

# Plastic surgery after massive weight loss

What the general surgeon should know about body contouring after successful bariatric surgery.

EDITOR'S NOTE: This article is based on Dr Rubin's presentation at the 2005 Minimally Invasive Surgery Symposium.

**G**astric bypass is a life-changing event, but many patients may be left with excess skin that interferes with comfort and hygiene following weight loss. The redundant skin can serve as a daily reminder of the morbid obesity and prevent patients from adopting a more positive body image.

For many, body contouring completes the journey from obesity and can have just as profound an effect on their lives as the weight loss itself.

The general surgeon frequently handles patient questions about weight-loss surgery. By understanding body contouring after surgical weight loss, the surgeon can help guide the patient's decision.

## Technical issues and outcomes

The massive weight loss patient represents a great technical challenge to the body-contour surgeon. H.A. Kelly pioneered the abdominal contouring procedures at the turn of the century,<sup>1</sup> and Mario Gonzalez-Ulloa, MD, expanded that to include "belt lipectomy" in 1961.<sup>2</sup> They provided the technical building blocks for innovative plastic surgeons

who attempt to transform the shape of these patients.

Body contouring after weight loss is highly specialized and the fastest growing field in plastic surgery. As bariatric procedures increase in the US, plastic surgery procedures rise similarly, considering the 12–18 month lag time for weight loss to occur. The American Society of Plastic Surgeons reported more than 52,000 patients had plastic surgery after weight loss in 2004.

This field is evolving as surgeons refine patient selection, technique, and safety. This article presents general patient care guidelines for plastic surgery after weight loss, as well as an overview of the available procedures.

## Interaction between surgeons

Plastic surgery can be an integral part of surgical weight loss. While a significant temporal gap exists between weight-loss surgery and plastic surgery, the two specialties must interact to coordinate care.

First, the bariatric patient should be made aware of the skin changes he or she may experience during weight loss and the plastic-surgery options available. Patients should gather basic information about third-party coverage for plastic surgery procedures so they can plan ahead.

Second, the bariatric surgeon should

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## KEY POINT

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be able to refer to a plastic surgeon with expertise and interest in weight loss patients at the appropriate time.

Third, the plastic surgeon may see patients who have not followed up with their bariatric surgeon. The plastic surgeon must be ready to identify signs of nutritional insufficiency or mechanical stricture and promptly refer the patient back to the weight-loss surgeon.<sup>3</sup>

### Centers of Excellence

Surgeons are embracing the concept that bariatric surgery is best performed in dedicated centers with a full compliment of expertise and resources. Our center combines nutritional and lifestyle counseling with state-of-the-art plastic surgery.

A detailed clinical registry allows for continuous improvements in patient care. A consistent operating team, with a physician assistant and body-contouring fellow, allows for a standardized technique and perioperative management.

In the first year of our program, operative time for most procedures decreased 25%–50%, and transfusion rates for multiple procedures dropped fivefold.

### Timing of body contouring

Body contouring is best delayed until the patient's weight has been stable for 2–3 months (often corresponding to 12–18 months after gastric bypass). This allows the patient to achieve a metabolic and nutritional homeostasis.

The risk of surgical complications decreases as the patient moves out of the morbidly obese category and approaches ideal body weight (IBW). Also, aesthetic outcomes of body-contouring surgery tend to be better for patients close to their ideal body weight.

### Complications of body contouring

Studies have demonstrated increased incidence of wound infections,<sup>4–7</sup> pulmonary complications,<sup>8,9</sup> thromboembolic events,<sup>10,11</sup> and even mortality<sup>12</sup> associated with surgery in obese patients.

In one series,<sup>13</sup> investigators performed panniculectomy on 42 patients weighing more than 220% of IBW. Most operations in this series were combined with intra-abdominal (eg, gynecological) procedures. The 68% incidence of complications primarily reflected wound and pulmonary problems.

A retrospective analysis of 90 abdominoplasty patients<sup>14</sup> found obese individuals (>100 lbs over IBW) had an 80% complication rate; borderline obese (50–100 lbs over IBW) and nonobese (within 50 lbs of ideal body weight) demonstrated complication rates of 33% and 32.5%, respectively. Overall, 42% of patients exhibited complications.

### Operating on the morbidly obese

We avoid operating on the morbidly obese patient unless there is strong indication, such as chronic panniculitis or a pannus that severely limits ambulation. In such a patient, a panniculectomy is a purely functional procedure and should be performed with no direct undermining of tissues and little regard to aesthetic contour. This patient may have a more refined abdominal contouring procedure at a lower body mass index (BMI).

A question often arises about panniculectomy at the time of gastric bypass. A large series<sup>15</sup> showed high rates of both systemic and local wound complications when these two operations are combined.

### The patient who reaches a plateau

We often evaluate patients who have reached a plateau at a BMI between 30 kg/m<sup>2</sup> and 35 kg/m<sup>2</sup> following bariatric surgery. Motivated patients in this category intent on reaching a lower goal weight may be offered an initial panniculectomy or breast reduction to make exercise more comfortable.

This can facilitate body image and lifestyle changes that result in further weight loss and allow subsequent procedures with a better aesthetic outcome. Additional nutritional counseling is a useful adjunct at this time.

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## Abdominal wall hernias

It is not uncommon for the plastic surgeon to encounter a massive weight-loss patient with an incisional hernia from open procedures. When approaching this patient, we first consider whether he or she has lost enough weight to avoid excessive pressure on the repair exerted by a still obese intra-abdominal compartment.

If the patient has reached an appropriate body weight for hernia repair, we then consider the extent of the procedure. For small or moderate sized hernias, we will combine the repair with a major body-contouring procedure, such as a lower body lift.

A very large hernia may require extensive lysis of adhesions and/or separation of the abdominal wall components to achieve closure. The plastic surgeon and bariatric surgeon may do this in a team approach. A general rule is to limit body-contouring procedures when performing a more extensive hernia repair.

## Skin-contouring procedures

All body-contouring surgery represents a trade of excess skin for scar. We emphasize this in patient consultation. The patient willing to accept scars in exchange for improved contour is likely to be satisfied with the procedures. This point is critical when discussing expectations with the patient who has lost weight.

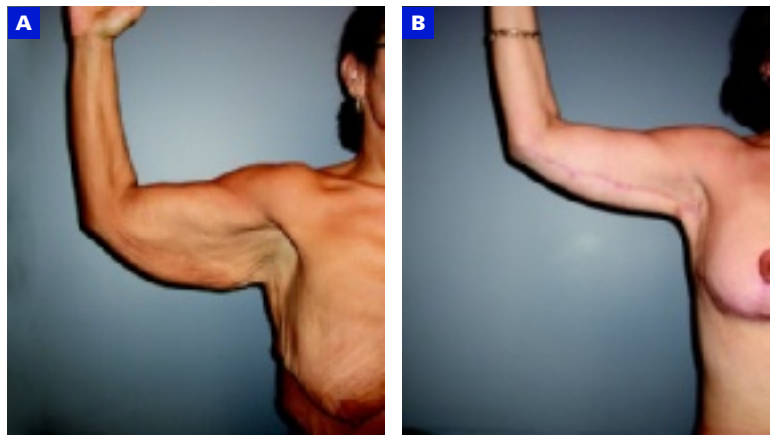
### Abdominoplasty/panniculectomy

This most common procedure after weight loss can range from simple excision of the apron of skin, or pannus, to complete contouring of the abdomen with plication of the abdominal muscles and moving the umbilicus.

The surgeon usually makes the incision low along the waistline and around the umbilicus. Some patients may benefit from a concurrent vertical incision to remove skin in 2 vectors.

Complications may include skin necrosis, persistent paresthesias of the abdominal wall, seroma, and wound sep-

**FIGURE 1** Brachioplasty with mastopexy



42-year-old woman following 190-lb weight loss with BMI 25 kg/m<sup>2</sup> (A), and results 8 months following brachioplasty and mastopexy (B).

aration. Necrosis of the umbilicus may complicate preserving that structure if the stalk is excessively long or an umbilical hernia is repaired. Adding a vertical resection increases the incidence of skin necrosis, especially at the confluence of scars in the lower abdomen. Tobacco use is a significant risk factor for wound healing complications in all versions of the abdominoplasty.

### Arm lift (brachioplasty)

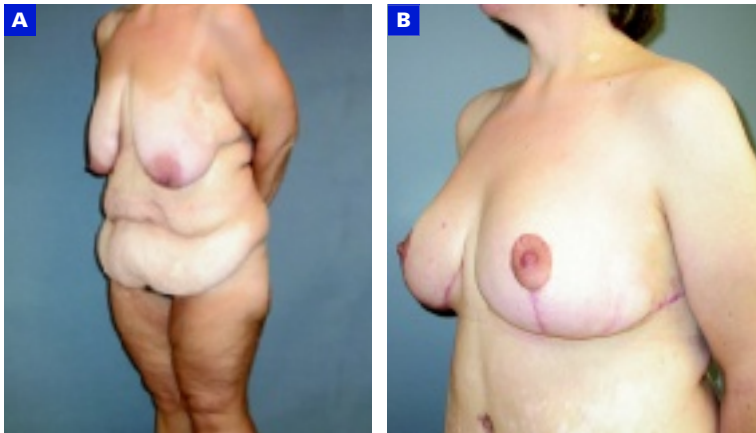
This operation is a good example of the trade mentioned earlier. The patient willing to accept the scar can be happy with the results (FIGURE 1). Loose skin is removed from the upper medial arm, but the scar will be visible.

Patients who would have never shown their arms before the brachioplasty have been comfortable wearing sleeveless clothes after this operation. If the patient has a low BMI and lean arms after weight loss, the skin can be tightened quite well over the musculature.

Complications include distal seroma and wound separation. Paresthesias in the upper arm and forearm may occur secondary to injury of sensory nerves passing through the resection area, although this rarely affects function. Scar contracture in the axilla may limit shoulder excursion in rare cases and require revision.

### KEY POINT

**The patient willing to accept scars in exchange for improved contour is likely to be satisfied with the procedures.**

**FIGURE 2** Mastopexy with abdominoplasty

A 45-year-old woman after 130-pound weight loss with BMI 27 kg/m<sup>2</sup> (A), and 6 months after mastopexy without implants and abdominoplasty (B).

**KEY POINT**

**Newer mastopexy techniques can reshape the parenchyma and restore superior fullness, even in lax tissues.**

**Liposuction**

This is rarely used as a sole procedure in body-contouring surgery after weight loss because it does not tighten skin. In fact, removing fat from under inelastic loose skin makes the loose skin appear worse.

Liposuction, however, can be an adjunct to lifting procedures to achieve a better contour. The primary local complications of liposuction are due to uneven removal of fat and resultant irregular contour. Systemic complications of liposuction relate to fluid shifts after large-volume aspirate and potential local anesthetic (lidocaine) overdose.<sup>16</sup>

**Thigh and buttock lift**

Treatment of loose skin on the thighs and buttocks involves a spectrum of operations customized to the patient. The outer thighs can be lifted at the same time as a panniculectomy with one continuous scar along the belt line. The same scar can be taken all the way around the back to lift the buttocks as well. This combination of thigh and buttock lift is commonly referred to as a lower body lift.

The inner thighs can be treated by lifting the skin and placing the incisions along the groin crease. Firmly anchoring the deep thigh fascia to Colles' fascia is essential. In cases of severe excess skin on the inner thighs, a long vertical incision is

necessary. This scar may be quite visible and should be avoided whenever possible, although this thigh-contouring procedure is becoming more common.

Complications of thigh/body lift include seroma, wound separation, skin necrosis, and change in shape of the genital region (with possible sexual dysfunction). Blood loss during the procedure may necessitate transfusion.

**Breast reshaping**

Breast reshaping operations remove skin and significant breast tissue (usually more than 350 g per side) while repositioning the nipple. Breast lift, or mastopexy, involves a similar pattern of scars on the inferior portion of the breast, but removes primarily skin and preserves the existing breast tissue.

Newer mastopexy techniques can reshape the parenchyma and restore superior fullness, even in lax tissues with a deflated skin envelope (FIGURE 2).<sup>17</sup> Severe breast volume loss mandates use of implants to restore projection. Potential complications include wound-healing problems, fat necrosis, decreased nipple sensitivity, and nipple loss.

**Male gynecomastia**

Breast enlargement in men who have lost weight after gastric bypass is treated with either liposuction alone or a combination of liposuction and skin excision. The scar pattern varies with the amount of correction needed. Postoperative hematoma requiring surgical drainage is a more common complication of this procedure.

**Face/neck lift**

A variety of face- and neck-lift procedures can correct loose skin in these areas. A common approach is to hide the scar along the anterior and posterior ear, and along hairlines. Postoperative hematoma and facial nerve injury are potential complications.

**Special areas**

Rolls of skin on the back and flanks are

difficult to correct, and plastic surgeons design unique operations for each patient's specific morphology.

These operations fall under the category of "upper body lift," and involve scars on the upper back and chest. The scars are often placed in the bra line to better conceal them. Essentially, any roll of skin may be traded for a scar.

## Combination procedures

Plastic surgeons commonly combine two body-contouring procedures in one stage. Some patients may be candidates for multiple procedures that will provide a "total body reshaping." Only patients close to their goal weight and in very good medical condition should be considered for extensive body contouring procedures. Other patients should be treated in stages for maximum safety.

One notable advantage of staging procedures is that they give the surgeon the opportunity to correct skin that has relaxed excessively in previously treated areas. While no universally accepted algorithm exists for when to stage procedures and what order to proceed, certain principles apply:

- Only short, single-region operations should be done on an outpatient basis.
- Larger procedures and multiple procedures should be performed in an appropriate inpatient facility with critical care capabilities.

The safety issues surrounding plastic surgery after weight loss are so important that the American Society of Plastic Surgeons has established an executive task force to work on care guidelines and education. ■

### DISCLOSURE

The author did not disclose any relationships.

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### KEY POINT

**Only short, single-region operations should be done on an outpatient basis.**