

# Ultrasound-guided Deep Waist Fat Liposuction: Complement to a Narrow Waist

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**Background:** For body contouring, the waist plays an important role in both male and female body structure. Currently, there are procedures that aim to achieve a narrow waist as a result, to achieve an adequate waist-to-hip ratio. This study proposes a technique of ultrasound-guided deep liposuction of the lumbar triangle to achieve favorable and safe aesthetic results.

**Methods:** The technique was applied in 142 patients who provided informed consent. During liposuction, ultrasound was used as a guide to avoid contact with vital organs, and in the postoperative stage, a satisfaction survey was administered on the aesthetic results obtained. In addition, patients had a preoperative waist measurement and a postoperative waist measurement at 3 months.

**Results:** The deep liposuction technique in the lumbar triangle is safe, no serious complications were observed, and the results of the satisfaction survey regarding the aesthetic result after the third postoperative month showed 100% satisfaction. In addition, it was found that the body measurements of the waist before the operation and 3 months later showed a difference between 8 and 15 cm less in the diameter of the waist after the technique was applied.

**Conclusions:** Deep liposuction of the lumbar region is a safe technique, due to the use of ultrasound for patient care, and enhances patient satisfaction with the aesthetic results. (*Plast Reconstr Surg Glob Open* 2024; 12:e6213; doi: 10.1097/GOX.0000000000006213; Published online 4 October 2024.)

## INTRODUCTION

The waist is a transcendental area in both the female and male body structure, and a narrow waist improves the body ratio. In women, to achieve a harmonious waist-to-hip ratio, a wide hip is sought to generate a good feminine contour,<sup>1</sup> whereas in men, a wide upper base, which is made up of the shoulders, pectorals, and lats, is prioritized to reflect a narrower waist.<sup>2</sup>

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There are currently multiple procedures that aim for a narrow waistline result, including aponeurotic plication of the obliques<sup>3</sup>; procedures to improve costal bone remodeling<sup>4</sup>; fat grafting in areas of the hip to improve the waist-hip relationship<sup>5</sup>; and, as an essential and novel proposal, deep liposuction.<sup>6</sup>

Liposuction in the deep region is performed in the lumbar triangle,<sup>7</sup> also called deep waist fat. This technique is essential to aesthetically improve this area; however, due to lack of experience or fear of damaging vital organs, like visceral perforation, especially in the retroperitoneum, which increases the risk of perforation or kidney damage, or also the chance of damaging the chest cavity, superficial liposuction has been preferred with little significant aesthetic results in patients.

There is a history of deep subiliac fat liposuction and its importance in improving the structure of the buttock.<sup>8</sup> In the case of fat located in the lumbar region or deep fat in the waist, by reducing the volume in this region, the aesthetic characteristics of the derriere, buttock, and the correct relationship with the hip in women are accentuated; as well as accentuating the proportions of the torso,

Disclosure statements are at the end of this article, following the correspondence information.

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achieving a relevant appearance in the dorsal region, and improving the shoulder-waist proportion in men.

In the interest of patient care and improved aesthetic outcomes, this study proposes to describe the results of applying the ultrasound-guided fat liposuction technique to the lumbar triangle as a basis for proposing a safe technique to improve the aesthetic appearance of body contouring in men and women.

## MATERIALS AND METHODS

In this study, the sample consisted of 142 patients. Patients included in the study met the following criteria: age 18–50 years, body mass index (BMI)  $\leq 26 \text{ kg/m}^2$ , surgical risk (RQ) according to Goldman index  $\leq \text{II}$ . This study is prospective and was carried out between December 2021 and November 2023.

Before the procedure, patients were duly informed about the new liposuction technique to be applied, the possible risks and complications, and confirmed their participation by signing the informed consent form. (See **Supplemental Digital Content 1**, which displays the informed consent form, <http://links.lww.com/PRSGO/D543>.)

This was a multicenter study conducted in Mexico, Peru, Brazil, Argentina, and Chile, conducted in accordance with the guidelines of the Declaration of Helsinki and the research protocol approved by the institutional ethics and research board of each clinic. All eight plastic surgeons were trained in this liposuction technique, and all used calibrated and standardized ultrasound scanners, specifically the Butterfly iQ and Clarius L7 HD wireless handheld ultrasound scanners.

The sociodemographic data of each patient were recorded in an Excel database for statistical analysis.

## SURGICAL TECHNIQUE

To carry out the surgical technique, we start with the anatomical position in which the center of the patient is located, locating the area lateral to the longissimus and iliocostalis muscles, then the posterior surface of the

### Takeaways

**Question:** Is ultrasound-guided liposuction to the deep waist fat a safe option for surgeons?

**Findings:** This study involved 142 patients who underwent surgery with a new deep waist liposuction technique. It was proven that ultrasound-guided liposuction can be an effective and safe option for surgeons, it enhances patient satisfaction with the aesthetic results, and it also achieves a decrease of 8–15 cm in the waistline.

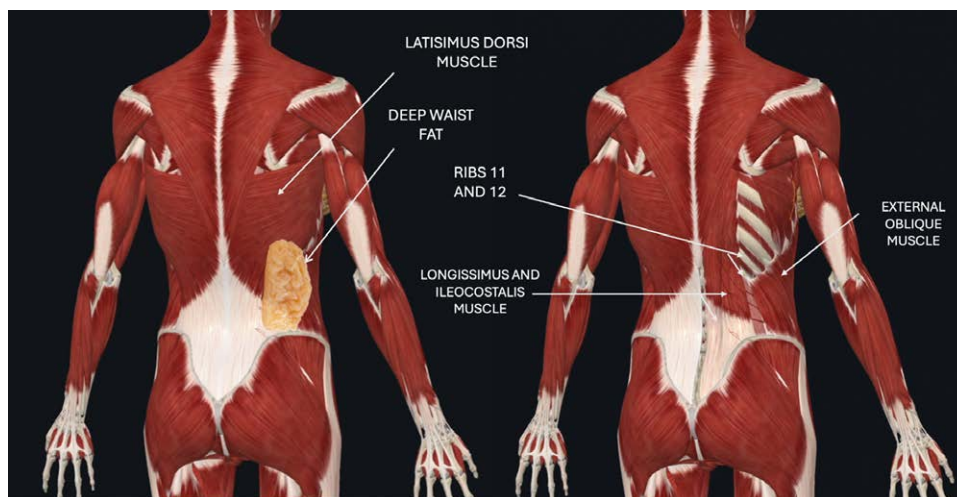
**Meaning:** Ultrasound-guided liposuction of waist-deep fat is a safe option for surgeons and potentially generates greater satisfaction with the results.

latissimus dorsi muscle, between the iliac crest and ribs 11 and 12, and finally, the lateral surface of the external oblique muscle (Fig. 1). [See **Video (online)**, which displays deep waist surgery.]

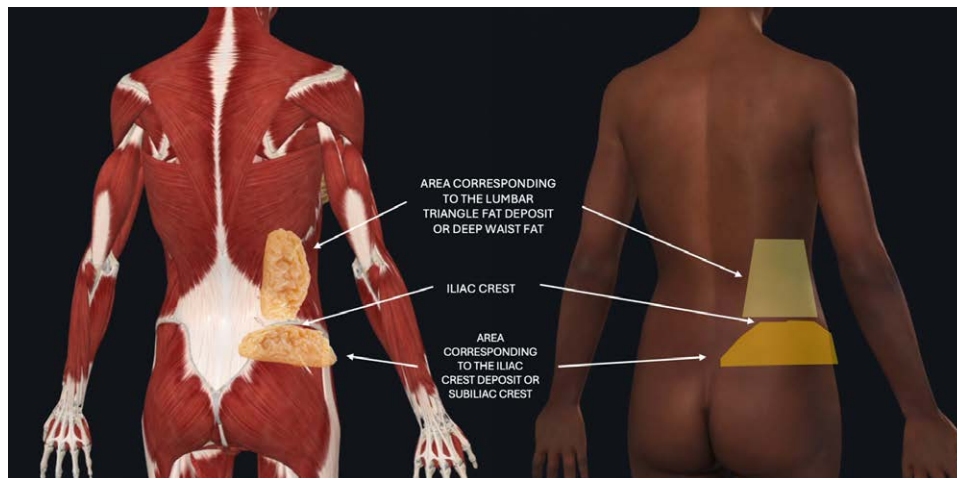
The subiliac fat located below the posterior iliac spine, bounded superiorly and inferiorly by the gluteus maximus muscle, must be differentiated. This thicker area is known as the iliac crest deposit and is located lateral to the erector spinae and superficial to the gluteus medius<sup>8</sup> (Fig. 2). With the patient in a standing position, the deep fat of the waist can be seen ultrasonographically, below the superficial and deep subcutaneous fatty tissue and located laterally to the iliocostalis and longissimus muscle and posterior to the latissimus dorsi muscle (Fig. 3).

In the operating theater, with the patient in the lateral decubitus position, the asepsis and antisepsis measures are carried out. To proceed with the liposuction, patients must be under general anesthesia applied 30 minutes before the procedure, intravenously, with a 1 g dilution of tranexamic acid.

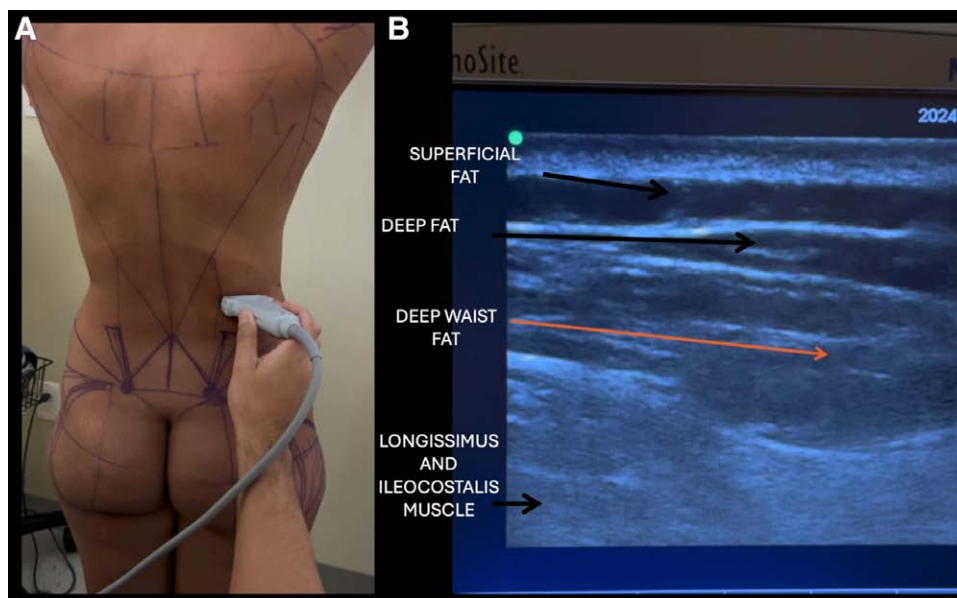
An ultrasound scan is performed in the lumbar region to locate the fatty compartment in this area with the references. Once located, an incision is made in the intergluteal region, and the infiltration cannula is inserted in the direction of the lumbar region under ultrasound guidance. Once the



**Fig. 1.** Anatomical situation of deep lumbar fat or deep waist fat.



**Fig. 2.** Lumbar triangle fat deposit or deep waist fat.



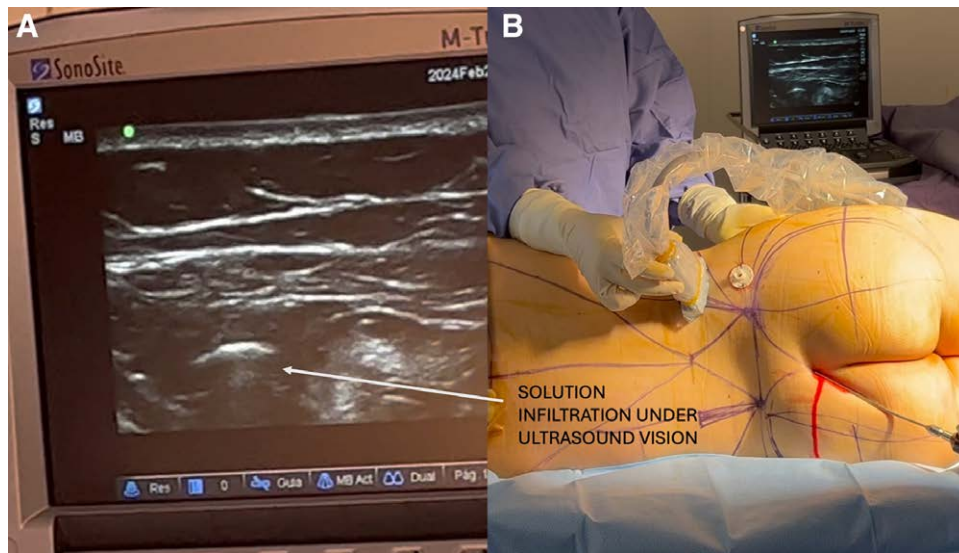
**Fig. 3.** Anatomical exploration of deep waist fat under ultrasound vision. A, View of the patient. B, View of the ultrasound.

location of the cannula has been pinpointed, the Hartman solution is infiltrated with an ampoule of epinephrine (1 mg/mL), one ampoule of amikacin (500mg/2mL), and one ampoule of clindamycin (600mg/4mL) between 200 and 300mL per side. Infiltration is observed without the need to mobilize beyond the insertion point of the cannula, as the solution permeates the fat deposit (Fig. 4). Subsequently, ultrasound-guided power-assisted liposuction is performed with a 32-cm straight mirror cannula and 4 Fr triport cannula. The liposuction is performed with short fan-shaped movements, which go from the lateral region of the longissimus muscle to the mid-axillary line. During the extraction of this fat deposit, the gradual reduction of volume in the area can be seen, as well as the definition of the longissimus muscle structures and how the curvature of the waist is increased. Subsequently, the correct waist–hip relationship is evident,

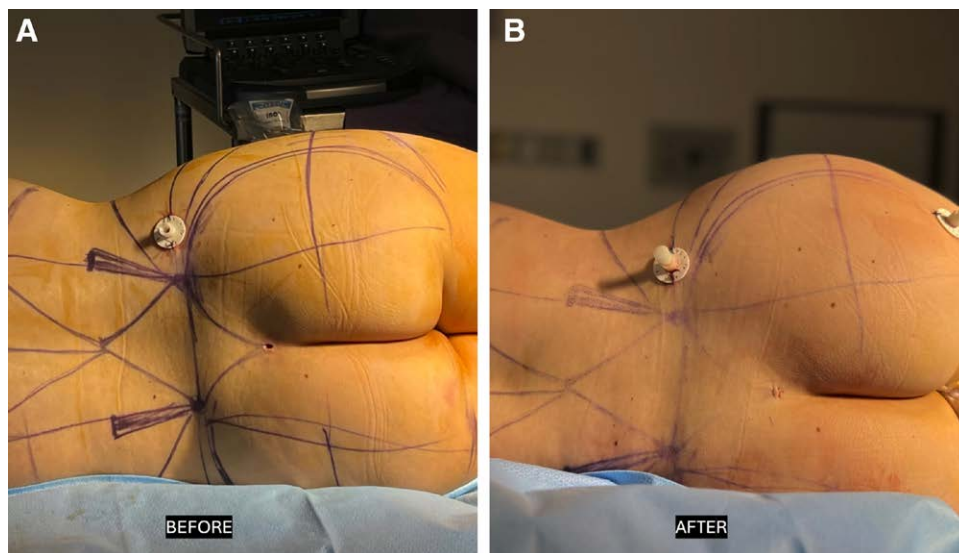
as well as the structural modification that shows an adequate transition of the derriere, the gluteus, and the iliocostal and longissimus muscles (Figs. 5, 6).

### SATISFACTION SURVEY

All patients completed an online satisfaction survey (Google Forms) 3 months postoperatively. The survey included three questions about their satisfaction with aesthetics, created in Microsoft Excel v.19. Statistical analysis was performed in SPSS software and results (Table 3). (See Supplemental Digital Content 2, which displays postoperative satisfaction survey, <http://links.lww.com/PRSGO/D544>.) (See Supplemental Digital Content 3, which displays postoperative satisfaction survey results, <http://links.lww.com/PRSGO/D545>.)



**Fig. 4.** Tip of the cannula under ultrasound vision. A, View of the ultrasound. B, View of the patient.



**Fig. 5.** Before (A) and immediately after surgery (B) in the lateral decubitus position.

## RESULTS

The surgical technique was performed on 142 patients, 56 men and 86 women, without any comorbidity, with an average age of 34.3 years, an average weight of 62.5 kg, an average height of 1.61 m, and an average BMI of 26.6 kg/m<sup>2</sup> (Table 1). In 94% of the patients, there were no complications, and in the remaining 6%, complications were linked to seromas in the abdominal region, and pain in the lumbar region which were treated by ultrasound-guided puncture drainage and muscle relaxant, respectively, without serious consequences in any of the cases.

The average volume of fat aspirated in the waist area is approximately 250–500 mL per side. The duration of the surgery was between 4 and 6 hours; it was performed with combined procedures, such as 360 liposuction,

abdominoplasty without plication, lipotransfer to the buttocks and hip, and waist remodeling without incision with ultrasound-guided Monocortical Fracture (ribXcar), among others (Figs. 7, 8).

Additionally, it was found that the mean waist measurement was 83.16 cm preoperatively and 71.35 cm 3 months postoperatively (Table 2). Of the 142 cases, there was a difference of between 8 and 15 cm in waist measurement 3 months after the technique was applied.

The results of satisfaction with the aesthetic result of the survey conducted during the third postoperative month were divided into three groups: satisfactory (containing very satisfied and satisfied responses), indifferent (containing neither satisfied nor dissatisfied responses), and unsatisfactory (containing dissatisfied or very dissatisfied responses), showing 100%



**Fig. 6.** Deep waist intervention results. A, Before liposuction of deep waist fat. B, Liposuction of deep waist fat after 3 months of evolution.

**Table 1. Sociodemographic Data of the Sample**

Variable	Minimum	Maximum	Mean	SD
Age (y)	18	50	34,3	3.62
Weight	57	69	62.5	4.23
Height (cm)	151	172	161	3.09
BMI	21.2	27.3	26.6	1.82
Comorbidity	—	—	None was reported	—

satisfactory results, of which 89% are very satisfied and 11% satisfied (Table 3).

### DISCUSSION

We consider liposuction to be an important technique in body contouring surgery, offering a safe, appropriate intervention for body harmonization and potentially generating greater patient satisfaction with the aesthetic results. Currently, the use of ultrasound is a novelty in body contouring surgery,<sup>9</sup> and deep liposuction of the lumbar region is no exception. It is considered a fundamental complement to understand anatomically this area, to delimit and acquire the necessary proprioception by the surgeon in the region, and

to offer security by being able to locate in a visual way an area that previously had to be imagined or left only in the hands of everyday life. Ultrasound helps not only to reduce the learning curve but also to offer results that considerably improve the aesthetic condition of patients.

In this study, within the limitations, we consider the time it takes to learn to use ultrasound in this type of intervention. Besides, the results correspond to a sample of 142 cases. Therefore, the outcomes cannot be generalized. However, it allows us to create a precedent to promote new research that encourages professional discussion. Although it is a technique aimed at achieving an adequate harmonization of the body, it has been identified as contributing to the reduction of the waist circumference and favoring the patients' satisfaction with the aesthetic results.

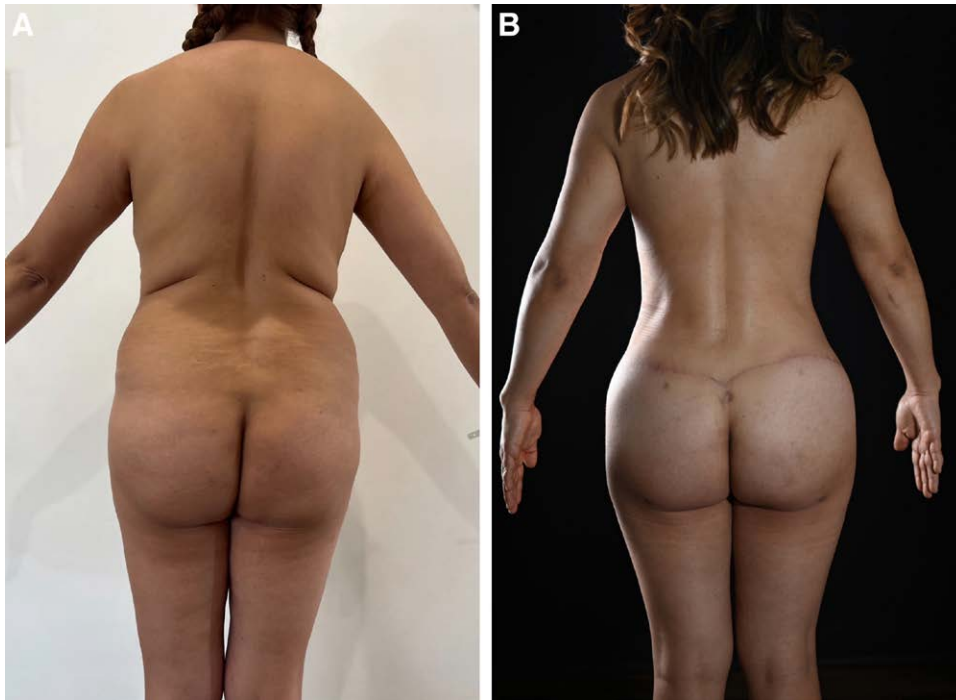
We also believe that deep liposuction of the lumbar region or waist-deep fat is a reproducible technique; safe, as it is ultrasound-guided to protect the vital organs in this region; and more satisfying for the patient. It also requires training and education of surgeons to identify the deep fat in the area and perform the technique with skill.

**Table 2. Variations in Waist Measurements**

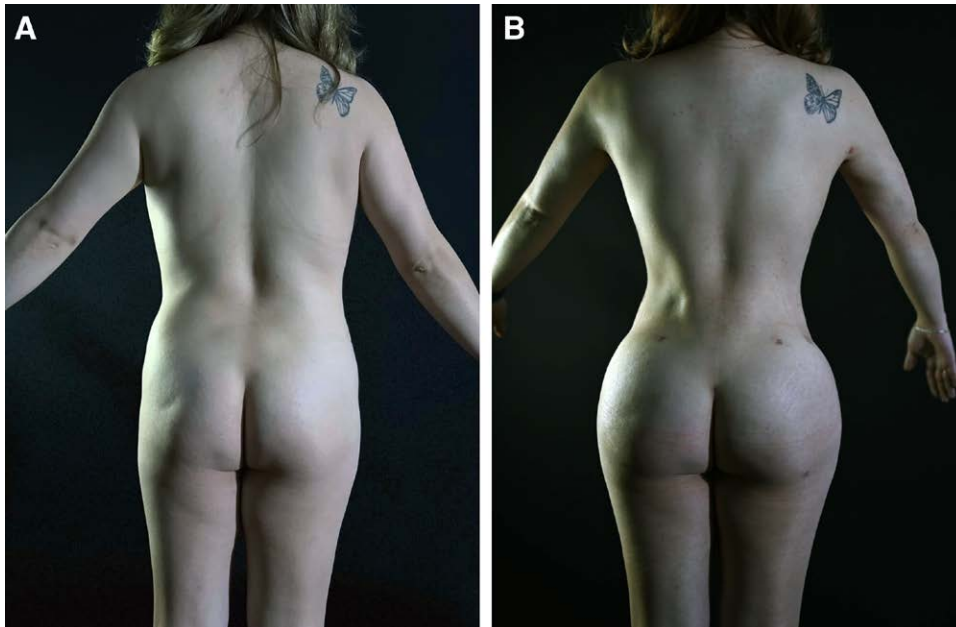
Variable	Measurement	Median	IR*	Chi-square	P
Waist measurements (cm)	Presurgery	83.16	(69–104)	90	0.00001
	Postsurgery 3 mo	71.35	(58–87)		

Friedman nonparametric test.

\*( $P < 0.0001$ ).



**Fig. 7.** Deep waist intervention results. A, Before deep fat liposuction and abdominoplasty. B, Three months after deep fat liposuction and abdominoplasty.



**Fig. 8.** Deep waist intervention results. A, Before deep fat liposuction of the waist and waist remodeling without incision, with ultrasound-guided monocortical fracture (ribXcar). B, Three months after deep fat liposuction of the waist and waist remodeling without incision, with ultrasound-guided monocortical fracture (ribXcar).

### CONCLUSION

Ultrasound-guided deep liposuction of the lumbar region is a safe technique, without serious complications, which by itself can improve waist-to-hip and shoulder-to-waist ratios, potentially leading to greater satisfaction in both men and women.

**Table 3. Results of Satisfaction Survey**

Level	N	%
Satisfactory	142	100.00
Indifferent	0	0.00
Unsatisfactory	0	0.00
Total	142	100.00

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#### DISCLOSURE

*The authors have no financial interest to declare in relation to the content of this article.*

#### PATIENT CONSENT

*Patients provided written consent for the use of their images.*

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