Lower-body Lift

The lower-body lift, designed for patients with multiple lower-body contour deformities, uses a circumferential bikini-line incision to simultaneously lift relaxed trunk and thigh tissues. The author describes 2 lower-body lift procedures, focusing primarily on the high–lateral-tension abdominoplasty with transverse-thigh/buttock lift, which he developed in 1996. (Aesthetic Surg J 2001;21:355-370.)

In the past 15 years, significant progress has occurred in the understanding of aesthetic body deformities of the aged, leading to new body lift designs based on modern surgical principles.1-8 Body contour deformities frequently involve multiple areas of the trunk and thighs. In patients with these problem areas, the ideal surgical plan targets the entire circumferential trunk and thigh aesthetic unit in 1 or 2 stages. The lower-body lift uses a circumferential bikini-line incision to simultaneously lift relaxed trunk and thigh tissues.

In 1992, I presented the original lower-body lift design, referred to hereafter as lower-body lift #1, which combines the anchor medial-thigh lift (1988) and the transverse-flank/thigh/buttock lift (1991) (Figure 1).1,3,4 This technique worked well for patients with minimal abdominal laxity or previous abdominoplasty. For patients with moderate to severe abdominal relaxation, an abdominoplasty was performed before the lower-body lift.

The concept of the high–lateral-tension abdominoplasty (1995) was based on an improved understanding of aesthetic body deformities of the aged.5 In patients with general body relaxation, the maximum vertical relaxation of the trunk/thigh aesthetic unit occurs along the lateral body contour, not along the abdominal or medial-thigh area as is commonly believed. Lateral body tissues collapse toward the central abdomen and medial thighs from each side. The central tissues then sag or hang in a vertical direction, belying the fact that horizontal relaxation is a significant cause of the aesthetic body deformity. Restoring tissues to their youthful location requires shifting relaxed abdominal and thigh tissues toward the lateral body.

In contrast, classic abdominoplasty shifts lateral tissues toward the abdominal midline in a mis-guided attempt to remove the umbilical defect. Actual vertical relaxation of the epigastrium is limited by its strong adherence to the linea alba. Therefore wide undermining of the entire abdominal flap is required to recruit lax tissue along the lateral body to effectively lengthen the epigastric vertical dimension. Wide undermining yields reduced abdominal flap vascularity.

I have found that only minimal undermining is required to return tissues to their youthful location. Minimal undermining yields maximal vascularity, allowing thorough lipoplasty of the trunk and thighs as needed. Direct undermining is limited to the tissue to be resected inferiorly and to the limits of the rectus muscle diastasis centrally. Standard lipoplasty techniques are used in all areas except for the new hypogastrium, where direct fat excision deep to Scarpa’s fascia is performed before wound repair.

In 1996, I combined the high–lateral-tension abdominoplasty with the transverse-thigh/buttock lift for generalized trunk and thigh relaxation, a technique referred to hereafter as the lower-body lift #2 (Figure 2). The lower-body lift #2 is the circumferential body lift procedure that I most commonly perform in my current practice.

The lower-body lift #1 is indicated for patients with minimal abdominal laxity or previous abdominoplasty. If abdominal laxity is moderate to severe, I recommend either an initial high–lateral-tension abdominoplasty followed by thigh/buttock lifting at a second stage, or a lower-body lift #2 in a single stage. The lower-body lift #2 will produce some degree of anteromedial thigh tightening; however, if the medial-thigh problem is severe, a second-stage medial-thigh lift will be required. Treatment plans are always based on the patient’s goals and unique aesthetic needs.
Lower-body lifts have proven to be effective and long lasting, with low risk of significant complications.4,7 Key technical elements of the lower-body lift include the following: incisions placed in current high-cut bikini lines; 2-layer superficial fascial system (SFS) suspension with permanent sutures; direct undermining through the zone of adherence for more distal transmission of lifting forces; discontinuous cannula undermining into the distal thigh, if needed; and lipoplasty of familial fat deposits of the circumferential trunk and thighs.

Markings for Lower-body Lift #2

Accurate and symmetric preoperative markings are critical to the success of lower-body lifts because each side of the thigh/buttock lift is performed without the ability to reference the opposite side. Markings are made with the patient in the standing position (Figures 2 and 4, A). First, high-cut bikini margins are outlined; the final incisional scar should always lie within these outlines.

The superior anchor-resection line is marked along the lateral body contour and continues posteriorly. The
Figure 2. **A**, The lower-body lift #2 combines the thigh/buttock lift with the high-lateral-tension abdominoplasty. Vertical reference lines *(purple)* at intervals around the circumferential body help maintain symmetry. The superior anchor-resection line *(blue)* is the initial incision line; no undermining is performed superior to this line. **B**, The anchor line for the high lateral tension abdominoplasty is the *inferior blue line*. The *superior blue line* is for reference only, and the actual extent of resection is usually less than indicated.

Figure 3. The patient is placed in the lateral decubitus position (foot to the right) in readiness for the thigh/buttock lift. A vacuum beanbag is used for positioning. The hips are flexed 45 degrees, and the thighs are held in wide abduction with foam blocks. The areas for planned deep *(D)* lipoplasty are marked. The only direct undermining of the thigh flap is in the lateral trochanteric area. Epinephrine infusion is not used near undermined flap edges.
amount of vertical tissue redundancy superior to the planned line of closure is estimated while the patient’s knees are 6 to 10 inches apart. This is usually 4 to 5 cm of stretched skin, representing about one fourth the vertical excess along the lateral body. Next, the redundant tissue inferior to the line of closure is estimated. This generally ranges from 10 to 18 cm vertically along the lateral contour, producing a total vertical resection of 14 to 23 cm of stretched skin. Although the actual extent of resection is determined at surgery, symmetric estimated resection lines are used as a reference to help maintain postoperative symmetry of the final scar.

An inferior anchor-resection line is marked anteriorly to resect inguinal redundancy inferior to the final scar line.

A superior reference line is marked across the abdomen at the umbilical level.

**Operative Technique**

After receiving general anesthesia, the patient is placed in the lateral decubitus position on a vacuum beanbag positioner with hips flexed at a 45-degree angle and thighs abducted with foam blocks to keep the knees 15 to 18 inches apart (Figure 3). Lipoplasty of the posterolateral trunk and circumferential thigh is performed if needed. An incision is made through the superior resection line. Undermining superficial to muscle fascia is begun along the lateral contour anterior to the iliac crest, staying lateral to the femoral triangle lymphatics (Figure 4).
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The dissection then sweeps posteriorly in the same plane, leaving deep fat posterior to the iliac crest. Direct undermining should extend only beneath the flap to be resected (Figure 5). Beyond this line, no direct undermining is performed over the buttocks or into the thigh except for the trochanteric region. The SFS fibrous adherence in the trochanteric region must be released with direct undermining to allow distal transmission of the lifting forces.

Next, discontinuous blunt undermining is performed more distally if the aesthetic deformity extends into the lower half of the thigh (Figure 6). The redundant soft tissue is resected with use of flap-splitting techniques and a D’Assumpcao, Pitanguy, or Lockwood marking clamp (Padgett Instruments, Kansas City, MO) (Figure 7, A).

Resecting more SFS than skin allows for minimal-tension skin repair after SFS anchoring sutures are placed (2-layer, #1 and 2-0 braided nylon, dipped in antibiotic or povidone-iodine solution, on large taper needles) (Figure 7, B). Two #15 or #19 French fluted (Blake) silicone drains (Ethicon Inc., Somerville, NJ) are inserted into each distal thigh, exiting the mons pubis anteriorly and near the incision posteriorly. Stacked towels are temporarily sutured to reduce pressure when surgery is performed on the opposite side (Figure 7, C).

After completion of the second thigh/buttock lift, the patient is placed in the supine position for the final stage of the procedure (Figure 8). The hips remain flexed at 40 to 45 degrees, with the thighs widely abducted and the knees supported with blanket rolls.

Figure 4. B, The superior anchor line is incised initially to the region of the anterior superior iliac spine. Undermining of the tissue to be resected is started laterally, superficial to muscle fascia, then continues posteriorly in this same plane over the iliac crest. This preserves deep fat posterior to the iliac crest.
Figure 5. A, Direct undermining continues beyond the posterior midline beneath the tissue to be resected and beneath the thigh flap in the trochanteric area only, releasing the superficial fascial system zone of adherence. No undermining of the gluteal tissues is performed. B, The deep fat posterior to the iliac crest is preserved. The resection flap is thicker posterior to the iliac crest.
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Figure 6. A, A Lockwood discontinuous undermining dissector (Byron Medical, Tucson, AZ) is used to release fibrous adhesions (superficial fascial system) more distally into the thigh as needed. Keep the instrument just superficial to muscle fascia and at right angles to the body surface. B, The discontinuous dissector is moved with an “in-and-out” motion. Use the dissector as far as the knee if there is looseness of the distal thigh. This loosens the tissues without cutting nerves or blood vessels.

Figure 7. A, A marking clamp is helpful in determining the appropriate extent of flap resection. To reduce tension of skin closure, leave 2 to 3 cm more skin than the clamp indicates. In addition to the Lockwood clamp shown here, the Pitanguy or D’Assumpcao clamp (Padgett Instruments, Kansas City, MO) may be used (see Figure 9, A).
After hemostasis and placement of drains, wound repair is performed. A 2-layer superficial fascial system repair with nonabsorbable sutures is the primary anchor for the body lift. I use #1 and 2-0 braided nylon dipped in antibiotic or povidone-iodine solution on large (CT-1 and CT-2) taper needles.

The skin is repaired with a running deep-dermal absorbable suture, 3-0 PDS (Ethicon Inc., Somerville, NJ), to provide a thicker dermal cover over superficial braided nylon knots. A final running superficial 3-0 polypropylene suture completes the skin repair. Stacked towels are temporarily sutured to reduce pressure on the undermined thigh flap while the thigh lift is performed on the opposite side.
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The high–lateral–tension abdominoplasty begins with the inferior anchor-resection line incision. Direct undermining is limited to the tissue to be resected inferiorly and to the edges of the rectus diastasis centrally above the umbilicus. After diastasis repair, the tissue is resected with the highest tension along the lateral thirds of the anterior incision (Figures 9 and 10). A final drain is placed into the epigastrium, exiting via the mons pubis. The SFS is repaired with 0 and 2-0 braided nylon, and the skin is sutured with running 3-0 PDS (Ethicon Inc.) deep-dermal suture and a running 3-0 Prolene (Ethicon Inc.) in the superficial dermis.

Light dressings are applied. A compression garment is not used. Postoperatively, the hips are flexed and the thighs are abducted to reduce tension on the wound. At least one drain on each side should remain in place for 14 to 21 days after surgery. Antibiotics are continued until all drains are removed.
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In the lower-body lift #1 (Figure 1), a medial-thigh lift and limited suprapubic resection are performed instead of the high-lateral-tension abdominoplasty. Vertical lines extend inferiorly from each end of the short horizontal suprapubic line toward the pubic tubercle, defining the new width of the mons pubis. The incision should be placed within bikini outlines, but I would caution against excessive narrowing of the mons width.

The incision then courses along the perineal-thigh crease from the pubic tubercle to the posterior perineal-thigh crease. Do not extend the incision into the but-
The lateral mons pubis and perineal-thigh crease skin incision is made. Undermining inferior to the pubic tubercle is performed superficial to the adductor muscle fascia. Only the tissue to be resected is undermined. Lateral to the pubic tubercle, care is taken to leave the soft-tissue bundle coursing between the mons pubis and the femoral triangle. Very superficial (8 to 10 mm) undermining over this bundle preserves the external pudendal blood and lymphatic vessels, reducing the risk of lymphatic complications.

Nonabsorbable anchoring sutures (0 braided nylon, dipped in antibiotic or povidone-iodine solution) into Colles’ fascia are used for all patients. In addition, Scarpa’s fascia is used as the anterior anchor to the adductor longus; the buttock fold superficial fascial system anchors posteriorly. (Figure continued on next page)
budded nylon sutures are placed into the SFS of the thigh flap (Figure 11, C). Skin is repaired with 3-0 Vicryl der-
mal sutures (Ethicon Inc.) and interrupted 3-0 nylon simple sutures. Light dressings are applied; compression garments are not used.

Operative time for lower-body lifts is generally 6 to 9 hours, depending on the extent of trunk and thigh lipoplasty. Usually 1 to 2 units of autologous blood are donated preoperatively. Patients who have undergone a lower-body lift are monitored on an inpatient basis for 4 to 5 days after surgery, depending on the degree of lipoplasty and lifting. Prophylactic antibiotics are start-
ed preoperatively and continued until the last drain is removed (10 to 20 days). Dressings are removed 1 to 2 days after surgery, and silver sulfadiazine cream is then applied to the incision twice daily. After 24 to 36 hours, patients are allowed to stand at the bedside and begin a course of progressive ambulation with a walker. Stool softeners and protein drinks are started on the first postoperative day, and then patients begin a high-protein diet. An exercise bodysuit or leotard is worn after 2 to 3 weeks and is used for several weeks for comfort and support.

Most patients are back to a limited work schedule in 3 to 4 weeks and can resume full vigorous physical activity in 2 months. Complications include suture reactions/infections, seromas, hematomas, delayed wound healing, wound infection, wound dehiscence, prominent or widened scars, paresthesias or anesthesia, and recurrence of aesthetic deformity because of underresection. Major complications such as major infection, pulmonary embolus, or death are rare.

Proper patient selection and careful preoperative planning will limit untoward results. Although the procedures are complex, lower-body lifts produce predictable and gratifying outcomes with low risk of serious complications (Figures 12 and 13).
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Figure 12. A, C, Preoperative views of a 38-year-old woman after massive weight loss and previous abdominoplasty. B, D, Postoperative views 8 months after transverse-thigh/buttock lift and medial-thigh lift (lower-body lift #1) with selective lipoplasty of trunk and thighs (see markings in Figure 1). The small transverse scar of the upper-left thigh (D) is a result of a subsequent vein-stripping procedure.
Figure 13. A, C, Preoperative views of a 50-year-old man, with a history of gastric bypass procedure, after a 200-lb weight loss from his highest weight of 450 lbs. B, D, Postoperative views 1 year after combined transverse-thigh/buttock lift and high-lateral-tension abdominoplasty (lower-body lift #2). I do not recommend a vertical midline abdominal resection for patients who have experienced massive weight loss. The incisional scar should remain within bikini outlines.
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Dr. Lockwood’s rediscovery and elucidation of the superficial fascial system\(^1\) is a landmark in body-contouring surgery. This article neatly synthesizes his 15-year experience with the lower-body lift and integrates the relevant anatomic background.\(^2\)\(^-\)\(^5\)

There is little to add to his presentation, but I would like to emphasize certain points and present a few alternatives.

Start small. For the surgeon who is new to body lifting, it is prudent to perform each component of the “combined” lift separately to gain experience with simple procedures before attempting a complex one. Medial-thigh lift, high–lateral-tension abdominoplasty, or lateral-thigh/hip/buttock lift can each be performed separately for staged torso and thigh reconstruction.

Preoperative marking. Thoughtful preoperative planning and accurate, precise marking are the sine qua non of a successful surgical outcome for these complex procedures. The surgeon should allocate adequate time for preoperative marking.

Positioning. Unlike Dr. Lockwood, I prefer a single, circumferential preparation of the skin at the beginning of the operation. After skin preparation, the patient is positioned on a vacuum beanbag, and undermining of all areas is first performed with the patient in the supine position and then with the patient turned sequentially in the right and left lateral decubitus positions. After completion of all undermining, skin resection and closure are first performed with the patient prone and then with the patient supine.\(^6\) The single preparation saves operative time and does not compromise undermining and resection.

Preinfiltration with epinephrine solution. I disagree with Dr. Lockwood’s advice to refrain from infiltrating the superficial wound edges with epinephrine-containing solution. I perform a generous 3-dimensional saturation of all tissues with epinephrine (1:1,000,000 in lactated Ringer’s solution). The resultant reduced bleeding shortens the procedure, makes it less traumatic, and has obviated the need for transfusion in my practice.

Preservation of the deep layer of the superficial fascial system. Dr. Lockwood mentions preservation of the deep layer of the superficial fascial system in areas posterior to the anterior-superior spine of the iliac crest. Leaving this deep layer in situ is essential for the maintenance of the normal, rounded appearance of the hip/buttock area. The deeper fat is separated from the superficial fat by a distinct, easily recognized fascial sheet. Dissection should be just deep to this fascial sheet, leaving undisturbed the larger, orange-colored fat lobules of the deep layer of the superficial fascial system. Inadvertent dissection through or under the deep fat will cause increased bleeding.

Permanent deep sutures. I agree with Dr. Lockwood that permanent deep sutures are essential to long-term maintenance of lifts in the lower trunk and thigh area. The disadvantages of the permanent sutures are that the patient will sometimes be able to palpate them beneath the surface of the skin. Also, if postoperative infection supervenes, permanent sutures may make the infection more difficult to eradicate.

Commentary

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References


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The following strategies will lessen the disadvantages of permanent sutures:

1. Use the minimal number of permanent sutures; you can alternate permanent with absorbable. (Monocryl [Ethicon Inc., Somerville, NJ] is my favorite, but Vicryl [Ethicon Inc.] or PDS [Ethicon Inc.] are also usable.)
2. Bury the knots carefully.
3. Close the wounds with penetrating towel clips to reduce tension while tying the knot.
4. Lay down 4 square, flat ties for all knots. More than 4 throws on each knot is redundant and burdens the wound with unnecessary foreign body mass.

Complications. Dr. Lockwood mentions minor and major complications. I would like to emphasize that operations of this magnitude have a significant potential for serious, sometimes life-threatening, complications. As always, careful patient selection and efficient, minimally traumatic surgery will reduce the likelihood of all complications.

References