Rectus Muscle Diastasis in Males: Primary Indication for Endoscopically Assisted Abdominoplasty

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Endoscopic techniques through umbilical and mons pubis ports have provided a method to plicate rectus muscle diastasis without skin resection. Limited or no skin excision is performed. Major series have included only women. The criteria for patient selection for endoscopic abdominoplasty include a protuberant abdomen caused by rectus muscle diastasis with minimal actual or potential skin laxity. There should not be significant intra-abdominal obesity. Extra-abdominal familial fat deposits may be part of the abdominal aesthetic deformity.

In most women, rectus muscle diastasis because of pregnancy, obesity, or aging is associated with actual or potential skin laxity of the abdomen and lateral trunk. Endoscopic abdominoplasty in these women would produce mediocre early results and poor aging potential for the future. There are a limited number of women who are reasonable candidates for the endoscopic approach.

In contrast, rectus muscle diastasis without skin laxity is a common finding in men older than 30 to 40 years of age. There may be a history of weight fluctuations, weightlifting, or full-exursion sit-up exercises, which may lead to progressive separation of the rectus muscles over time. Other etiologic factors include chronic or intermittent abdominal distension, advancing age, or familial weakness of the abdominal musculofascial tissues.

Endoscopically assisted abdominoplasty was performed in four male patients with good to excellent results at 4 to 18 months. Minor complications occurred in half the patients but were successfully treated without re-operation.

Men with prominent abdominal contours who are diet- and exercise-resistant should be examined both for familial fat deposits and for significant rectus muscle diastasis. Contouring of the male abdomen may be the primary indication for endoscopically assisted abdominoplasty. (Plast. Reconstr. Surg. 101: 1685, 1998.)

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In most women, rectus muscle diastasis caused by pregnancy, obesity, or aging is associated with actual or potential skin laxity of the abdomen and lateral trunk.6,7 Endoscopic abdominoplasty in these women would produce mediocre early results and poor aging potential for the future. There are a limited number of women who are reasonable candidates for the endoscopic approach.

In contrast, rectus muscle diastasis without skin laxity may be seen more commonly in men presenting with prominent abdominal contours, especially in the epigastrum. Contouring of the male abdomen may be the primary indication for endoscopically assisted abdominoplasty.7 Adjunctive liposuction of the abdomen and posterolateral trunk is commonly performed with endoscopic abdominoplasty.

Materials and Methods

Four male patients undergoing endoscopically assisted abdominoplasty with truncal liposuction were followed for 4 to 18 months. The average follow-up was 10 months. Ages ranged from 33 to 55 years. The primary indication for endoscopic abdominoplasty is a protuberant abdomen caused by rectus muscle diastasis with minimal actual or potential skin laxity. There should not be significant intra-abdominal obesity. Extra-abdominal familial fat deposits may be part of the abdominal aesthetic deformity.

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Patient Selection

Men with prominent abdominal contours who are diet- and exercise-resistant should be examined both for familial fat deposits and significant rectus muscle diastasis. There may be a history of weight fluctuations, lifting of heavy weights, full-exursion sit-up exercises, chronic or intermittent abdominal distension from a variety of causes, and advancing age in general that may lead to progressive separation of the rectus muscles over time. There may be a familial history of early rectus diastasis, perhaps because of inherited fascial weakness (Fig. 1).

Women often have muscle relaxation of the entire abdomen, resulting in a hypogastric bulge when standing. In men, rectus diastasis is often more dramatic in the upper abdomen, resulting in an epigastric bulge on standing (Fig. 2).

There should be marked anterior-to-posterior excursion of the abdominal contour when the patient moves from a standing to a supine position, indicating significant musculofascial laxity without significant intra-abdominal obesity (Figs. 2 and 3, above). A partial sit-up from the supine position (crunch test) confirms the presence and extent of any rectus muscle diastasis (Fig. 3, center). This is repeated postoper-

Fig. 2. Case 1. Prominent central and epigastric abdominal bulge caused by rectus muscle diastasis in a 46-year-old man in relaxed standing position.

atively to evaluate the success of rectus muscle plication (Fig. 3, below).

Patients must be in good health without respiratory disease, obesity, or deep venous disease of the lower extremities. A low-residue diet and gentle bowel prep is recommended in the 1 to 2 days before surgery.

Surgical Technique

Markings are made in the standing position and include the extent of rectus muscle diastasis, the planned extent of direct undermining to create an optical cavity, and fat deposits of the abdomen and flanks (Fig. 4).

After general anesthesia, the patient is draped to allow moving from a supine to a lateral decubitus position during surgery. A vacuum bean bag is used to position the patient for posterolateral liposuction. Infuse the surgical area with a dilute epinephrine and xylcaine lactated Ringer’s solution (1 cc epinephrine 1:1000 and 50 cc 0.5% xylocaine in 1000 cc Ringer’s solution).

Access ports include a complete circumumbilical incision along with a short transverse pubic incision. Direct vision undermining with appropriate retractors is used initially to form the optical cavity as far as possible. The optical cavity is initially extended to the midrectus line laterally and to the xiphoid superiorly. More lateral undermining may be required to re-

Fig. 1. A 34-year-old man with a familial (father) history of a prominent abdomen at an early age.
Undermining is performed with scissors and a long Teflon-coated cautery blade extension. A sump suction tip is helpful for smoke evacuation. Towel clips are placed in the skin over the optical cavity to tent the tissues. The endoscope is only needed for dissection and suturing in the superior epigastrum. Special equipment required for this procedure include a 30-degree, 10-mm endoscope with retractor and an endoscopic needle-holder.

Rectus muscle repair is performed by using a two-layer no. 1 braided nylon suture beginning at the umbilicus, running to near the xiphoid and returning to tie near the umbilicus. The braided nylon is soaked in a povidone-iodine solution before use. Musculofascial relaxation in the hypogastrium is repaired in a similar fashion. The umbilical stalk is pulled into the crevice created by the muscle repair and is fixed with sutures to the surrounding muscle fascia.

Central bulging of the soft tissues may be seen after rectus muscle repair. The bulging and skin tethering frequently resolve with thorough deep and superficial liposuction of the epigastrum and deep liposuction of the hypogastrium. Superficial liposuction refers to suctioning within the 10 mm of superficial fat beneath the dermis, and deep liposuction is at least 10 mm from the dermis. A thin (3 to 4 mm) layer of subdermal fat is left as a minimum in the epigastrum except in the midline, where even the subdermal fat is suctioned to create the midline rectus valley. Any residual tethering of the skin after liposuction will require more lateral undermining at the muscle level.

Liposuction of any fat deposits may be performed before or after rectus muscle plication depending on the surgeon's preference. Liposuction was performed after muscle plication in this study. Suctioning on a tight musculofascial platform is theoretically safer than suctioning over loose muscles, and there is less distortion of the operative field for the direct or endoscopic undermining.

A 19 French fluted Blake drain is inserted through a pubic incision after final hemostasis and is left for 5 to 7 days, or longer if the drainage is excessive. The circumumbilical incision is closed with 3-0 polydioxanone dermal sutures and 4-0 nylon skin sutures. The pubic incision is closed with 2-0 braided nylon superficial fascial system sutures, 3-0 polydioxanone dermal sutures, and a running 3-0 polypro-
pylene skin suture. Posterolateral liposuction is now performed as needed.

Light gauze dressings are applied over the incisions. Reston foam dressings are usually used over the abdomen, but no binder or compression garment is used in the early postoperative period. The foam dressing is removed in 3 or 4 days. An abdominal binder is then applied. In 2 to 3 weeks, the binder is replaced by an elastic-type body suit made of Spandex or similar material. This is worn for another 3 to 4 weeks on average.

RESULTS

Endoscopically assisted abdominoplasty was performed in four male patients with good to excellent results at 4- to 18-month follow-up (Figs. 5 through 11). Adjunctive truncal liposuction was performed in all four patients. No skin was resected in three patients. The 55-year-old patient had a limited skin resection of central suprapubic skin. Endoscopic abdominoplasty was performed as an outpatient or overnight observation procedure.

Complications were limited to a seroma requiring multiple aspirations and one late skin suture infection.

DISCUSSION

Endoscopic techniques have been used in aesthetic plastic surgery for several years for facial rejuvenation, breast surgery, and abdom-
nal contouring. Early success with endoscopically assisted rectus diastasis repair in selected patients led to enthusiastic predictions for the use of the endoscope for abdominal contouring in women. The four major series published to date have included only women.

In general, endoscopic abdominoplasty has not gained widespread popularity because of the limited number of women who are reasonable candidates for endoscopic rectus diastasis repair. In most women, rectus muscle diastasis caused by pregnancy, obesity, or aging is associated with actual or potential skin laxity of the abdomen.

In addition to central abdominal laxity, the aesthetic deformity of the female body often includes laxity of the waist, inguinal, and upper thigh regions. Ideally, all elements of the aesthetic problem should be treated to produce a balanced, harmonious rejuvenation of the body aesthetic, leading to more natural contours and longer lasting aesthetic results.

In contrast to women, rectus abdominis muscle diastasis without significant abdominal skin relaxation is a relatively common finding in men as they age. Although abdominal muscle and skin relaxation in men has been linked to massive weight loss, significant rectus muscle diastasis in men with minimal skin laxity or intra-abdominal obesity without a history of dramatic weight loss has not been previously reported.

In fact, prominent abdominal contours (especially the upper abdomen) are a common finding in men after 30 to 40 years of age, even in the absence of significant intra-abdominal obesity. Etiologic factors may include repetitive stretching trauma from exercise (full sit-ups,
Fig. 8. Case 2. (Left and right) Markings in a 33-year-old man with moderate rectus muscle diastasis of the entire abdomen and significant fat deposits of the circumferential trunk. In this case the diastasis is marked in blue, the optical cavity in red, and the fat deposits in green.

Fig. 9. Same patient as in Figure 8. Preoperative (left) and postoperative oblique views at 3 months (center) and 9 months (right) after endoscopically assisted abdominoplasty and liposuction of trunk. Abdominal contours have remained stable even with a 5-lb weight gain from the 3-month visit to the 9-month visit.

Fig. 10. Same patient as in Figure 8. Preoperative (left) and postoperative anterior views at 3 months (center) and 9 months (right) with stable contours.
weightlifting), physical work, or abdominal dis-tension; possible inherited fascial weakness; and advancing age in general.

The endoscopically assisted abdominoplasty technique is essentially the same for either male or female patients. The endoscopic approach can be performed through an isolated pubic or umbilical incision, although most surgeons prefer combining the two incisions for ease of dissection and plication as is recommended in this study. Core uses the umbilical incision to excise a small rim of circumumbilical skin, enlarging the umbilical port for better exposure and to allow better access for a more accurate and natural umbilicoplasty.

Men presenting with concerns of prominent abdominal and truncal contours should be examined both for familial truncal fat deposits and for significant rectus muscle diastasis. The repair of rectus muscle diastasis in male patients may be the primary indication for endoscopically assisted abdominoplasty. In a small series of patients, the results have been significant and predictable without major complications. Results appear to be stable over 9- to 18-month follow-up.

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REFERENCES