Outpatient Abdominoplasty Under Conscious Sedation

Thomas A. Mustoe, MD; Peter Kim, MD; and Clark F. Schierle, MD, PhD

Dr. Mustoe is Chief and Drs. Kim and Schierle are Residents, Division of Plastic Surgery, Northwestern University, Feinberg School of Medicine, Chicago, IL.

According to the authors, advantages of outpatient abdominoplasty performed with the patient under conscious sedation are decreased nausea and vomiting and greatly reduced risk of deep venous thrombosis. Sharp dissection without electrocautery, preservation of perforators, and a plane of dissection that preserves lymphatic vessels has provided rapid recovery, minimal need for postoperative narcotics, and a low complication rate. (*Aesthetic Surg J* 2007;27:442–449)

We reviewed our experience performing outpatient abdominoplasty with the patient under conscious sedation in 2004.[1] Since then, the senior author (TM) has performed an additional 150 procedures, adding refinements that have further improved outcomes, confirming our favorable experience with this approach.

Since we began performing abdominoplasty with patients under conscious sedation, there have been no unplanned hospital admissions, no conversions to general anesthesia, no hematomas, and no infections requiring intravenous antibiotics. Occasionally, for convenience, patients choose to spend the night in the hospital. We continue to have occasional scar revisions, rare localized infections at the incision site, and a seroma rate of less than 5%. (Seromas have responded well to one to two aspirations performed in the office).

Conscious Sedation

The senior author's experience with conscious sedation includes more than 3000 cases since 1991 in which patients have had a complete absence of complications other than occasional nausea, vomiting, and infrequent incidents of longer recovery times from sedation. No patient has required intubation, one patient needed reversal with naloxone for respiratory depression, and there have been no cardiac events.

With experience, we have tended to increase the amount of preoperative diazepam (range 5 to 140 mg) used; the median dose we administer to yield a therapeutic effect is 30 mg. The dosage is determined by patient response, but there is also a high correlation with patient sensitivity to alcohol, that is, how many drinks it takes to feel mildly intoxicated or relaxed. More medication is needed in patients with a history of taking benzodiazepines or other medications with central nervous system effects.

Diazepam dosage is administered in 5- to 10-mg increments every 2 to 3 minutes until nystagmus and slurring of speech are observed. The patient is monitored with a pulse oximeter and, by direct observation, through conversation.

Adequate preoperative diazepam administration ensures that the patient is not anxious when entering the operating room and avoids peaks and valleys in sedation level that can occur with short-acting midazolam. All patients receive clonidine to augment the effects of sedation.[2]

During surgery, we have decreased fentanyl administration. We used to administer maintenance fentanyl regularly during the case but now limit fentanyl to just before local anesthetic injections. Formerly, we administered an average of 200 mg/case, and now it is about half of that and frequently as little as 50 µg for the entire procedure. With reduced fentanyl the occurrence of perioperative nausea and vomiting has been rare, even in patients with a very strong history. For such patients, a cocktail of intravenous dexamethasone, metoclopramide, ondansetron, and promethazine is given prophylactically.

A key safety factor is avoiding a deep plane of sedation that requires supplemental oxygen. Our goal is to ensure that patients are under *conscious* sedation and able to respond to commands. All of our conscious sedation procedures are performed in a hospital operating room setting with medications given under the surgeon's direction, with a nurse monitoring, and with hospital resources available to handle an adverse event. Our practices have been rigorously reviewed by a quality assurance committee, consisting of nursing and anesthesia representatives, on an ongoing basis. Because of the absence

of problems, these techniques have gained widespread acceptance within the hospital and are used by other attending surgeons and residents.

Under conscious sedation, the calf muscle pump action and thermoregulatory reflexes are preserved; therefore we have not needed warming blankets or antiembolic prophylaxis even in patients at high risk. The senior author has never observed a clinical case of deep vein thrombosis (DVT) with the patient under conscious sedation although, arguably, many cases of DVT are clinically silent. Although, admittedly, this is only our impression on the basis of anecdotal observation, we strongly believe the risk is no greater than the risk during a night's sleep and therefore prophylaxis is not necessary.

Local Anesthetic

The critical factor in the success of conscious sedation is achieving effective local anesthesia. The incision line is infiltrated with 0.3% or greater lidocaine, and the subcutaneous fat underneath the incision is tumesced with standard lipoplasty wetting solution. The lateral portion of the incision is made down through Scarpa's fascia (where there is minimal subcutaneous fat even in obese patients) to identify the correct plane for local anesthetic infiltration. Then wetting solution is infiltrated along the abdominal fascia.

The areas in which supplemental lipoplasty is to be performed, such as waist, hips, costal margins, and back, are also infiltrated at this time. A range of 1 to 4 L of solution is used depending on the amount of supplemental lipoplasty and the patient's weight. The hydrodissection makes the field bloodless and makes it quite easy to identify perforators. Occasionally, additional concentrated local anesthetic is necessary for some of the perforators; however, maintaining a surgical dissection plane below Scarpa's fascia, but well above abdominal fascia, has aided in achieving complete local anesthesia.

The same technique, with a dose of up to 35 mg/kg lidocaine, can be used for circumferential body lifts and combined breast and abdominal procedures. We have gone somewhat above this dose to 40 to 45 mg/kg, recognizing that the abdominal tissue (and in breast reduction, the breast tissue) is being excised, resulting in less lidocaine absorption than with lipoplasty alone.

Obtaining anesthesia of the abdominal fascia is not problematic because of effective wetting solution diffusion through the fascia when high volumes of solution are used. A key advantage of high volume infiltration of local anesthesia is the long duration of effects. The patient is typically almost pain free for many hours; this facilitates early ambulation and bathroom use, which aid in early discharge and recovery.

Abdominoplasty Technique

We use a modified high lateral tension technique. The extended incision allows for a more central directional pull of the abdominal flap, thus accentuating the waistline while still avoiding lateral fullness (Figure 1). In some patients scars will extend to the posterior hips, although we perform circumferential body lifts infrequently (Figure 2). In patients with massive weight loss, we usually work on the breasts and abdomen as one procedure, saving the thigh-buttocks area for a second procedure, to allow greater tension on the abdominal closure.

Over time, our plane of dissection has evolved to a location above the lymphatic vessels, running just superficial to the abdominal fascia. In a thin patient this plane of dissection is just deep to Scarpa's fascia. Avoiding the disruption of lymphatic vessels has resulted in a diminished need for drains. In thin patients, we use one drain only and routinely remove the drains 3 to 4 days after surgery; this has not increased our low seroma rate. We do not use pleating stitches.[3]

We use sharp dissection with bipolar cautery. The wetting solution interferes with monopolar electrocautery, which would also be more painful in the awake patient. We take great care to preserve perforators along the costal margins, which also preserves sensation in most of the abdomen and allows reliable abdominal flap survival, even with substantial tension and greater amounts of skin excision. Loupe magnification is useful in dissection (to preserve perforators) and in closure to ensure precise dermal reapproximation. The greater tension allowed by this meticulous preservation of blood supply accentuates the contours of the anterior abdomen. This minimizes the need for lipoplasty in the upper abdomen, making it necessary only infrequently.

Aesthetically, a low scar is important. Routinely, we remove 3 to 5 cm of hair-bearing skin in the pubic region, leaving the underlying fatty tissue. This allows for overlap of the abdominal flap with this fatty tissue in a beveled fashion, thereby minimizing scar depression and the need for sutures in Scarpa's fascia. An additional advantage of this closure method is that it maintains native vascularized tissue between the abdominal fascia and the overlying skin of the abdominoplasty flap. Frequently, we close the umbilical site as a straight vertical line above the transverse incision (Figure 3) or as a "T" to preserve the aesthetics of a low scar (Figure 4).

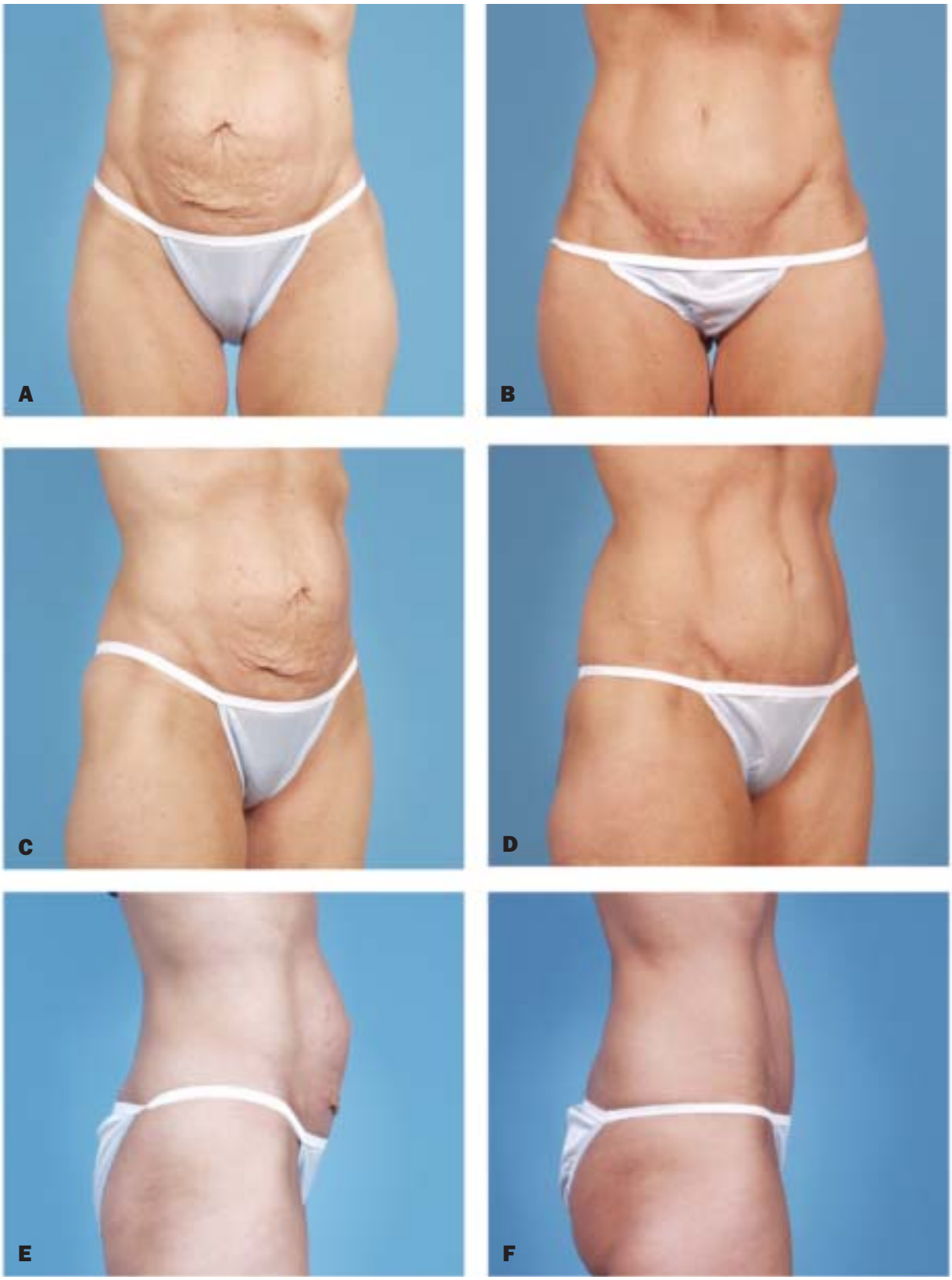

Figure 1. A, C, E, *Preoperative view of a 38-year-old woman.* **B, D, F,** *Postoperative view 15 months after abdominoplasty with fascial plication. High lateral aspect of incision remains below bikini line.*

Figure 2. A, C, E, *Preoperative view of a 48-year-old woman.* **B, D, F,** *Postoperative views 10 months after abdominoplasty and lipoplasty of the hips and thighs. Incision extending to the posterior hips allows for central pull of the abdominal flap.*

Although a mini-abdominoplasty can be useful in selected patients, frequently, the rectus diastasis and the skin laxity extend above the umbilicus. The extended mini-abdominoplasty with a floating umbilicus, allowing optimal treatment of the rectus muscle has been quite useful, but movement of the umbilicus more than 2 to 3 cm is undesirable.

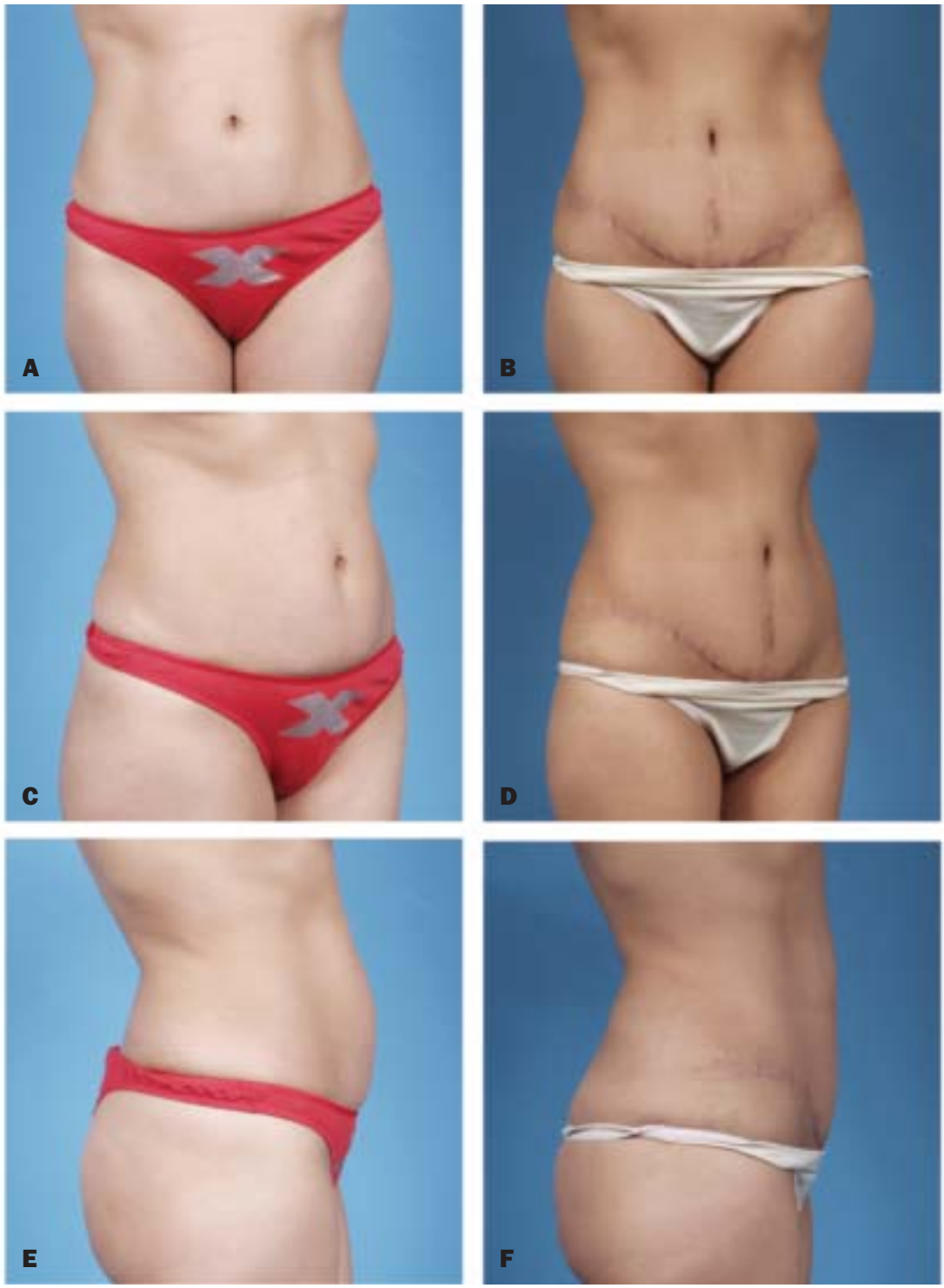

Figure 3. A, C, E, *Preoperative view of a 35-year-old woman.* **B, D, F,** *Postoperative views show patient with immature scars 6 months after abdominoplasty and rectus abdominis plication with vertical closure of the umbilicus.*

Umbilicus

We have continued to use our technique for the umbilicus.[4] Its virtues are simplicity, hidden scars (because of the depth of the umbilicus), and high patient satisfaction (patients feel comfortable in a bikini). No skin is excised; only a vertical slit is made,

Figure 4. A, C, E, *Preoperative views of a 37-year-old woman.* **B, D, F,** *Postoperative views 1 year after abdominoplasty with fascial plication with a* T *closure at the site of the old umbilicus to keep the transverse scar optimally low, and lipoplasty of the hips and buttocks. Vertical component of umbilicus incorporated in transverse closure to preserve low incision.*

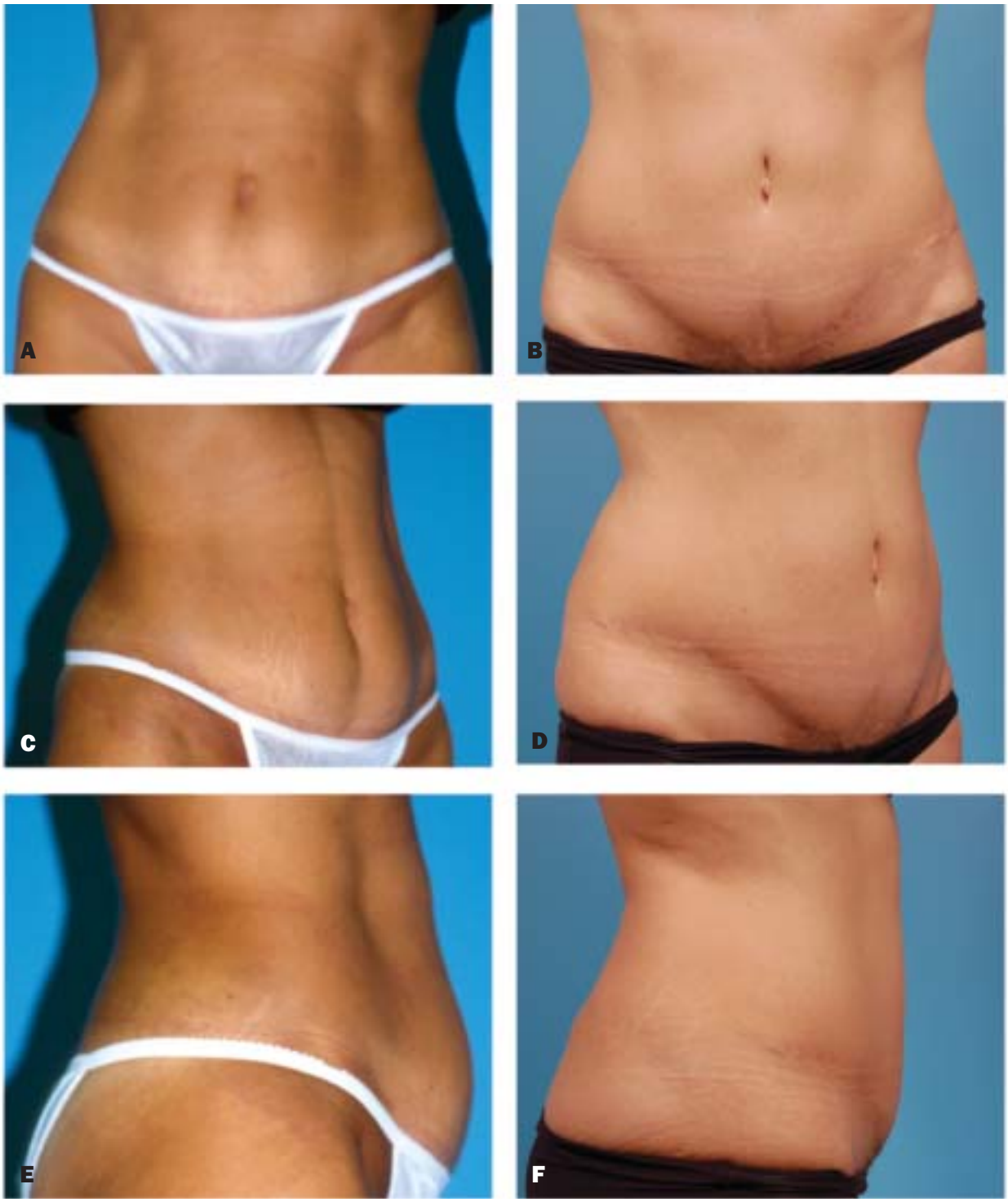

Figure 5. A, C, E, *Preoperative views of a 38-year-old woman.* **B, D, F,** *Postoperative views 7 years after abdominoplasty with fascial plication and lipoplasty of the hips and thighs demonstrate fully matured scar.*

resulting in an aesthetically pleasing small umbilicus (Figures 1 to 5). The fascia is imbricated very snugly around the umbilicus to aid in pulling it in, creating a natural-looking contour. The results are most pronounced in a thin patient with a previously everted umbilicus.

Skin Closure

In our opinion, and on the basis of our clinical results, the key to successful scar outcome is effective suture-splinting of the dermal closure for the duration of the scar remodeling period, which is 6 months (Figure 5).[5-7] Accordingly, there are two principles that are critical to the skin closure: (1) minimizing deep dermal sutures (knot extrusion is detrimental to scar outcomes); and (2) meticulous placement of a continuous intradermal polypropylene suture that is left in place for a minimum of 6 months. This method effectively splints the surgical incision and offloads tension from the dermal edges. We believe that Scarpa's sutures, as popularized by Lockwood, are not necessary when this technique is used.[3]

Lipoplasty

Lipoplasty is a useful adjunct for optimizing contour of the waist and hips. As reported by previous authors,[8] we have not seen problems when it is used in combination with abdominoplasty. Furthermore, abdominoplasty with lipoplasty is frequently performed in tandem with lipoplasty of the thighs, buttocks, and other areas, as well as other procedures (breast reduction, mastopexy, face lift, etc.), as long as the amount of local anesthetic used is not excessive and the length of the procedure does not exceed 4.5 hours.

Summary

Outpatient abdominoplasty with the patient under conscious sedation is applicable to almost all patients, except for those with severe anxiety who have used anxiolytic medications long term and are therefore resistant to sedation. Advantages include a low incidence of nausea and vomiting and reduction or elimination in the risk of DVT. The technique of sharp dissection without the use of electrocautery, preservation of perforators, and a surgical plane of dissection that preserves lymphatic vessels has allowed for a rapid recovery, minimal need for postoperative narcotics, and a low complication rate. Careful attention to abdominal fascial plication, the umbilicoplasty, contouring with lipoplasty, thoughtful positioning of the incision, and meticulous dermal closure are all important factors for optimal aesthetic outcomes. ■

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Corresponding author: Thomas Mustoe, MD, 675 N. St. Clair Ave, Galter 19-250, Chicago, IL 60611. E-mail: tmustoe@nmh.org.

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