Aesth. Plast. Surg. 26:223–230, 2002
DOI: 10.1007/s00266-002-1478-z

Aesthetic Plastic Surgery
© 2002 Springer-Verlag New York Inc.

Remodeling Bodylift with High Lateral Tension

J.F. Pascal,[1] and C. Le Louarn

[1]Lyon, France
[2]Paris, France

Abstract. Body lifts are surgical procedures that are infrequently performed because the length of operating time increases the risk to the patient as well as the likelihood of surgeon fatigue. The other drawback of body lifts is the long incision line. However in our experience, these incisions are well accepted if they are well placed and if the results of body change is significant. The goal of this paper is to show how operating time can be shortened and the scar be correctly positioned by using precise preoperative markings. In addition to high superior tension abdominoplasty, the two innovations of this type of body lift are the dermal fat flap and the suspension of tissue in the trochanteric and buttock regions. Meticulous hemostasis limited undermining, and the closure of dead space are factors that produce a more reliable procedure, both in terms of postoperative problems and the final results.

Key words: Bodylift—High lateral tension

From the beginning, we found body lifts to be a unique solution for the large skin excesses that occur after massive weight loss. But, after a lot of reconstructive cases, we now very commonly use this procedure in aesthetic indications.

Preoperative Markings

Precise markings constitute an essential step in the process. They are simple and they are the key to saving valuable time.

The goal is to obtain a symmetrical and harmonious incision. Nothing is less aesthetic than an asymmetric incision line. If the irregularities exceed several centimeters, it will be difficult to hide the incision under a swimming suit. Careful markings prevent large irregularities that cannot be corrected. During surgery, it is easy to correct small shortfalls in height with small local incisions. Precise markings lead to precise resection in one cut. Maximum tension must be placed on the flap during resection to achieve optimal results.

There are several components to the preoperative planning:

1. Four lateral marks
2. Three dorsal marks
3. Two incision lines
4. The design of the flap, if necessary
5. The design of abdominoplasty

Lateral Marks (Fig. 1)

1. A vertical line is drawn along the mid axillary line. This line cuts across the middle of the iliac crest. It separates two very different areas in which the directions of the stretching are opposed. In the abdomen, the stretching is made from the top to the bottom. In the buttocks, this is the inverse.
2. The iliac crest is located visually (the narrowest part of the body) and by palpation. In principle, this method guarantees symmetry in height, but in cases of thick fat deposits, it may be more difficult to determine. In this case, having the patient wear a panty or bathing suit can be of assistance.
3. The height of the upper resection line at the mid-axillary is determined regarding the type of bathing suit worn by the patient. Two solutions are possible: Either an average height (4 cm below the iliac crest) or incision placement in relation to a high-cut bikini. The skin of the iliac crest will shift 2–3 cm downward because of tension during closure. Therefore, the incision line must be 2 cm

Correspondence to: J.F. Pascal, 13, Quai Sarrail 69006 Lyon, France, *email*: jfpascal@wanadoo.fr

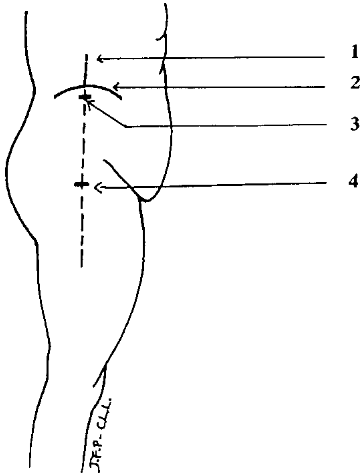

Figure 1. Lateral marks: 1, mid-axillary line; 2, iliac crest; 3, upper resection mark (localization depends on the favorite bathing suit); 4, lower resection mark (positioning is done by pinching).

higher. On very lax skin or if the patient would like to wear high-cut bikini, one sometimes must place the incision line on the iliac crest.

4. To determine the lower resection line on the mid-axillary line the positioning is done by pinching. The lower part can rise 15 to 25 cm. When pinching, tension must be high and may be uncomfortable for the patient. One must always be aware of symmetry. This determination of cutaneous excess by pinching may seem risky as wound closure is impossible in the case of excessive removal, but with experience the method becomes very accurate, but when learning the technique it is advisable to leave an extra 1 or 2 cm.

Dorsal Marks (Fig. 2)

1. Positioning the interspinal line.
2. Lower resection line: it is placed at the top of the groove between the buttocks.
3. Upper resection line. The resection width can be estimated by pinching, but this may prove difficult as the skin is very thick there. It rarely exceeds 10 cm. In any case, it is advisable to be rather conservative in order to prevent the unaesthetic results of an excessively high, elongated groove between the buttocks which seems to be hanging directly from the back.

Incision Lines (Fig. 2)

The posterior and lateral markings then must be joined.

1. Upper line: This must be straight or upwardly convex.
2. Lower line: This line is downwardly concave. The concavity will determine how successful the surgery will be.

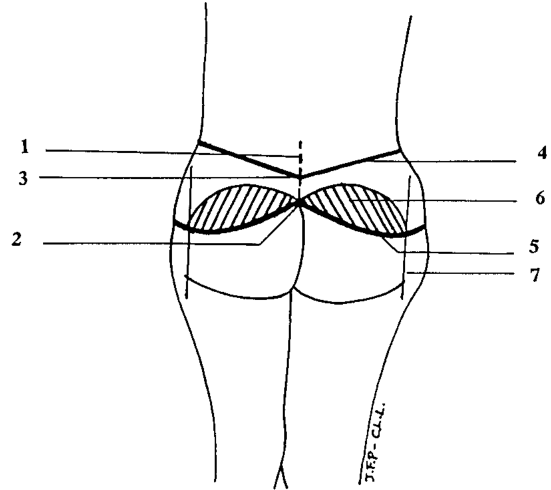

Fig. 2. Dorsal marks: 1, interspinal line; 2, top of the groove between the buttocks; 3, upper resection mark; 4, upper resection line; 5, lower resection line; 6, flap's design; 7, vertical line, marking the end of the groove under the buttocks and, most of the time, the end of the flap's design. (The concavity of the lower resection line is maximum.)

There are two zones, the buttock and the trochanteric area. In the buttock, the importance of concavity depends on what we have to remove. If too much skin is removed, there is a risk of excessively spreading the buttocks and exposing the anus and the posterior perineum. The maximum excess of skin is located in the external buttock fold and in the trochanteric region. The concavity of the design must be exaggerated there. It must curve upwards to join the lower lateral line. In total, the extended incision must be neither too high nor too low, and straight or upwardly convex, so most of it can be concealed by panties.

Abdominal Markings (Fig. 3)

The markings start at the mons pubis and follow the rule of 7 (cf: abdominoplasty). The incision line is 7 cm from the superior border of the vulva, this leaving a 7 cm high pubic hair triangle. Laterally, the line is horizontal and 7 cm long on each side. It should be noted that, depending on the morphology, the rule of 7 can also be rule of 6 or even the rule of 5. From that point the design of the marking join the lower lateral line at the level of the vertical line of separation of the body when tension is placed upwards on the skin. If the abdominal mass is too heavy, such markings are made easier by having the patients lie supine. The upper resection limit is not marked. It will be determined during surgery depending on the amount of tissue to be resected.

Le Louarn's and Pascal's Flap

We often noticed that a lot of our patients show atrophy in their buttocks. They are flat and there is a lack of an

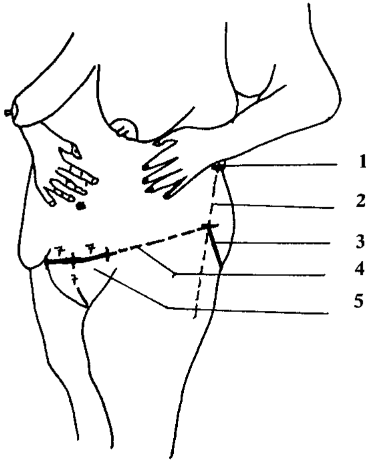

Fig. 3. Three-quarters view. Junction between anterior and posterior markings (The patient is pulling up her abdomen). 1, upper resection mark; 2, interspinal line; 3, lower resection line; 4, junction line; 5, rule of 7.

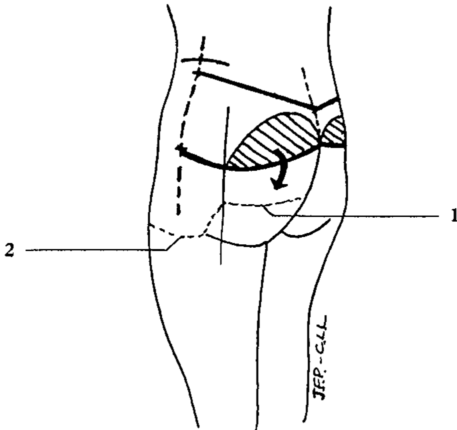

Fig. 4. Three-quarters view. 1, Undermining area for the flat; 2, Undermining area for suspension points.

attractive curve in the lower back which may appear totally straight. The aesthetic importance of this region is well recognized both with clothes and without.

To restore a youthful curvature, part of the tissue normally resected can be used. This technique allows one to fill the upper half of the buttocks, which is the most important region aesthetically (Fig. 4).

1. A flap is designed starting from the lower side to the excision and across the whole length of the buttocks. The external limit is the end of the buttock fold. Thus, the main axis is horizontal and about 25 cm long and 10 cm to 12 cm high. After one incision is made the flap is deepitheliazed (Fig. 5). The dermis is kept for easier insertion and suture, but has no vascular function. The incision of the two edges of the wound to the muscular plane allows the creation of an island dermal fat flap. To give more volume, the design of the flap can be

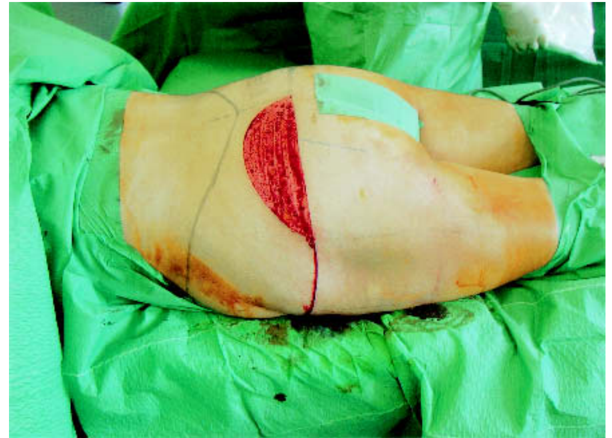

Fig. 5. Deepithelialization of the flap.

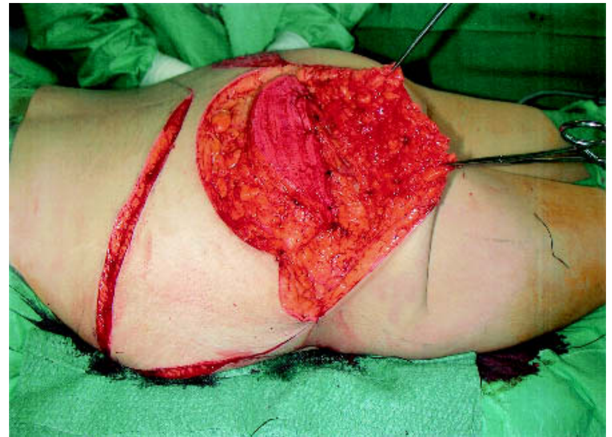

Fig. 6. Anchoring with Number 2 dexon suture.

elongated. This requires undermining a third of the external flap to turn it downwards and inwards.
2. The dissection plane area where the flap will be inserted is created by undermining the buttock just above the muscle (Fig. 6). The dissection plane must extend a sufficient length downwards as the flap consists of very mobile tissues (depending on how much weight the patient has lost) which causes considerable displacement. Often it is possible for the flap to extend to the groove below the buttocks.
3. Anchoring of the flap is accomplished with number 2 Dexon suture between the dermis and the aponeurosis as low as possible. The skin of the buttocks, which is also very lax, is pulled in the reverse direction to cover the flap.
4. The lymphatic draining of the buttocks is not modified by the dissection. The tissues of the buttocks are divided into two lymphatic territories; the first is external and includes two-thirds of the external part of the buttocks, the other is internal and includes one-third of the internal part of the buttocks. The lymphatic vessels which drain the two territories both go to the superficial inguinal nodes, but

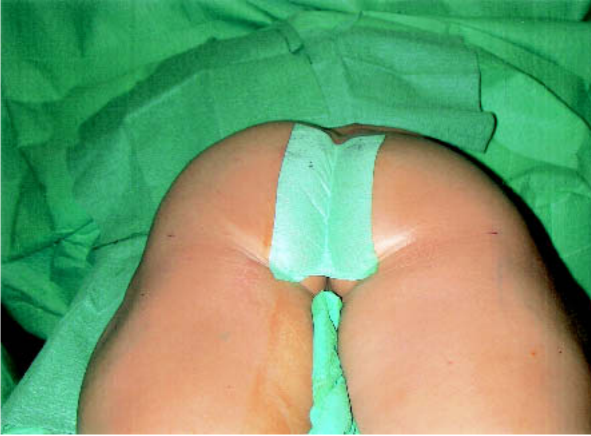

Fig. 7. The left buttock is filled by the flap.

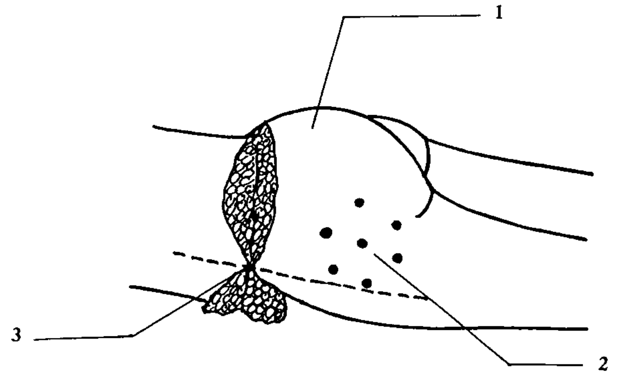

Fig. 8. Supine position: closure has begun by reconstitution of the mid-axillary line (3). 1, The flat is placed under the skin of buttocks; 2, 6–7 suspension-traction points between aponeurosis and superficial fascia.

by two different routes. The lateral trunks pass around the lateral part of the hip and drain into the lateral part of the superficial inguinal nodes. The medial trunks pass around the superior part of the inner thigh and drain into the medial part of the superficial inguinal nodes. Therefore, neither incisions nor dissection will interrupt lymphatic drainage.

5. The flap used in 60% of the cases and extends operating time by about 30 minutes (Fig. 7).

The High Lateral Tension

After our early experience with performed body lifts, we realized that the buttock and trochanteric areas present unique problems if one is to maintain adequate tension (Fig. 8).

1. The trochanteric region (saddlebags). Once liposuction has been performed in the region with a maximum excess of skin. It is also located far from the region which is elevated. Given that the tissues are elastic, a higher cutaneous resection line to tighten them will have only a very limited transitory effect. To have an effect on the trochanteric region, it is necessary to start by effective undermining of to the S.F.S. (Lockwood), before advancing it. The trochanteric region is dissected 15–20 cm inferiorly and wide enough to allow at least six suspension points between the muscular aponeurosis and fascia superficialis. These points must bear relatively strong traction when pulling the skin of the trochanteric region upwards. They may form visible dimples which disappear in time. The suspension has other advantages. It greatly diminished tension on the upper scar segment which is usually subject to strongest tension. It also takes the role of quilting sutures to obliterate the dead space, which we feel is essential.
2. Buttocks: In the case of flat buttocks, the dermal fat flap is often sufficient to fix a slight ptosis. But, in more important cases, it is the same problem as trochanteric skin ptosis. One must operate close to the ptotic region to achieve correction. Hence the technique consists, after undermining of the buttock just above the muscle, to insert six to eight suspension points in various parts of the dissected buttock.

Abdominoplasty/High Superior Tension

The methods in LeLouarn [10] were applied.

Surgical Procedure

1. Preoperative preparation. The patient is place don oral iron therapy one month before surgery. Autotransfusion is possible and particularly useful at the beginning of the procedure since operative time is long and frequent flap tailoring may create more blood loss. If the regions treated are infiltrated with saline with adrenaline serum and hemostasis is meticulous the blood loss is not severe.
2. The procedure starts with the incision of the buttocks, as sutures are stronger and turning the patient from prone to a supine position does not risk separation. These two steps of the procedure require about two hours each.

We perform them in the following order:

A. the infiltration of all areas of surgery particularly in the regions where liposuction is done. This one to one formula is a wet technique.
B. Liposuction of the trochanteric region is always necessary. Superficial and deep liposuction must be done to produce a substantial thinning effect.
C. Posterior incisions do not go beyond the posterior midline. The level of lumbar skin flap resection must be exactly above the muscular aponeurosis. If

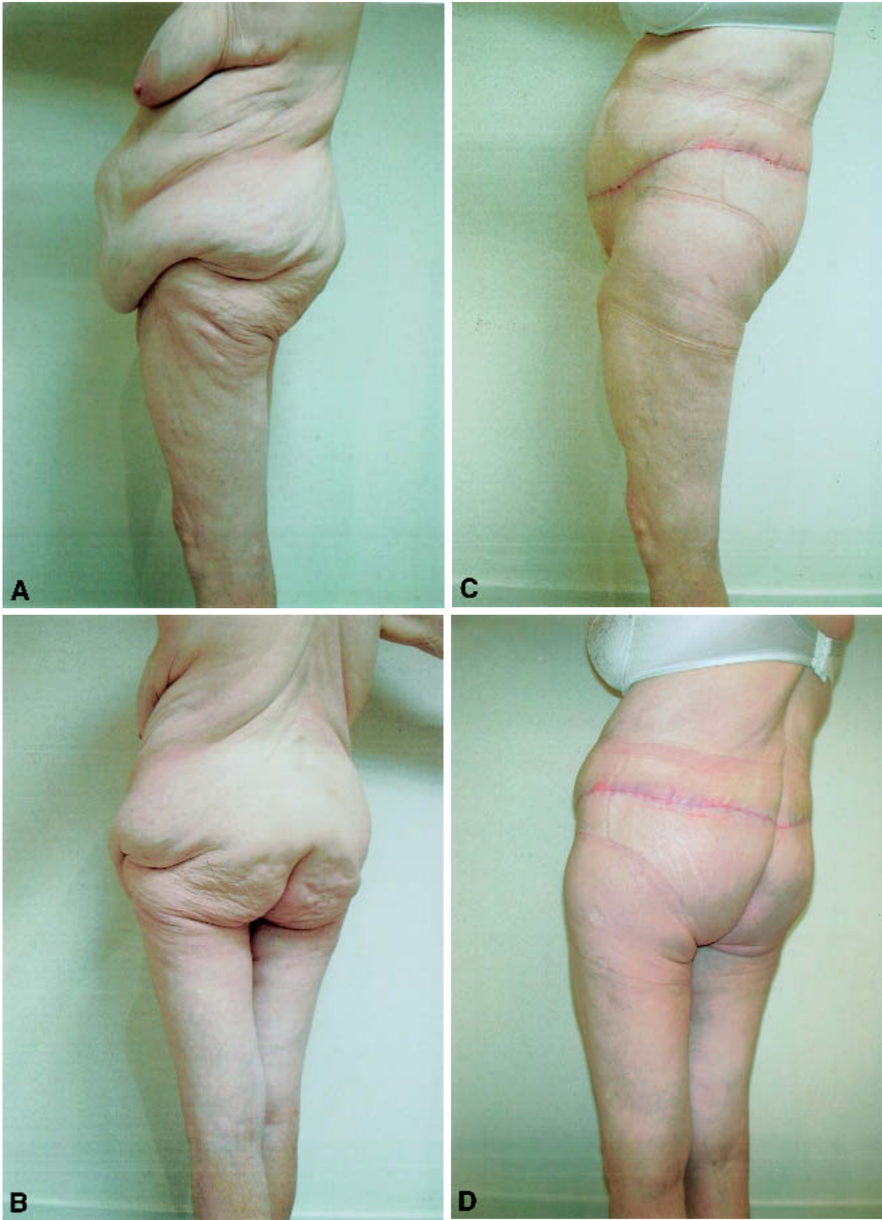

Fig. 9. **(A,B).** Preoperative view. A 50-year-old woman with excess skin after massive weight loss of 40 kilos. **(C,D).** Postoperative view after bodylift. Notice the shape of the buttocks.

fat remains on the muscle, the placing of suspension points will be less reliable.

D. When developing the dermal fat flap, the steps are as follows:
   1. Undermine the buttocks and the external part of the thigh.
   2. Trochanteric and buttock advancement and suspension is then done.
   3. Sutures are placed on three planes: fascia superficialis, subcutaneous and cutaneous.
   4. Following these steps, the patient is turned from a prone to supine position.

Complications and results are shown in Figs. 9, 10, and 11.

Postoperative Care

Drainage: a maximum of 24 hours for anterior drains allows faster mobilization and prevention of embolism. Drainage from posterior drains tends to last for one or two extra days. The urinary catheter is removed after 48 hours. No antibiotics are given. The patient is released from the hospital after six to seven days.

A Series of Forty Cases Since January 2001

Patient satisfaction is very high since the body lift is an impressive procedure which removes a large quantity of

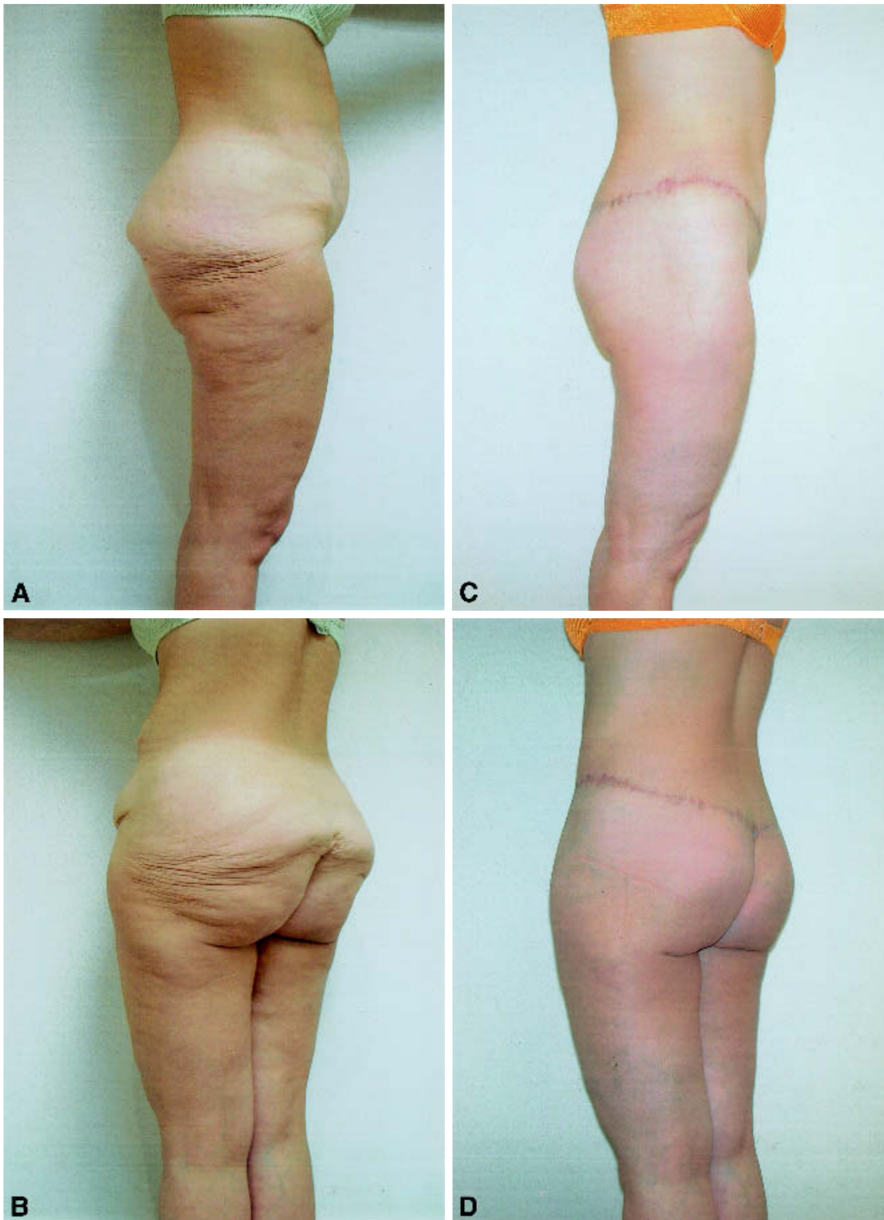

Fig. 10. **(A,B).** Preoperative view. A 30-year-old woman with excess skin after diet. **(B,C).** The flap runs to the groove under the buttocks. The scar is not very nice, but will be redone.

skin and fat. Ted Lockwood use to say: the liposuction makes you thinner and the bodylift makes you younger. The effect of a body lift is all the greater as it treats the regions where weight loss is most difficult to achieve and which are the most bothersome when wearing clothes. In our series, the ratio of complications is very low and the convalescence has been smooth. A more precise study is planned for future publication.

Complications

The anterior part of the procedure. In abdominoplasty with high superior tension most of the usual classical complications such as seroma of the abdomen do not occur.

The posterior part of the procedure. We have never had serious complications with the Island flap, apart from pain in the buttocks in some cases. There is little chance of necrosis as it is highly vascularized. Cutaneous necrosis is not possible either, given the depth of the region that is operated on and limited undermining.

Substantial quilting sutures make seromas unlikely. We have had no case of infection or seromas. A frequent after effect is loss of sensitivity, which is often definitive, in the undermined regions and particularly the buttocks.

Healing problems. Scar hypertrophy is not any more frequent than in classical abdominoplasty, but since the incision is very long, it can be a rather bothersome problem. However, as we have previously mentioned, even if

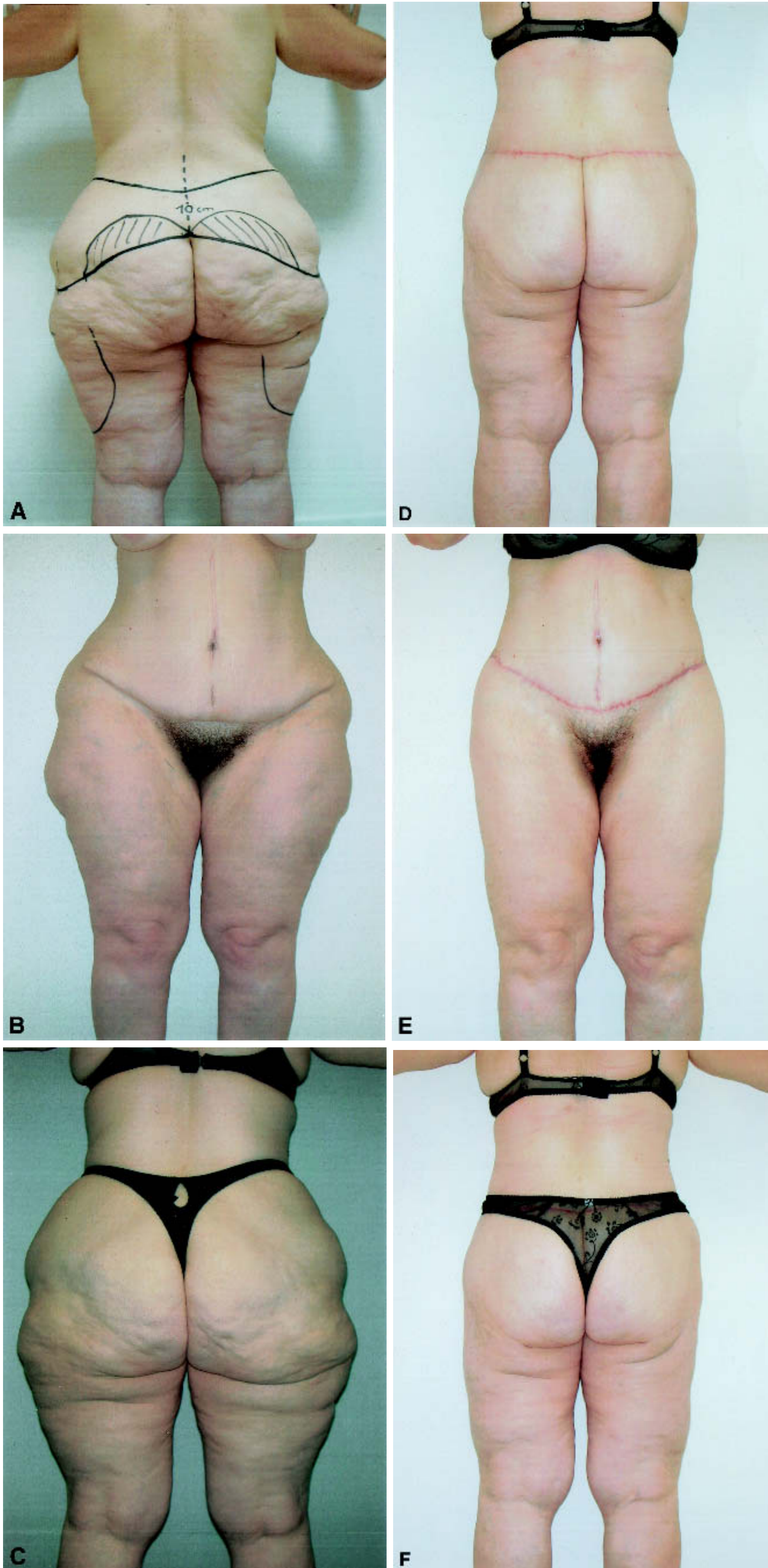

Fig. 11. (A,B,C). Preoperative view. A 45-year-old woman. A more difficult case because of the type of obesity (middle third of the body). The high lateral tension must be very efficient. The drawings are placed at the level of the iliac crest because the patient wanted to wear high cut bikini. **(D,E,F).** The excess skin has been reduced both in height and in circumference.

the scar is average, it is easily accepted if the body shape is harmonious and if the incision is well positioned.

Thrombo-embolic problems. Until now there have been no cases of embolism but we use all possible prophalaxis: wearing postoperative stockings, low weight Heparin, early mobilization, and postoperative massage of the calves.

Conclusion

Thanks to its reliability, its efficiency, spectacular results, and the reasonable length of surgery, the body lift can be adapted to aesthetic cases. We are convinced that this technique will easily find its place in the common therapeutic armentarium of surgeons.

References

1. Baroudi R: Body contouring surgery. *Clin Plast Surg* **16:**263, 1989
2. Baroudi R: Body contouring surgery in the ‘90s. *Adv Plast Reconstr Surg* **9:**1, 1993
3. Baroudi R: Flankplasty: a specific treatment to improve body contouring. *Ann Plast Surg* **27:**404, 1991
4. Baroudi R: Flankplasty. *In* Hetter GP (ed) Lipoplasty: The theory and practice of blunt suction lipectomy, 2 ed. Little, Brown: Boston, 1990, p. 399
5. Elbaz JS, Flageul G: Abdomen plastic surgery. Masson & Cia: Paris, 1977
6. Gonzalez-Ulloa M: Circular lipectomy with transposition of the umbilicus and aponeurotic technique. **27:**394, 1959
7. Grazer FM, Klingbeil JR: Body image: A surgical perspective. Mosby: St. Louis, 1980
8. Hamra ST: Circumferential body lift. *Aesth Surg J* **19:**244–250, 1999
9. Illouz YG: Body contouring by lipolysis: A 5-year experience with over 3000 cases. *Plast Reconstr Surg* **72:**591, 1983
10. Le Louarn C, Pascal JF: High superior tension abdominoplasty. *Aesth Plast Surg* **24:**375–381, 2000
11. Lockwood TE: Fascial anchoring technique in medial thigh lifts. *Plast Reconstr Surg* **82:**299–304, 1988
12. Lockwood TE: Transverse flank-thigh-buttock lift with superficial fascial suspension. *Plast Reconstr Surg* **87:**1019–1027, 1991
13. Lockwood TE: Lower body lift with superficial fascial system suspension. *Plast Reconstr Surg* **92:**1112–1122, 1993
14. Lockwood TE: Superficial fascial system (SFS) of the trunk and extremities: A new concept. *Plast Reconstr Surg* **87:**1009–1027, 1991
15. Lockwood TE: High-lateral-tension abdominoplasty with superficial fascial system suspension. *Plast Reconstr Surg* **96:**603–615, 1995
16. Pascal JF: Lifting of the inner thigh. Thesis of medicine, Lyon 1989
17. Pascal JF, Masson CH: Lifting of the inner thigh. Video film 1991
18. Somalo M: Dermolipectomia circular del tronco. *Sem Med* **47:**1435, 1940