COSMETIC

Risk Factors for Complications after J Medial Thighplasty following Massive Weight Loss: A Multivariate Analysis of 94 Consecutive Patients

Nicolas Bertheuil, M.D., Ph.D. Jérôme Duisit, M.D., Ph.D. Farid Bekara, M.D. Eric Watier, M.D., Ph.D. Silvia Gandolfi, M.D. Damien Bergeat, M.D.

Rennes and Montpellier, France; and Brussels, Belgium



Background: Bariatric surgery has increased the number of patients requiring medial thighplasty after massive weight loss. However, despite the various complications, the procedure improves quality of life. The authors report postoperative complications of vertical J-shaped medial thigh lift in a series of patients and identify preoperative risk factors.

Methods: For almost 5 years, the details of all J medial thighplasties performed by a single surgeon were recorded; detailed medical records were also available. Complications can be major (e.g., need for early surgical revision or readmission) or minor (delayed wound healing).

Results: During the study period, 94 patients were treated and only minor complications were recorded (42.5 percent). On multivariate analysis, older age (OR, 1.05; 95 percent CI, 1.01 to 1.10) and a body mass index greater than or equal to 30 kg/m² (OR, 2.82; 95 percent CI, 1.10 to 7.22) were independent risk factors for postoperative complications.

Conclusions: As with other postbariatric operations, medial thighplasty is associated with significant morbidity, but the risk thereof can be easily established and managed. Specific algorithms for determining the risk of postoperative complications based on age and body mass index are needed to guide preoperative discussions with patients and perform patient selection. (*Plast. Reconstr. Surg.* 148: 540e, 2021.)

CLINICAL QUESTION/LEVEL OF EVIDENCE: Risk, III.

The goal of medial thighplasty, first described by Lewis in 1957,^{1,2} is to reshape the inner thighs to improve mobility and aesthetic appearance. However, the procedure is unpopular among plastic surgeons³ because of frequent postoperative complications and unsatisfactory results. Many improvements to the initial surgical technique have been reported, including anchoring of the superficial fascia to the Colles fascia⁴ to reduce ptosis recurrence and extensive use of concomitant liposuction to decrease the incidence of postoperative seroma and lymphedema.^{3,5} The

From the Department of Plastic, Reconstructive, and Aesthetic Surgery, Hospital Sud, INSERM U1236, and Department of Hepatobiliary and Digestive Surgery, University of Rennes 1; SITI Laboratory, Rennes University Hospital; Department of Plastic, Reconstructive, and Aesthetic Surgery, Cliniques Universitaires Saint-Luc; and Department of Plastic, Reconstructive, and Aesthetic Surgery, CHU of Montpellier.

Received for publication March 27, 2020; accepted April 27, 2021.

Copyright © 2021 by the American Society of Plastic Surgeons DOI: 10.1097/PRS.0000000008386

outcomes are now more predictable and the postoperative complication rate is lower. Plastic surgeons are currently encountering many patients suffering from weight loss sequelae because of the increasing popularity of bariatric surgery. The deformities induced by massive weight loss pose

Disclosure: The authors received no funding support for the research of this article and declared no potential conflicts of interest with the respect to the research, authorship and/or publication.

Related digital media are available in the full-text version of the article on www.PRSJournal.com.

By reading this article, you are entitled to claim one (1) hour of Category 2 Patient Safety Credit. ASPS members can claim this credit by logging in to PlasticSurgery.org Dashboard, clicking "Submit CME," and completing the form.

a dilemma for surgeons. Cosmetic outcomes are superior for corrections that leave a horizontal scar, which improves the appearance of the proximal third of the inner thigh albeit with possible residual excess skin. A correction that leaves a more visible vertical scar but avoids skin excess over the entire thigh is also an option,⁶ which we are increasingly offering. The large number of patients requiring treatment has led to this procedure being more common. Furthermore, despite the high postoperative complication rate, medial thighplasty improves quality of life⁷; thus, the surgery is justified. Surprisingly, although the number of procedures has increased exponentially, few studies have focused on postoperative complications. In this study, we report our experience of using I medial thighplasty in patients following massive weight loss, and identify factors predictive of postoperative complications.

PATIENTS AND METHODS

All patients treated by means of vertical J medial thighplasty, by the same senior surgeon (N.B.), between November of 2014 and April of 2019 were included in this study. The following data were prospectively recorded in a secure database: age, sex, body mass index before massive weight loss, body mass index before medial thighplasty, weight loss before thighplasty, change in body mass index after thighplasty, history of bariatric surgery, hypertension, diabetes, tobacco use, liposuction volume, operative time (in minutes), American Society of Anesthesiologists score, postoperative complications, and length of hospital stay.

In all operative patients (i.e., regardless of their pre-plastic surgery body mass index), a weight plateau for at least 6 months following massive weight loss was a requirement for surgery. Smoking cessation 1 month before surgery was strongly advised, but not mandatory. Patients who did not stop smoking were considered smokers, whereas those who stopped 1 month before intervention were classified as nonsmokers. Postoperative complications were divided into major and minor complications. Major complications were events occurring within 30 days after surgery that required surgical revision, hospital readmission, or an emergency room visit. Minor complications were those that could be treated in an outpatient clinic; among these complications, delayed wound healing was defined as any scar that required dressing beyond 15 days postoperatively but showed no wound dehiscence (which was defined as the need for resumption

of dressing care of an initially closed wound, even when it was smaller than 0.5 cm²). The study was approved by the Institutional Review Board of Rennes University Hospital (approval number 14.79), and all procedures were in compliance with the principles of the Declaration of Helsinki (1964) and French bioethics laws that came into force on July 7, 2011.

Operative Procedure

Skin markings were made preoperatively,8 both when the patient was standing and in the prone position with the lower extremities in abduction (Fig. 1, *above*, *left*). The superior incision line was marked on the perineal thigh crease. In the anterior direction, the incision was made up to the point just before the femoral pulse, and continued posteriorly to the medial buttock crease. We then drew a vertical line in the posterior direction along the thigh that allowed closure when the patient was in the frogleg position. Anterior marks were made based on the pinch test; we paid particular attention to the junction between the horizontal and vertical scars, as reported previously.^{6,8} Finally, areas of liposuction outside of the preexisting marked areas were identified and also marked.

Surgery was performed with the patient under spinal anesthesia or, occasionally, general anesthesia, while supine in the frogleg position. For antibiotic, 2 g of cefazolin was injected intravenously immediately before incision. A urinary catheter was placed and adipose tissue was infiltrated with an adrenaline-saline solution (1 mg/liter; mean dose, 1 to 1.2 liter/patient) to reduce bleeding during surgery and facilitate liposuction. [See Video (online), which demonstrates the operative surgical technique of J medial thighplasty.] Liposuction was performed in the marked areas; all fat under the areas for which the skin would be excised (between the dermis and muscular fascia) was removed using a 4-mm-diameter cannula (Fig. 1, above, right). The technique applied was similar to our lipo-body lift technique.9-12 Liposuction could be performed in predefined localized areas outside of the resection area. At this level, the liposuction was deep, continuing under the superficialis fascia. The extent of the skin resection required was assessed by pinching (Fig. 1, *below*, *left*), and the skin was excised and the deeper connective tissue was preserved.¹³ A recent anatomical study found that lymphatic vessels were present not only in subfascial fat, but also in the deep layer of superficial fat.¹⁴ The great saphenous vein, located under the superficialis fascia,



Fig. 1. Perioperative view of J medial thighplasty. Operative skin markings (*above*, *left*). Perioperative view after liposuction (*above*, *right*). Pinch test (*below*, *left*). Final view after skin closure (*below*, *right*).

was carefully preserved. Next, we anchored the thigh flap to the Colles fascia using two or three nonabsorbable, interrupted deep sutures. Finally, wound closure (Fig. 1, *below*, *right*) was achieved in a tension-free manner, without drain placement, using separate absorbable stitches (Polysorb 2; Covidien, Dublin, Ireland) placed between the two superficial fascial layers. Then, the subcutaneous/subdermal planes were sutured with 3-0 separate absorbable sutures and 4-0 running sutures (Monocryl; Ethicon, Inc., Somerville, N.J.).

Postoperative Care

Deep venous thrombosis prophylaxis involved the use of compression stockings and injections of low-molecular-weight heparin for 15 postoperative days. Compressive clothing was worn for 2 months postoperatively. The dressings were changed every 2 days. Walking was permitted on postoperative day 1 and the urinary catheter was removed on the following day. Physiotherapy (scar massage, LPG procedure, and lymphatic drainage) was initiated within 6 weeks after surgery, to facilitate the performance of activities of daily life and avoid excessive scarring.

Statistical Analysis

Statistical analysis was performed using R software (R Development Core Team, Vienna, Austria). Quantitative variables are expressed as medians with interquartile ranges and were compared using the Mann-Whitney U test. Qualitative variables are expressed as numbers with percentages and were compared using Fisher's test or the chi-square test, as appropriate. Correlation coefficient between body mass index and liposuction volume was calculated with the Spearman test. We performed univariate analyses to identify potential risk factors for postoperative complications. For multivariable analysis, all variables with values of $p \le 0.2$ on univariate analysis were included in the multivariate analysis, and the most suitable model was then selected using the backward selection method. Potential multicollinearity was explored with the variable inflation factor. Because of complete separation for some variables, Firth's biasreduced logistic regression was performed using the "logistf" R package to identify independent risk factors for postoperative complications. The area under the receiver operating characteristic curve of the final model was calculated using the

Characteristic	Value (%)
No.	94
Age, yr	
Median	44.00
IQR	34.25 - 51.00
Gender (female)	94
Pre-massive weight loss BMI, kg/m ²	
Median	46.48
IQR	42.52 - 52.07
Weight loss, kg	
Median	50.00
IOR	38.00 - 57.00
Pre-medial thighplasty surgery BMI, kg/m ²	
Median	27.94
IOR	24.85-31.57
BMI decrease, kg/m^2	
Median	18.77
IOR	14.91 - 22.42
History of bariatric surgery	83 (88.30%)
Adjustable gastric banding	1 (1.06)
Sleeve gastrectomy	19 (20.21)
Gastric bypass	63 (67.02)
Diabetes	3 (3.19)
High blood pressure	7 (7.45)
Tobacco use within past 4 wk	12 (12.77)
ASA classification	
1	19(20.21)
2	70(74.47)
3	5(5.32)
Complications	40(42.55)
Major	0 (0.00)
Phlebitis, pulmonary embolism	0(0.00)
Hematoma	0(0.00)
Minor	
Wound infection	2(2.13)
Wound dehiscence	33 (35.11)
Partial skin necrosis	1 (1.06)
Fat necrosis	1 (1.06)
Seroma	0(0.00)
Delayed wound healing	7 (7.45)
Lymphedema	2(2.13)
Length of hospital stay, days	. ,
Median	4.00
IQR	3.00 - 5.00

IQR, interquartile range; BMI, body mass index; ASA, American Society of Anesthesiologists.

*Patients were reported to be diabetic or hypertensive if they were treated for these abnormalities. They were considered to be smokers if consumption had not been stopped in the month preceding the intervention.

"pROC" R package. A value of p < 0.05 was considered significant.

RESULTS

Demographics

During the study period, 94 patients underwent thighplasty (Table 1). The median age was 44 years (interquartile range, 34 to 51 years). The median body mass index before thigh lifting was 27.94 kg/m² (interquartile range, 24.85 to 31.57 kg/m²) and the median weight loss before surgery was 50 kg (interquartile range, 38 to 57 kg). The median body mass index loss was 18.77 kg/ m² (interquartile range, 14.91 to 22.42 kg/m²). Bariatric surgery was performed in 88.3 percent of patients [mostly gastric bypasses, n = 63 (67 percent)]; the other patients lost weight after a period of adherence to a strict diet and physical activity. We found no between-group difference concerning weigh loss method except for diabetes at the time of thighplasty. (See Table, Supplemental Digital Content 1, which shows the comparisons between methods to achieve massive weight loss, http://links.lww.com/PRS/E591.) The preoperative American Society of Anesthesiologists score was 1 for 20.2 percent, 2 for 74.5 percent, and 3 for 5.3 percent of patients. The median operative time was 98 minutes (interquartile range, 83 to 120 minutes). The median liposuction volume was 1600 ml (interquartile range, 1200 to 1900 ml) and the mean mass of the resected skin was 252 g (interquartile range, 205 to 346 g). The median length of hospital stay was 4 days (interquartile range, 3 to 5 days). Figure 2 shows an example outcome after vertical J medial thighplasty.

Postoperative Complications

Forty patients (42.5 percent) experienced at least one complication (Table 1). No patient experienced any major complication (deep venous thrombosis, hematoma, bleeding, or the need for reoperation). The minor complications included wound dehiscence [33 cases (35.1 percent)] treated by healing with secondary intention. The median wound dehiscence size was 3 cm^2 (range, 1 to 42 cm^2). Delayed wound-healing [seven cases (7.5 percent)], wound infections [two cases (2.1 percent)], fat necrosis [one case (1.1 percent)], and partial skin necrosis at the junction between the horizontal and vertical scars [one case (1.1 percent)] were also noted. Two patients showed lymphedema at the 3-month postoperative consultations, all of which resolved spontaneously within 12 months.

Risk Factors for Complications of the Vertical J Technique

Univariate analysis of risk factors for postoperative complications after vertical thighplasty showed that age (p = 0.006), higher body mass index before thighplasty (p = 0.002), marked change in body mass index after thighplasty (p = 0.046), and longer operative time (p = 0.04) were associated with postoperative complications. A body mass index greater than or equal to 30 kg/ m² (p = 0.017) and hypertension (p = 0.002) were also associated with an increased risk of postoperative complications (Table 2). Multivariate analysis (Table 3) showed that older age and a body mass index greater than or equal to 30 kg/m² were



Fig. 2. Preoperative and 6-month postoperative views of J medial thighplasty. (*Above, left*) Preoperative anterior view. (*Above, right*) Preoperative posterior view. (*Below, left*) Postoperative three-quarter view. (*Below, center*) Postoperative anterior view. (*Below, right*) Postoperative posterior view.

independent risks factors for complications after J vertical medial thighplasty (OR, 1.05; 95 CI, 1.01 to 1.10; p = 0.04 and OR, 2.82; 95 percent CI, 1.10 to 7.22; p = 0.03, respectively).

DISCUSSION

Redundant skin of the medial thigh impacts the quality of life of massive weight loss patients in terms of clothing choices, walking ability, and intimate relationships. As few surgeons are willing to perform the procedure, it is unsurprising that scientific data are lacking. However, as the number of patients suffering from weight loss sequelae is increasing, given the current popularity of bariatric surgery, and because postbariatric surgery increases the quality of life,^{7,15} it is necessary to improve the evidence base pertaining to medial thigh lifts, as has been achieved for abdominoplasty. Only three teams have assessed the risk of postoperative complications. The first report (by our team in 2014¹⁶) was a retrospective study of 53 patients. Univariate analysis showed that only a high body mass index before massive weight loss and thigh lifting was a risk factor for postoperative complications; however, 50 patients

Copyright © 2021 American Society of Plastic Surgeons. Unauthorized reproduction of this article is prohibited.

	Postoperative Complications		
Variable	No	Yes	þ
No.	54	40	
Age, vr			$0.006 \pm$
Median	42	47.5	
IOR	32-48.5	39.75-54	
Weight before MWL, kg			0.951
Median	125.50	125.00	
IOR	112.00-137.75	115.00-135.00	
Weight before MTP kg		110100 100100	$0.019 \pm$
Median	71 50	78.00	0.010
IOR	65 00-81 75	71 75-90 00	
Weight loss kg	03.00 01.75	11.15 50.00	0.067
Median	51 50	47.00	0.007
IOR	40 50-65 00	37 00-54 00	
BMI before MWI $k \sigma / m^2$	10.50-05.00	57.00-51.00	0.671
Median	46 99	46.87	0.071
IOP	11 88 59 04	19 82 59 41	
BMI before MTP ka/m^2	41.00-52.04	12.03-32.11	0.009+
Median	96 79	90.87	0.002
IOP	20.72		
PMI before MTP ka/m^2	24.47-29.07	20.97-33.79	$0.017 \pm$
$s^{20} \text{ kg/m}^2$			0.017
< 50 Kg/III	41	90	
IOD	41 75 0	20	
IQK	75.9	30	
250 kg/m ²	10	00	
Median	13	20	
IQK	24.1	50	0 505
Previous bariatric surgery	49 (90.7)	34 (85.0)	0.595
ASA score ≥ 2	40 (74.1)	35 (87.5)	0.179
Smoking	6 (11.1)	6 (15.0)	0.806
Diabetes	1(1.9)	2 (5.0)	0.791
Hypertension	0 (0.0)	7 (17.5)	0.002†
Liposuction volume, ml			0.268
Median	1425.00	1600.00	
IQR	1025.00 - 1937.50	1200.00-1925.00	
Weight resection, g			0.702
Median	251.00	256.00	
IQR	208.00-325.25	206.50-346.00	
Operative time, min			0.04^{+}
Median	87.00	98.00	
IQR	76.25–108.50	83.00-120.00	

Table 2. Univariate Analysis of Overall Complications after J Medial Thighplasty*

IQR, interquartile range; MWL, massive weight loss; MTP, medial thighplasty; BMI, body mass index; ASA, American Society of Anesthesiologists.

*The values for categorical variables are numbers and percentage and the values for quantitative variables are median with interval interquartile range.

†Statistically significant.

were treated using a horizontal technique and only three were treated by means of vertical thighplasty; thus, we could not compare the two techniques. No other parameter was associated with an increased rate of complications. The second study, using a more robust methodology, was performed

 Table 3. Multivariate Analysis of Postoperative

 Complication Risk Factors after J Medial Thighplasty*

Variable	OR (95% CI)	þ
BMI ≥ 30 kg/m ² Hypertension	$\begin{array}{c} 2.82 \ (1.10{-}7.22) \\ 15.78 \ (0.63{-}393.17) \end{array}$	0.03 + 0.09 + 0.09 + 0.09 + 0.09 + 0.09 + 0.00 +
Age	1.05 (1.01–1.10)	0.04†

BMI, body mass index.

*Area under the receiver operating characteristic curve of the final model = 0.75.

+Statistically significant.

in 2015 by Gusenoff et al.¹⁷ and included 106 patients. Anemia (OR, 5.3; p = 0.03) and advanced age (OR, 1.29; p = 0.02) were associated with an increased rate of complications. Their study had a superior design compared to our work; it included a larger cohort and used multivariate analysis. A higher body mass index was not associated with complications, contrary to our previous finding. The number of cases in the horizontal group was much lower than in the vertical group, explaining why no significant group difference was evident (p = 0.1). Also, the cited authors performed fullthickness excisions. Notably, the vertical technique was associated with a relatively high rate of postoperative lymphedema (22 percent), which persisted after 1 year in 1.9 percent of cases (compared to 0 percent after use of the horizontal technique).

A vertical scar was significantly correlated with increased rates of seroma (OR, 2.9; p = 0.02) and lymphedema (p = 0.007). The cited authors also reported a hematoma rate of 5.7 percent; hematoma is a major complication requiring surgical revision. The third study (Afshari et al.¹⁸) analyzed data from a CosmetAssure insurance database and preoperatively enrolled all patients requiring body contouring surgery. All major complications were identified by the surgeon within postoperative month 1. Thus, minor complications, which represented most of the complications, were not documented. However, the data set covered the entire United States and included 1493 patients; such a large number is not feasible for monocentric studies. Ninety-nine patients (6.6 percent) developed major complications requiring hospital operations (as distinct from ambulatory operations and officebased procedures). In this study, tobacco use was identified (on univariate analysis and confirmed on multivariate analysis) as an independent risk factor for complications of thighplasty.

This study was one of the largest series of medial thighplasties performed by the same surgeon. Our database contains an exhaustive list of minor complications, unlike insurance databases. We showed, for the second time, that a high preoperative body mass index is an independent risk factor for complications after vertical medial thigh lifting. Notably, although the complication rate was high, all complications were minor, including impaired wound healing, which may have been caused by our extensive use of liposuction, or by intrinsic skin characteristics associated with massive weight loss (e.g., atrophic dermis, inelasticity) that promote wound breakdown.¹⁹ It is interesting to note that on univariate analysis, certain well-known factors associated with complications after abdominoplasty (change in body mass index, hypertension, and operative time) seemed to be risk factors for complications. However, ultimately, only a high body mass index and advanced age were independent risk factors. Gusenoff et al. also found that older age was a risk factor for complications in a patient series mainly involving vertical scars. Any surgeon planning to use a vertical technique must inform the patient about the risks of complications.

The general operative technique of medial thighplasty merits attention, regardless of the type of scar. In the series performed by Gusenoff et al.,¹⁷ redundant tissue was typically resected in a monobloc manner, which was associated with a reoperation rate comparable to that of abdominoplasty involving traditional undermining. Afshari et al.¹⁸

Plastic and Reconstructive Surgery • October 2021

did not describe their surgical technique, but it may have been similar to that used by Gusenoff et al.,¹⁷ given that the major complication rate did not differ markedly (6.6 percent versus 5.7 percent). In Europe, the approach has gradually changed over the past two decades following the first description of lipoabdominoplasty by Saldanha et al.²⁰ and given its utility for arm contouring.^{3,21} This series was based on the same concept that we applied in our earlier lipo-body lift series⁹ (i.e., on the remarkable tissue laxity induced by weight loss and the need to dissociate the tissue layers to be treated). The thighs are not undermined, and we dissociate treatment of excess skin from that of the underlying fat. Adipose tissue is removed by means of extensive liposuction; the adipocytes are lost but the aim is to preserve the microvascular network. Next, redundant skin is resected just under the dermis. This approach was associated with no major complications and only a few cases of lymphedema. However, medial thighplasty is associated with a high rate of wound-related complications, especially dehiscence. Nevertheless, we encountered only two cases of lymphedema, which resolved within the first postoperative year; we attribute this to our careful preservation of the vascular and lymphatic frameworks. Thus, liposuction can be considered valuable.

There are few guidelines aimed at optimizing the care and safety of this complex patient population. The information provided in this study improves current knowledge of the risks of medial thighplasty. In the future, we will develop algorithms for personalized treatment. Patients must be informed of possible postoperative complications associated with a body mass index greater than 30 kg/m² in particular, and with advanced age. It would be useful to standardize surgery among countries, but this will not be possible until more data have been gathered.

Our work had certain limitations. Although the database was prospectively maintained, our analysis was retrospective. However, when dealing with minor complications (e.g., wound dehiscence) that are easily managed in the outpatient clinic, the fact that the database was constantly updated reinforces the value of the data. However, our data set is not comparable in scope to massive public health and insurance databases.

CONCLUSIONS

The principal goal of body contouring surgery is to meet the expectations of patients with impaired quality of life. Of the available procedures, medial

Copyright © 2021 American Society of Plastic Surgeons. Unauthorized reproduction of this article is prohibited.

thighplasty is associated with a higher complication rate than brachioplasty and abdominoplasty, as emphasized in this study. The risk factors should not be used as a basis to deny treatment to large numbers of patients, but rather to improve the information that they are provided with before surgery; this is important for managing patient expectations and preventing dissatisfaction. In conclusion, we found that a high body mass index and advanced age were independent risk factors for complications of vertical J medial thighplasty.

> Nicolas Bertheuil, M.D., Ph.D. Department of Plastic, Reconstructive, and Aesthetic Surgery

Hospital Sud 16 Boulevard de Bulgarie Rennes 35200, France nbertheuil@gmail.com

REFERENCES

- 1. Lewis JR Jr. The thigh lift. J Int Coll Surg. 1957;27:330-334.
- Lewis JR Jr. Correction of ptosis of the thighs: The thigh lift. *Plast Reconstr Surg.* 1966;37:494–498.
- 3. Le Louarn C, Pascal JF. The concentric medial thigh lift. *Aesthetic Plast Surg.* 2004;28:20–23.
- 4. Lockwood TE. Fascial anchoring technique in medial thigh lifts. *Plast Reconstr Surg.* 1988;82:299–304.
- Bracaglia R, Tambasco D, Gentileschi S, D'Ettorre M. L-shaped lipothighplasty. Ann Plast Surg. 2015;75: 261–265.
- Bertheuil N, Carloni R, De Runz A, et al. Medial thighplasty: Current concepts and practices. *Ann Chir Plast Esthet*. 2016;61:e1–e7.
- Bertheuil N, Thienot S, Chaput B, Varin A, Watier E. Qualityof-life assessment after medial thighplasty in patients following massive weight loss. *Plast Reconstr Surg.* 2015;135: 67e–73e.
- Bertheuil N, Isola N, Grolleau JL, Watier E, Chaput B. Lifting de face interne de cuisse ou cruroplastie. In: *EMC: Techniques Chirurgicales. Chirurgie Plastique, Reconstructrice et Esthétique.* Amsterdam: Elsevier; 2019:1–12.

- 9. Bertheuil N, Chaput B, De Runz A, Girard P, Carloni R, Watier E. The lipo-body lift: A new circumferential body-contouring technique useful after bariatric surgery. *Plast Reconstr Surg.* 2017;139:38e–49e.
- 10. Bertheuil N, Chaput B, De Runz A, Girard P, Carloni R, Watier E. Reply: The lipo-body lift: A new circumferential body-contouring technique useful after bariatric surgery. *Plast Reconstr Surg.* 2017;140:352e–353e.
- Bertheuil N, Chaput B, Girard P, Carloni R, Watier E, De Runz A. Reply: The lipo-bodylift: An ideal technique for type I and II massive weight loss patients. *Plast Reconstr Surg.* 2017;140:233e–234e.
- Bertheuil N, Chaput B, Bergeat D, Morvan C, Mocquard C, Watier E. The lipo-body lift: Operative technique. *Plast Reconstr Surg Glob Open* 2019;7:e2156.
- **13.** Bertheuil N, Chaput B, Berger-Müller S, et al. Liposuction preserves the morphological integrity of the microvascular network: Flow cytometry and confocal microscopy evidence in a controlled study. *Aesthet Surg J.* 2016;36:609–618.
- 14. Tourani SS, Taylor GI, Ashton MW. Understanding the three-dimensional anatomy of the superficial lymphatics of the limbs. *Plast Reconstr Surg.* 2014;134:1065–1074.
- **15.** Mocquard C, Chaput B, Pluvy I, Bertheuil N. Does medial thighplasty improve the sexual quality of life of patient after massive weight sequelae? *Obes Surg.* 2020;30:1147–1149.
- 16. Bertheuil N, Thienot S, Huguier V, Ménard C, Watier E. Medial thighplasty after massive weight loss: Are there any risk factors for postoperative complications? *Aesthetic Plast Surg.* 2014;38:63–68.
- 17. Gusenoff JA, Coon D, Nayar H, Kling RE, Rubin JP. Medial thigh lift in the massive weight loss population: Outcomes and complications. *Plast Reconstr Surg.* 2015;135:98–106.
- Afshari A, Gupta V, Nguyen L, Shack RB, Grotting JC, Higdon KK. Preoperative risk factors and complication rates of thighplasty: Analysis of 1,493 patients. *Aesthet Surg J.* 2016;36:897–907.
- Xie SM, Small K, Stark R, Constantine RS, Farkas JP, Kenkel JM. Personal evolution in thighplasty techniques for patients following massive weight loss. *Aesthet Surg J.* 2017;37:1124–1135.
- Saldanha OR, Pinto EB, Matos WN Jr, Lucon RL, Magalhães F, Bello EM. Lipoabdominoplasty without undermining. *Aesthet Surg J.* 2001;21:518–526.
- 21. Pascal JF, Le Louarn C. Brachioplasty. *Aesthetic Plast Surg.* 2005;29:423–429; discussion 430.