80 percent for trunk and abdomen and 50 percent for legs and arms.³⁵ The harvested fat was partially grafted in the gluteal and breast as needed.

Lipectomy

A low horizontal incision is performed between the lateral edges of the rectus abdominis muscle insertion and lateral at an angle of 135 degrees. The position is 2 cm above the pubic tubercle once light vertical traction is performed to correct pubic ptosis. The abdominal flap is raised in the lower abdomen (sub-Scarpa

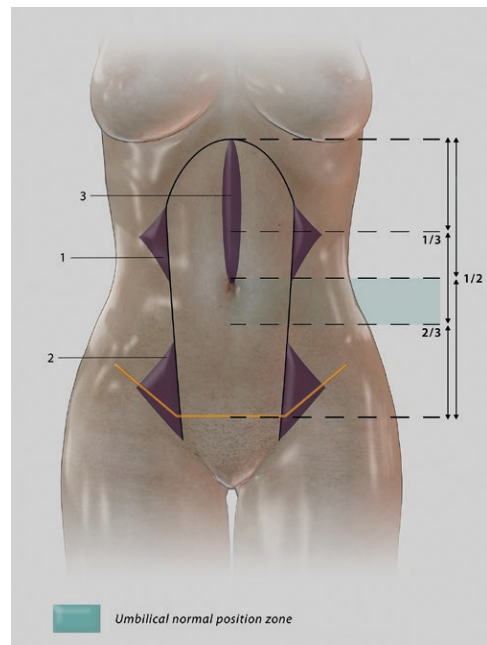


Fig. 4. Ideal umbilical zone: the area is between the middle of the distance between the xiphoid and the pubis, and the lower two-thirds. The choice of the exact point of umbilicoplasty depends on the visual goal: the higher it is, the younger it appears. The purple zones are negative spaces for definition (1, 2, and 3).

layer) in the upper abdomen above the muscular fascia. A tunneling technique is used with careful hemostatic control followed by plication of the rectus abdominis muscles. The native umbilicus is resected and the remnant is closed to the muscular fascia. The abdominal flap is then advanced and secured with a midline progressive tension technique: profound continuous stitches are used from the xiphoid down to the umbilicus aiming to enhance the midline in the upper abdomen using 0 polyglactin 910; below the umbilicus, the stitching is shallower (Fig. 5). The excess skin is then resected and closure is performed in layers. A single closed, 7-mm, Jackson-Pratt drain is placed and sutured through the incision wound (Blake Ethicon, Inc., Johnson & Johnson, Somerville, N.J.) and left until drainage output is less than 50 ml in 24 hours. Any additional liposuction within the flap can be performed after wound closure, following the markings to enhance the muscular definition. (See Video, Supplemental Digital Content 1, which demonstrates the surgical technique of the abdominoplasty after ultrasound-assisted liposuction, available in the “Related Videos” section of the full-text article on PRSJJournal.com or, for Ovid users, available at <http://links.lww.com/PRS/C913>.)

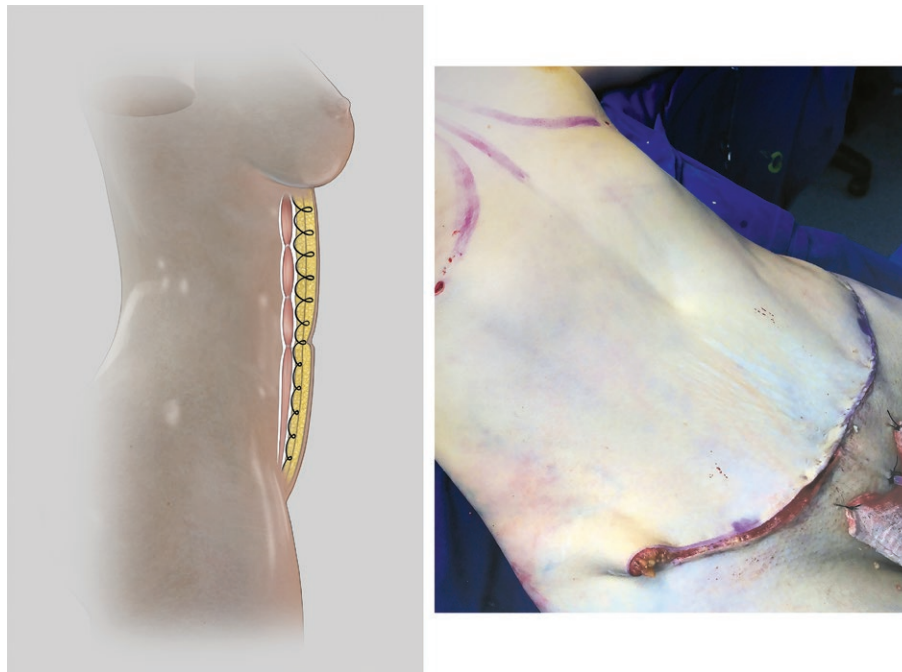


Fig. 5. Midline definition by a running continuous suture in the midline. (*Left*) Suture bites cross the Scarpa fascia, creating the supraumbilical midline. (*Right*) Intraoperative photograph. The midline is defined until the point projected for the new navel.



Video 1. Supplemental Digital Content 1 demonstrates the surgical technique of the abdominoplasty after ultrasound-assisted liposuction, available in the “Related Videos” section of the full-text article on PRSJournal.com or, for Ovid users, available at <http://links.lww.com/PRS/C913>.

Neoumbilicoplasty: Immediate versus Delayed

Although delaying umbilical reconstruction is unconventional, it may be an additional tool for the surgeon. The choice of a delayed neoumbilicoplasty is preferred when (1) high flap tension is detected; (2) flap discoloration or congestion is present; (3) there is a thick flap, which requires more

liposuction over the area; (4) additional definition is performed, or planned for a second procedure; (5) there is inverted T-flap closure or inadequate flap descent; (6) there is high scar positioning; and (7) secondary or revision lipectomy is performed. The timing is defined by drain removal after the first stage (7 to 10 days), to avoid seroma draining

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fluid through the neoumbilical area. Some patients choose to undergo the navel procedure after feeling completely healed (up to 3 months).

Two Hindu patients refused the neoumbilicoplasty procedure to avoid damage to the navel, as Hindus believe the navel holds a point of the body's energy flux (chakra). Therefore, the traditional "buttonhole" technique was performed.³⁶

The umbilicus was planned according to the "umbilical zone" theory: a higher location is preferable in patients who are younger or fit, or desire a more athletic appearance. A lower location is chosen for patients who are older, or want a rather "soft" (nonathletic appearance), and patients with larger and/or ptotic breasts (ptotic breasts tend to make the optical illusion of a shorter torso). After defining the umbilical location, zones for deep and superficial liposuction are marked to perform extra fat resection and definition (Fig. 6).

"Butterfly" Neoumbilicoplasty

An X-shaped incision, with 60 degrees in the apex angles, is performed across the linea alba, deep enough to reach the rectus abdominis fascia. Upper incisions are 10 mm long and lower ones are 6 mm. Because of the incision, four triangular flaps emerge: superior, inferior, left, and right. The three lower flaps are sutured with continuous subcuticular stitch with polyglactin 2-0 and fixed upward to the abdominal fascia in a spot located on the base of the superior flap (Fig. 7), which is then fixed loosely to the fascia, in a perpendicular way, with polyglactin 2-0.

The wound is covered with gauze embedded in topical antibiotic (nitrofurazone) to induce a round umbilicus shape. One week after the gauze is applied, the splint is removed. (See Video, Supplemental Digital Content 2, which demonstrates the surgical technique of the delayed umbilicoplasty, available in the "Related Videos" section of the full-text article on PRSJournals.com or, for Ovid users, available at <http://links.lww.com/PRS/C914>.)

Postoperatively

Patients with fat extraction greater than 5000 ml, patients with a tense or high-risk flap, and patients with additional procedures and comorbidities such as hypertension or diabetes were admitted overnight for observation. A loose elastic girdle and a foam vest were used immediately postoperatively for 8 to 12 weeks. The foam vest avoids the appearance of irregular skin folds. Supine position was recommended in addition to 30-degree knee folding for the initial week after surgery. Postoperative photographs were taken in the standing position in anterior, lateral, oblique, and posterior views at week 1 and at 1, 3, 6, and 12 months whenever possible (Figs. 8 and 9).

RESULTS

Seven hundred thirty-six patients with abdominal skin laxity Matarasso type IV were included. Six hundred twenty-four patients (85 percent) were of Latin origin. The mean patient age

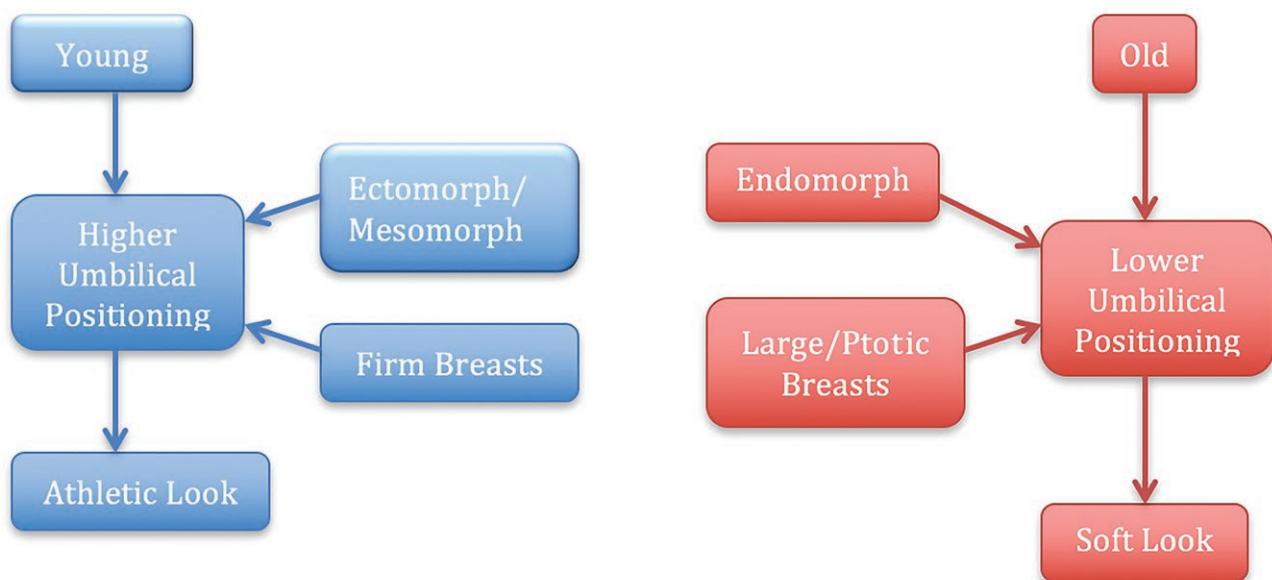


Fig. 6. Hierarchy algorithm for choosing from higher to lower umbilical positioning. Although this is our recommendation, some variations can be made according to the patient's desires.

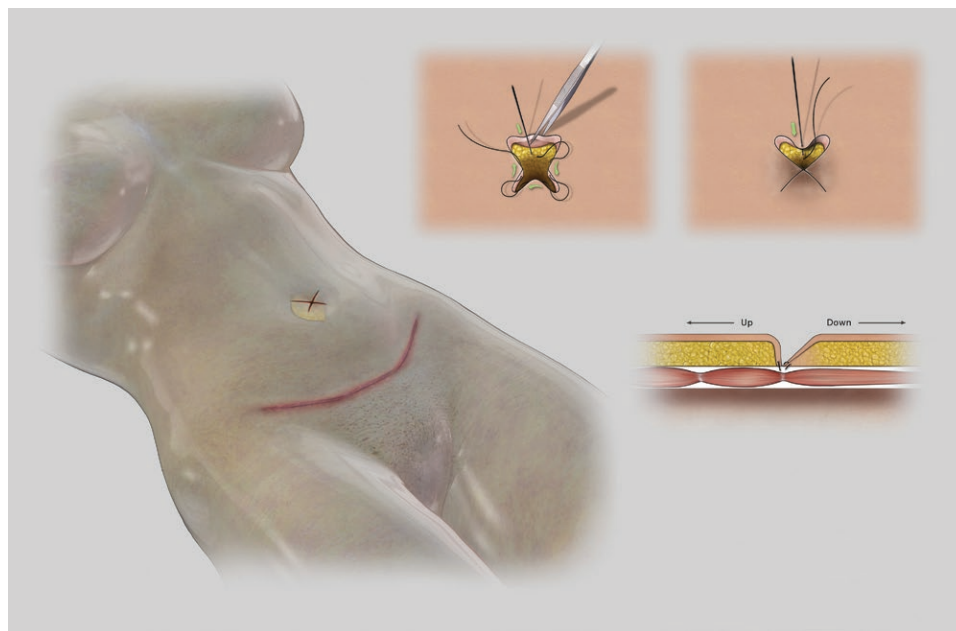


Fig. 7. Hoyos butterfly technique. (Left) An X incision is performed in the previously selected spot. The upper legs are 1 cm long, and the lower ones are 0.5 cm, followed by defatting of the area in an inverted teardrop. (Above, center and above, right) A nylon suture is performed over the lateral and lower flaps and sutured to the muscularis fascia at the level of the base of the upper flap. (Below, right) the upper flap is then sutured to the muscularis fascia.

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Video 2. Supplemental Digital Content 2 demonstrates the surgical technique of the delayed umbilicoplasty, available in the "Related Videos" section of the full-text article on PRSJournals.com or, for Ovid users, available at <http://links.lww.com/PRS/C914>.

was 36 years (range, 25 to 67 years). The mean body mass index of the patients was 28.4 kg/m² (range, 26 to 33 kg/m²). The postoperative body mass index was not always available. Other demographic characteristics are summarized in Table 1.

T1 Table 1.

All patients had postoperative checkup at 24 or 48 hours after the procedure. Six hundred seventy (91 percent) were followed up for 2 years.

The mean volume of fat extraction was 3808 cm³ (range, 2000 to 9300 cm³). The harvested fat was then grafted in the gluteal area ($n = 648$), with a mean of 285 cm³; and the breast area ($n = 15$), with a mean of 145 cm³.

Neoumbilicoplasty was performed during the same surgical procedure in 361 cases (49.04 percent) and was delayed in 370 cases (50.2 percent), 7 to 65 days after the lipoabdominoplasty. The

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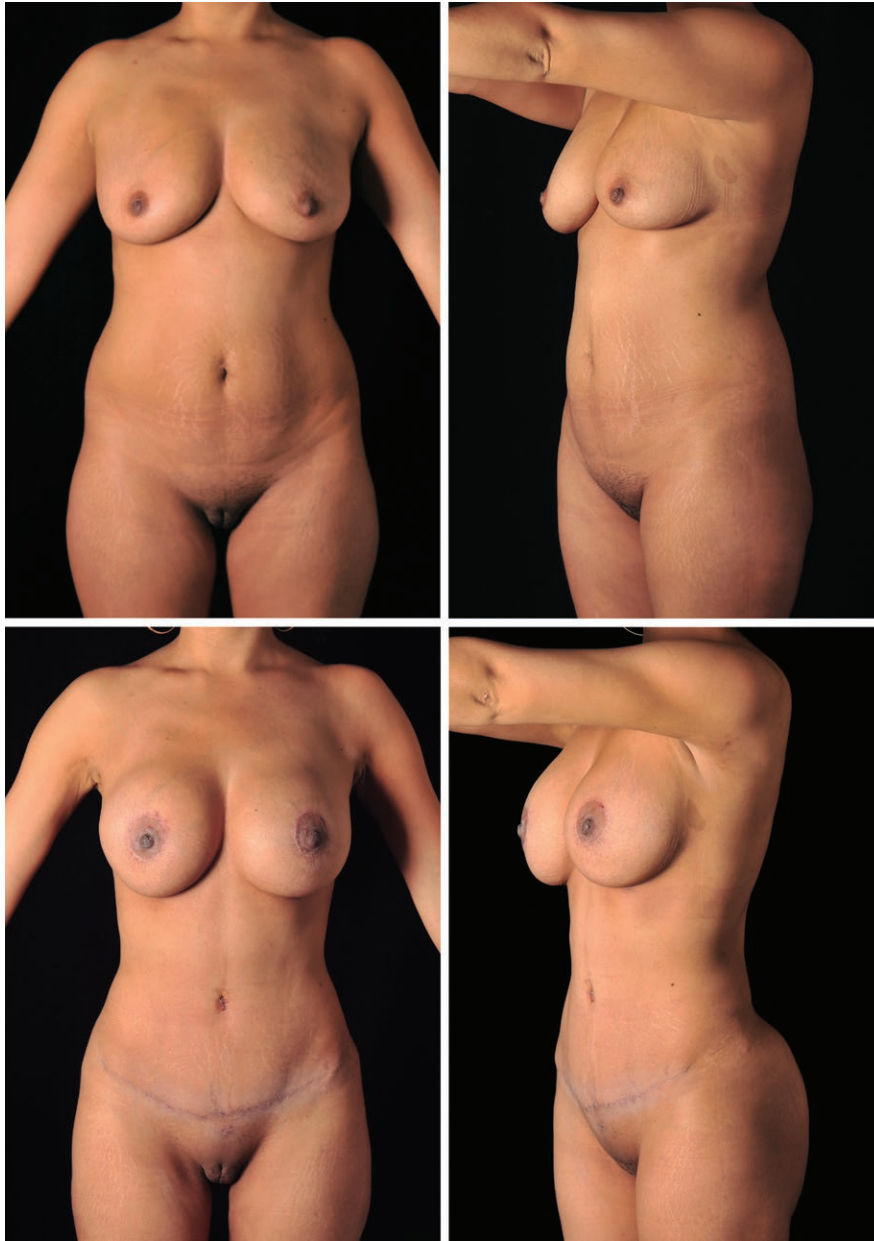


Fig. 8. A 38-year-old woman who underwent Eve definition lipoabdominoplasty, before (*above*) and 1 year after (*below*) surgery. Notice the long distance between the navel and the scar and definition of the abdomen and waistline. The patient also had silicone breast augmentation.

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procedure was performed under local anesthesia as an office-based procedure in 640 cases (86.9 percent). The remaining 96 were performed under sedation in addition to liposculpture revision (Fig. 10).

No necrosis or infection was reported. Umbilicus flattening and loss of shape were present in four cases (1.2 percent) from neoumbilicoplasty procedures, associated with prone position at rest

in the immediate postoperative period. A new umbilicoplasty was necessary to solve the problem in addition to supine rest position recommendation. Complications are listed in Table 2.

Transfusion was necessary in five patients (0.7 percent), and was indicated when there was symptomatic anemia and the serum hemoglobin value was 8.5 g/dl or lower after surgery. The follow-up period ranged from 2 months to 6 years (mean,

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Fig. 9. A 45-year-old woman who underwent Eve definition lipoabdominoplasty, before (*above*) and 1 year after (*below*) surgery. Notice the low placement of the scar and definition of the abdomen and waistline. Observe the natural shadows; the shape and height of the navel give a natural appearing abdomen.

2.1 years). Six hundred eleven patients (90 percent) completed the follow-up protocol; the others were contacted by phone or e-mail to complete the database. Drains were removed when output was less than 50 ml/24 hours. Mean time of drain removal was 7.3 days.

A postsurgical survey was completed by 670 patients (91 percent). It was answered anonymously and completed at one of the control visits after month 3 and up to month 22 (mean, month

9). Five hundred forty-eight patients (81.79 percent) answered “above expectations,” 67 patients (10 percent) answered “good results,” 34 patients (5.07 percent) answered “average,” 14 patients (2.08 percent) answered “below expectations,” and none answered “poor results.”

Statistical Survey Analysis

The Cohen kappa coefficient was measured to determine the interevaluator agreement

Table 1. Demographic Characteristics of Patients Included in the Study (n = 736)

Characteristic	Mean (%)	Range
Age, yr	36	25–67
BMI, kg/m ²	28.4	26–33
Weight, kg	62.5	50–105
Height, m	1.59	1.5–1.85
Smokers	65 (8.83)	
Previous abdominal procedures	103 (13.99)	
Previous pregnancies	662 (89.94)	
Concomitant procedures		
Mammoplasty	446 (60.59)	
Breast grafting	15 (2.03)	
Gluteal grafting	648 (88.9)	

BMI, body mass index.

about the postsurgical results. The evaluators were adults of different ages and social, academic, and economic conditions, and none of them were physicians, which allowed us to consider them diverse, like the general population. The evaluator's responses about natural and reconstructed navels were compared with the chi-square test (49.843). The Cohen kappa coefficient was calculated using Epidat Version 4.1. The interevaluator agreement was low, as the expected kappa index was 0.082 (Tables 3 through 7). Because of the heterogeneity of the groups, randomization was a strong factor affecting the answers. However, the general population was not able to differentiate between a natural navel and a neumbilicoplasty; therefore, the distinction between them cannot be achieved with anatomical parameters or objective evaluation. This allows us to infer that this technique provides natural results that are comparable to a nonsurgical abdomen.

DISCUSSION

Third-generation ultrasound-assisted lipoabdominoplasty was designed to address the abdominoplasty pitfalls described by Lockwood.¹³ The use of third-generation ultrasound-assisted lipoabdominoplasty combined with the low trauma design in cannulas allows us to achieve better lateral abdominal superficial and deep liposuction, create a defined waistline and lateral skin retraction, and perform deep liposuction and superficial ultrasonic release of the central flap (which addresses the tension over the central flap). It also helps with migration and hypertrophic scar and pubic hair displacement and muscular definition, creating the natural concavities of the abdomen and avoiding the tense appearing abdomen.

The use of third-generation ultrasound-assisted lipoabdominoplasty was shown to increase flap viability compared with suction-assisted lipoplasty alone.¹⁵ In our 10-year experience, we have not seen any damage to the surrounding tissues. However, some authors disagree with this finding, indicating that the energy-based assistance produces thermal damage to the surrounding tissues.³⁷ However, more research is still needed to find the clinical evidence that supports this theory.

Large liposuction extraction (>5000 cc) with flap resection has been associated with blood loss resulting in anemia in up to 18 percent of the cases.³⁴ Third-generation ultrasound-assisted lipoabdominoplasty had been shown to decrease blood loss and the need for transfusion,³⁸ but these reports do not consider large-volume liposuction or large flap resections.

A natural appearing umbilicus is important in abdominal aesthetics, improving the outcomes, because part of the unnatural appearance is attributable to a distorted shape and color of the original navel. The ideal umbilicus is still a topic that needs to be addressed and should be the subject of further research. Our experience leads us to choose a neumbilicoplasty to recreate the anatomy, with subsequent advantages: the umbilical position can be selected; thus, there is not a short distance between the navel and the scar. Even an inverted-T lipectomy scar can be converted into a horizontal linear scar over time, and performing a delayed traction of the flap and neumbilicoplasty leaves a better scar and navel position. Umbilical scarring with a larger than normal navel or a constricted scar, navel hyperchromia, and residual umbilical hernias are not a problem anymore.

Reducing flap tension and limiting flap dissection after aggressive liposuction is important for preserving flap viability. Preserving a deep superior epigastric artery perforator has also been described to enhance perfusion.³⁹ We believe that delay of the umbilicoplasty enhances the distal perfusion and even allows recovery of flap viability in patients with distal flap problems. The potential use of umbilical reconstruction could be an alternative for the surgeon in difficult cases such as tense and/or high-risk flaps. Even though delayed umbilicoplasty has been described previously,⁴⁰ more studies are needed to objectively support this finding.

Data provided by the nonstandardized survey gives an overall idea of the patient's satisfaction perception of the procedure, letting us infer that a neumbilicus is comparable to a natural one. However, it is not the best tool with which



Fig. 10. A 32-year-old woman who underwent Eve definition lipoabdominoplasty. Notice the bulky appearance of the abdomen and flanks in the preoperative photograph (*above, left*). (*Above, right*) After 360-degree liposuction in the first stage, 1 month postoperatively. (*Below, right*) After neoumbilicoplasty in the second stage. (*Below, right*) Six months postoperatively. Notice the athletic appearance and high umbilical position of the abdominal area.

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to evaluate results. The results have limitations because of the lack of specific questions about the procedure, such as the scar and the umbilical reconstruction. Further tests with multicenter controlled trials may be needed to strengthen our findings. This approach validates the security

and reproducibility of third-generation ultrasound-assisted lipoabdominoplasty when combined with other procedures and opens the door to extending the research to look for evidence about the selection of the optimum abdominoplasty technique.

Table 2. Complications Associated with Immediate Umbilicoplasty versus Delayed Umbilicoplasty

	Eve Procedure plus Immediate Umbilicoplasty (%)	Eve Procedure plus Delayed Umbilicoplasty (%)
No.	341	
Minor complication		
Seroma	17 (4.9)	15 (4.43)
Prolonged bruising	24 (7.0)	21 (6.21)
Prolonged swelling	34 (9.9)	34 (10)
Major complication		
Flap necrosis	0	0
Infection	0	0
Flap suffering	29 (4.3)	3 (0.8)
Additional procedures	48 (14)	4 (1.2)

Table 3. Survey Analysis

	Age	Score
Valid no.	109	109
Lost individuals	0	0
Average	32.40	11.51
Standard error from average	0.977	0.398
Median	30.00	12.00
Mode	25	10
SD	10.202	4.151
Variance	104.076	17.234
Asymmetry	1.202	-0.130
Standard error from asymmetry	0.231	0.231
Kurtosis	1.172	-0.628
Standard error from kurtosis	0.459	0.459
Range	47	18
Minimum	15	2
Maximum	62	20
Addition	3532	1255
Percentile		
25	26.00	9.00
50	30.00	12.00
75	35.00	15.00

Table 4. School

	Frequency	%	Valid %	Cumulate %
Valid				
0	16	14.7	14.7	14.7
1	32	29.4	29.4	44.0
2	61	56.0	56.0	100.0
Total	109	100.0	100.0	

0 = student; 1 = technician; 2 = professional.

Table 5. Gender

	Frequency	%	Valid %	Cumulate %
Valid				
0	77	70.6	70.6	70.6
1	32	29.4	29.4	100.0
Total	109	100.0	100.0	

0 = women; 1 = men.

Table 6. Concordance Analysis: 95% CI*

Kappa	95% CI
0.0269	-0.0029 to 0.0565

*n = 20 individuals.

Table 7. Jackknife Confidence Interval

Z Statistic	p
9.2306	0.0000

CONCLUSIONS

Ultrasound-assisted high-definition lipoabdominoplasty is a safe and reproducible technique with which to perform abdominoplasty, with the advantage of improved liposculpture outcomes. Aesthetically pleasant results can be achieved, and an athletic contour gives a more natural result, and successfully reduces the sequelae of lipectomy. Neoumbilicoplasty resolves the hyperchromic navel, umbilical hernia repair, and position issues, leading to better management of these issues. By delaying the neoumbilicoplasty, complications related to flap tension or vascularization can be minimized. Also, the delay helps when additional traction is needed for removal of an inverted T or in revision abdominoplasty.

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AUTHOR QUERIES

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- AQ1—running head OK? If not, please provide running head with ≤ 40 characters, including spaces.
- AQ2—For indexing purposes, please confirm that author names have been correctly identified as given names (blue), surnames (red), and suffixes (black). Color in the byline will not appear on the final published version.
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- AQ5—Note to CE: Please check the head level. [blind 2 subhead within Introduction section
- AQ6—Please confirm that the second sentence of the legend to Fig. 2 is OK, or provide word(s) missing from sentence.
- AQ7—Figure 7 part labels correct?
- AQ8—Fig, 8 legend OK as edited?
- AQ9—Fig. 10 legend: "high umbilical position" correct?
- AQ10—Sentence that begins with “The interevaluator agreement...” OK as edited?
- AQ11—Table 3 separated into Tables 3 through 7 because of different column heads. Please verify that tables are correct.
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