

Shaping Abdominoplasty Surface Contour to Simulate Muscular Anatomy

Steve Laverson, MD

A modification of traditional abdominoplasty is described in this article that attempts to contour skin surface anatomy in order to simulate a well-developed rectus abdominis muscle. A combination of limited goal-directed undermining, wide rectus abdominis plication, and selective lipectomy from the deep surface of the abdominoplasty flap are incorporated. Flap advancement is individually designed to amplify the desired contour. The resulting appearance is more lean and fit than conventional abdominoplasty without added risk.

The ideal female abdominal aesthetic unit has been illustrated by Lockwood.¹ These include a narrow infracostal waist and gently undulating contours softly suggesting the underlying musculofascial and skeletal structure. Also described are paramedian vertical and infraumbilical convexities reflecting underlying rectus abdominis muscle bellies and gentle concavities between and adjacent to the muscle bellies further defining them. There is a gentle localized concavity terminating centrally in the umbilicus (Figure 1). These subtle features can be simulated during abdominoplasty by a combination of technical maneuvers that will be described. Patient selection is limited to women who are nonobese nonsmokers who are not expecting future pregnancies and are in generally good health.

METHOD

Under general anesthesia with paralysis, the abdominoplasty flap is developed with a minimum of direct undermining to accommodate wide anterior sheath

rectus abdominis plication from xiphoid to pubic symphysis with a combination of running and interrupted sutures. Care is taken to avoid strangulation of umbilical blood supply. Plication medializes the epigastric skin attachments to deep fascia, which can then be mobilized sufficiently to create paramedian fullness by slight bunching of epigastric skin and fat. The distal end of the flap is pulled caudally, and skin redundancy is marked for

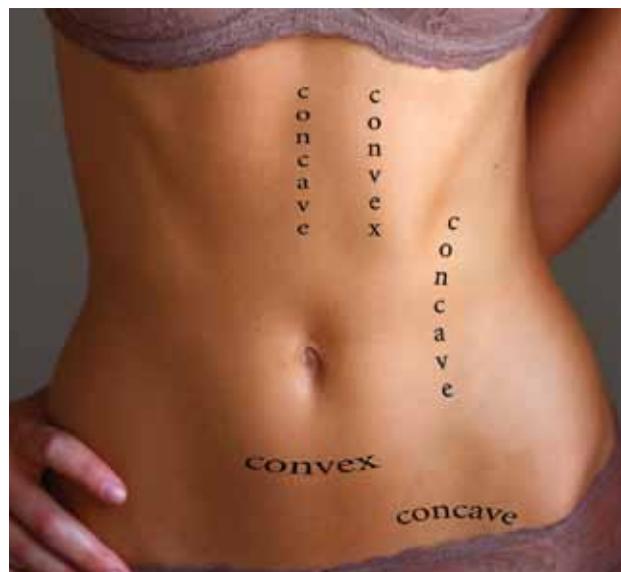


Figure 1. Surface contours of the youthful, fit, nulligravida abdomen.

Dr. Laverson is Principal Surgeon, Feel Beautiful Plastic Surgery, Carlsbad and Encinitas, California.

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Correspondence: Steve Laverson, MD (slaverson@feelbeautiful.com).

resection. Distal lateral ends of the flap are pulled caudally and medially to maximally narrow the waist and to enhance infraumbilical convexity. After removal of skin and fat redundancy, the Scarpa fascia is grasped at the lateral flap edges, and fat deep to the Scarpa fascia is removed by cautery dissection lateral to the linea semilunaris for concavity superior to the inguinal creases. Location of the neoumbilicus is marked, and fat is removed by electrocautery dissection from the underside of the flap in the midline epigastrium to suggest a linea alba sulcus.² Fat is also trimmed from around the neoumbilical opening to conceal scar and create a natural periumbilical transition. Postsurgical drainage and surface compression by an abdominal binder secure the effects of these interventions.

RESULTS

This modification has been applied in more than 50 abdominoplasty procedures with generally good results (Figures 2-4). No skin necrosis has been experienced, and final contour is enhanced over traditional abdominoplasty. Overexcision in the linea alba region can create an unnatural epigastric vertical crease, and this can deviate to one side depending on the direction of flap advancement and location of the neoumbilical opening in the flap. If the umbilical stalk is long, amputation of distal umbilical skin better conceals periumbilical scars. Occasional revisions have been performed for lower abdominal scar asymmetry, scar hypertrophy, or dog-ears at lateral ends of the scar. Seroma has been infrequent. Hypoesthesia of lower abdominal skin is a constant postsurgical finding, which patients are warned of in advance.

DISCUSSION

Liposuction, even in combination with topically or subdermally applied energy to induce collagen contraction, is of limited utility for treatment of postpartum abdominal wall relaxation and redundant skin. Pregnancy

stretches the abdominal wall fascial envelope and overlying skin significantly, and surgical reconstruction by abdominoplasty is often the best suited reconstructive option. Conventional abdominoplasty involves a transverse suprapubic incision extending bilaterally toward the anterior superior iliac spine; wide undermining toward the costal margins; midline rectus abdominis sheath suture plication to imbricate fascial redundancy;



Figure 2. Oblique view and front view of a female patient after 3 pregnancies before (A,B) and 2 months after modified abdominoplasty (C,D).



Figure 3. Oblique view and front view of a female patient after 4 pregnancies before (A,B) and 6 months after modified abdominoplasty (C,D).

ABDOMINOPLASTY

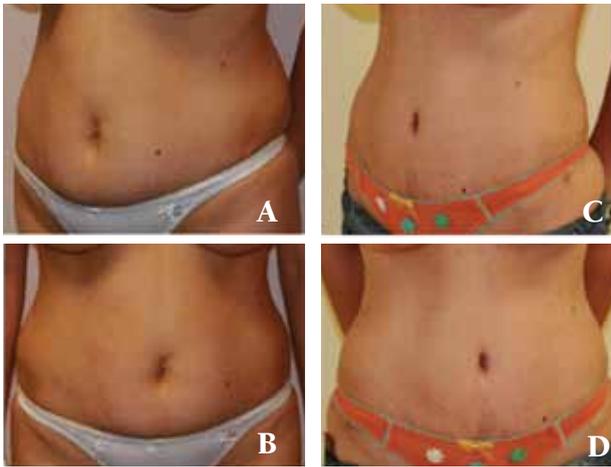


Figure 4. Oblique view and front view of a female patient after 4 pregnancies before (A,B) and 3 months after modified abdominoplasty and liposuction of flanks (C,D).

and inferior advancement of the skin flap with removal of excess pannus, umbilical inset, and wound closure over drains. The procedure safely and reliably flattens the postpartum abdomen, slightly narrows the waist, and removes infraumbilical skin and fat leaving a transverse

scar that can usually be well concealed. The technique can also obliterate natural surface contours and create iatrogenic deformity. The modification described here refines the procedure slightly to accentuate surface contours characteristic of the young, fit, nulligravida abdomen. A urethral catheter and deep venous thrombosis prophylaxis are suggested, as well as thorough presurgical informed consent. Experience in traditional abdominoplasty is recommended before adding the modifications described.

CONCLUSION

Limited goal-directed undermining, direct lipectomy, and carefully customized flap advancement can create surface contours simulating muscular anatomy and safely promote a pleasing, natural abdominoplasty result.

REFERENCES

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