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# Techniques in Cosmetic Surgery

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## Simplified Technique for Creating a Youthful Umbilicus in Abdominoplasty

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Reimplantation of the umbilicus remains a critical aesthetic component in abdominoplasty and transverse rectus abdominis musculocutaneous breast reconstruction. Although the ideal shape of the umbilicus has been debated, recent studies have shown the young, thin female with an attractive abdomen tends to have a small, vertically oriented umbilicus. The aesthetic considerations for reimplantation include position, depth, shape, and location of scar. The authors present a technique that is expedient and reliable and that addresses each of these variables. The umbilicus is sutured to the rectus fascia and reimplanted through a vertical incision in the abdominal flap. Subdermal sutures are placed from the umbilicus to the linea alba superiorly and inferiorly. These sutures create a vertically oriented shape and place the umbilicus in the midline. Shortening the umbilical stalk establishes depth and hides the closure of the umbilicus and abdominal flap within the stalk. The stalk length is easily varied, depending on the thickness of the panniculus. Defatting is performed through the vertical incision to allow easy visualization of the umbilicus. This technique creates depth, ensures optimal position, pulls the scar deep in the umbilicus, and produces a vertically oriented, youthful umbilicus. More importantly, a questionnaire given to patients who have undergone abdominoplasty with this procedure ( $n = 21$ ) confirms that patients have a high level of satisfaction with the resulting shape, position, and overall appearance. (*Plast. Reconstr. Surg.* 109: 2136, 2002.)

The umbilicus is a prominent structure and aesthetic unit of the abdomen. Many techniques have been devised to create an aesthetically pleasing reimplanted umbilicus after abdominoplasty or transverse rectus abdominis musculocutaneous flap breast reconstruction.

These techniques have attempted to address complications associated with reimplantation, which include unsightly scars, cicatricial ring

formation, and umbilical stenosis, malpositioning, or aesthetically unpleasing shapes. The most appealing shape of the umbilicus has been debated. Pitanguy<sup>1</sup> used a transverse incision for reimplantation to create a large, transversely oriented umbilicus. Many have used circular incisions that have led to round umbilical reconstructions.<sup>2,3</sup> Others have focused on recreating a naturally occurring superior hood with a variety of skin flaps ranging from simplistic to complicated.<sup>4-10</sup>

The aesthetic considerations for reimplantation in abdominoplasty and breast reconstruction are position, depth, shape, and location of scar. Recent evaluation of the ideal umbilicus has shown that the youthful and thin individual has a small and vertically oriented umbilicus, whereas the older or more obese individual has a rounder, transversely oriented, and hooded umbilicus.<sup>11,12</sup> We present a technique of reimplantation that emphasizes suturing the umbilical stalk to the linea alba and rectus sheath and utilizing a vertical incision in the abdominal flap. This technique creates depth, ensures optimal position, pulls the scar deep in the umbilicus, and produces a small, vertically oriented umbilicus. This technique is simple, predictable, and addresses all these aesthetic considerations to create a youthful appearance without visible scars. The senior author has found that the speed and simplicity of the procedure, and its applicability to every abdominoplasty regardless of weight, have made it very appealing.

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## SURGICAL TECHNIQUE

The skin is sharply incised in a vertical ellipse, taking care to keep the skin island small. Minimal fat is included with the umbilicus to preserve the adventitial blood supply. Once the abdominal flap is elevated, and the muscle is plicated, the umbilical stalk is sutured subdermally to the linea alba superiorly and inferiorly with 3-0 Vicryl stitches (Fig. 1). These sutures ensure a midline placement of the umbilicus, pull the scar deep within the umbilicus, and create depth and a vertically oriented shape. The distance of the suture from the dermis of the umbilicus to the linea alba is dependent on the thickness of the panniculus and is easily varied. It is important to plicate the periumbilical fascia sufficiently on a thin patient to create an inverted umbilicus. The site of reimplantation in the abdominal flap is determined by where the original umbilicus projects in the caudally pulled flap as previously described.<sup>7</sup> In the abdominal flap, a small vertical incision is made approximately the vertical size of the original umbilicus. It is then extended to the exact length once the umbilicus is exposed. This vertical incision accentuates the vertical shape of the umbilicus. It is not necessary to remove any skin; a vertical incision keeps the umbilicus from widening.

Defatting is performed through the vertical incision, which allows easy visualization of the umbilicus (Fig. 2). It is important to defat an area 2 to 3 cm surrounding the umbilicus. This can be done through the vertical incision without the need for additional hemostasis. We have seen no incidence of necrosis secondary to defatting. Subdermal 3-0 Vicryl sutures anchor the abdominal flap to the umbilicus in four corners to pull the skin edges of the ab-

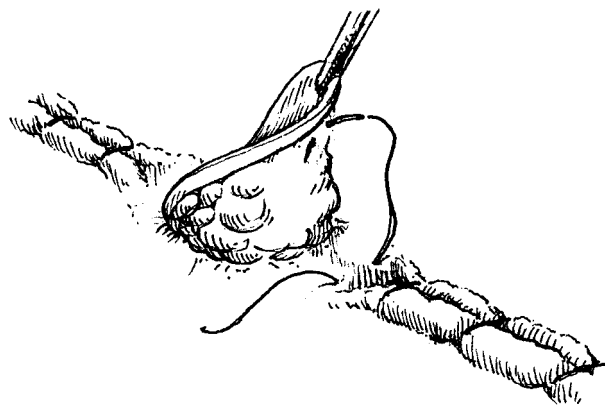


FIG. 1. The umbilical stalk is sutured superiorly and inferiorly to the linea alba.

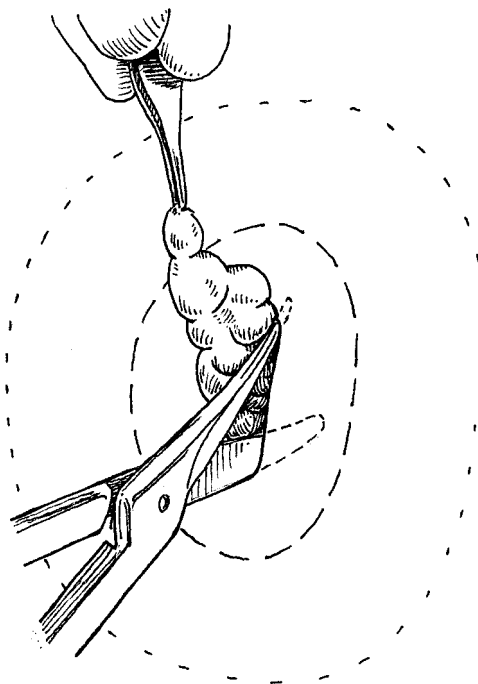


FIG. 2. An area 2 to 3 cm around the umbilicus (outer dotted line) is defatted through the vertical incision.

dominal flap down to the umbilicus and take tension off the skin closure (Fig. 3). The skin is closed with a running suture of choice. No postoperative bolster or stents are applied, and they have not been found to be necessary.

## QUESTIONNAIRE

A questionnaire was randomly given to patients who underwent elective abdominoplasty by means of this procedure for umbilical reimplantation by the senior author. Twenty-one responses were obtained. Patients were asked to rate the shape of their new umbilicus, the position and symmetry, and the overall appearance, which specifically included scar formation. The rating scale was from 1 to 10, in which a score of 1 was unsatisfactory, 5 was satisfactory, and 10 was ideal. The average rating for shape was 8.0. The average rating for position was 9.2; the average rating for overall appearance was 8.1. Seventy percent (15 out of 21) of the patients were extremely satisfied with their umbilical shape and overall appearance, with scores of 8 and above. Only 1 out of 21 patients was less than satisfied with the umbilical shape, giving it a score of 4. This patient rated the overall appearance a score of 6. According to the senior author, none of the patients had any negative comments about the umbilicus on follow-up visits.

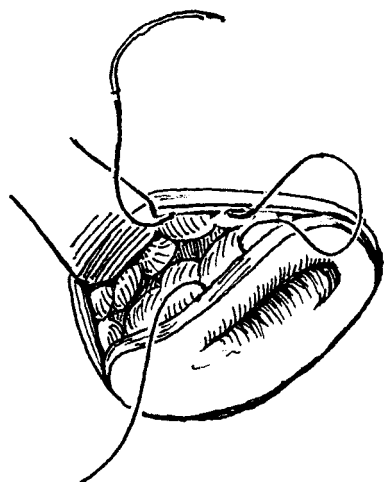


FIG. 3. Four subdermal sutures anchor the abdominal flap to the umbilicus.

#### DISCUSSION

The aesthetic considerations for reimplanting the umbilicus are position, depth, shape, and scar location. Suturing the umbilical stalk to the rectus fascia and linea alba creates depth, pulls the scar deep within the umbilicus, and helps maintain a vertical shape (Figs. 4 and 5). Although other methods have been

developed to decrease the visibility of scars,<sup>3,9</sup> the majority of these methods ultimately create a round, larger umbilicus. Others have described suturing the umbilicus to the fascia to decrease the visibility of scars; however, they use a sequence of triangular incisions in the abdominal flap that ultimately creates a rounder and larger umbilicus.<sup>9</sup> Some techniques place no incisions into the abdominal flap, which prevents scars, but use a purse-string suture to recreate the pattern of the umbilicus. This umbilicus pattern is circular and measures 6 to 7 cm in diameter.<sup>3</sup>

The vertical incision in the abdominal flap, as opposed to a circular, half-circular, or triangular incision, reinforces the vertical shape and decreases the overall number of incisions and the possibility of scar visibility. It also minimizes the possibility of interrupting the blood supply to the skin compared with multiple skin flaps or a circular incision. The incision can be extended superiorly or inferiorly to fit the umbilicus and provides a greater level of flexibility than other types of incisions. After the incision is made, defatting from outside the flap allows easy visualization of the umbilicus, which eliminates the often time-consuming and frustrat-

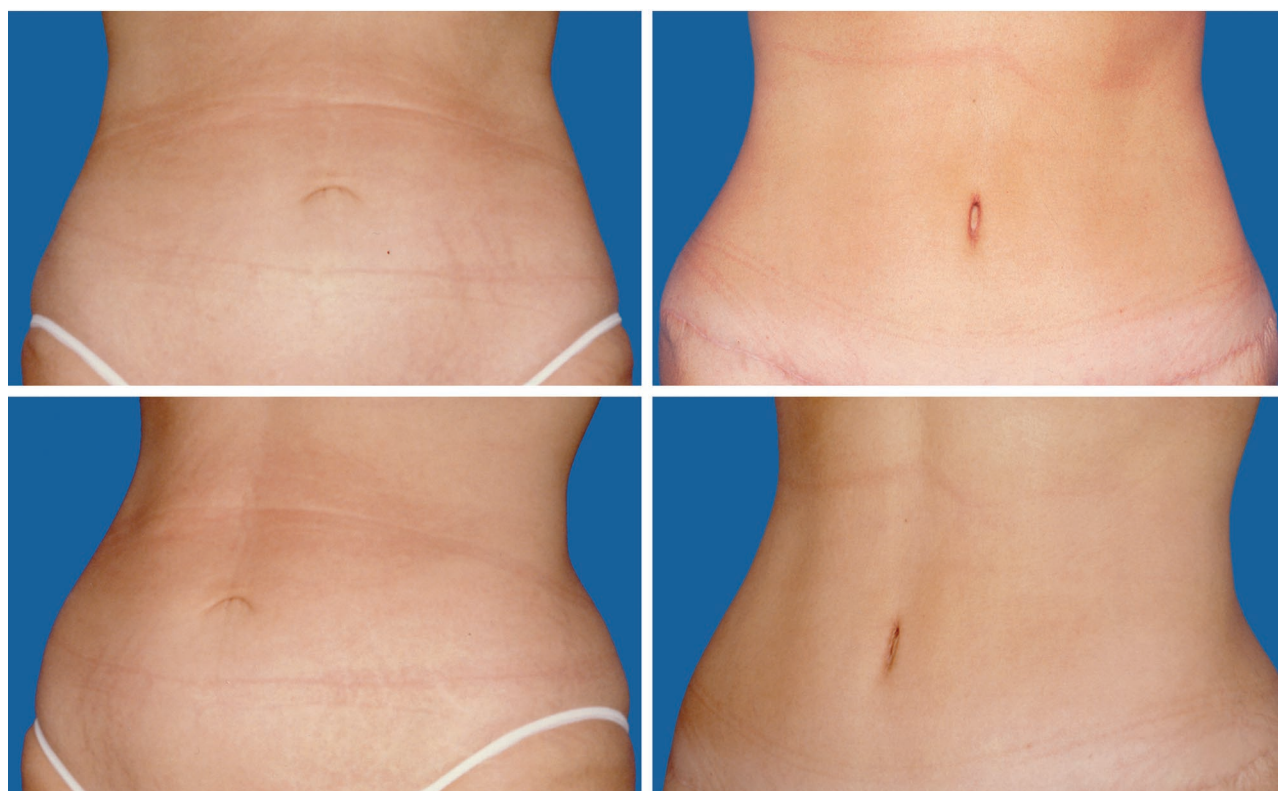


FIG. 4. Anteroposterior and oblique photographs of one patient before abdominoplasty.



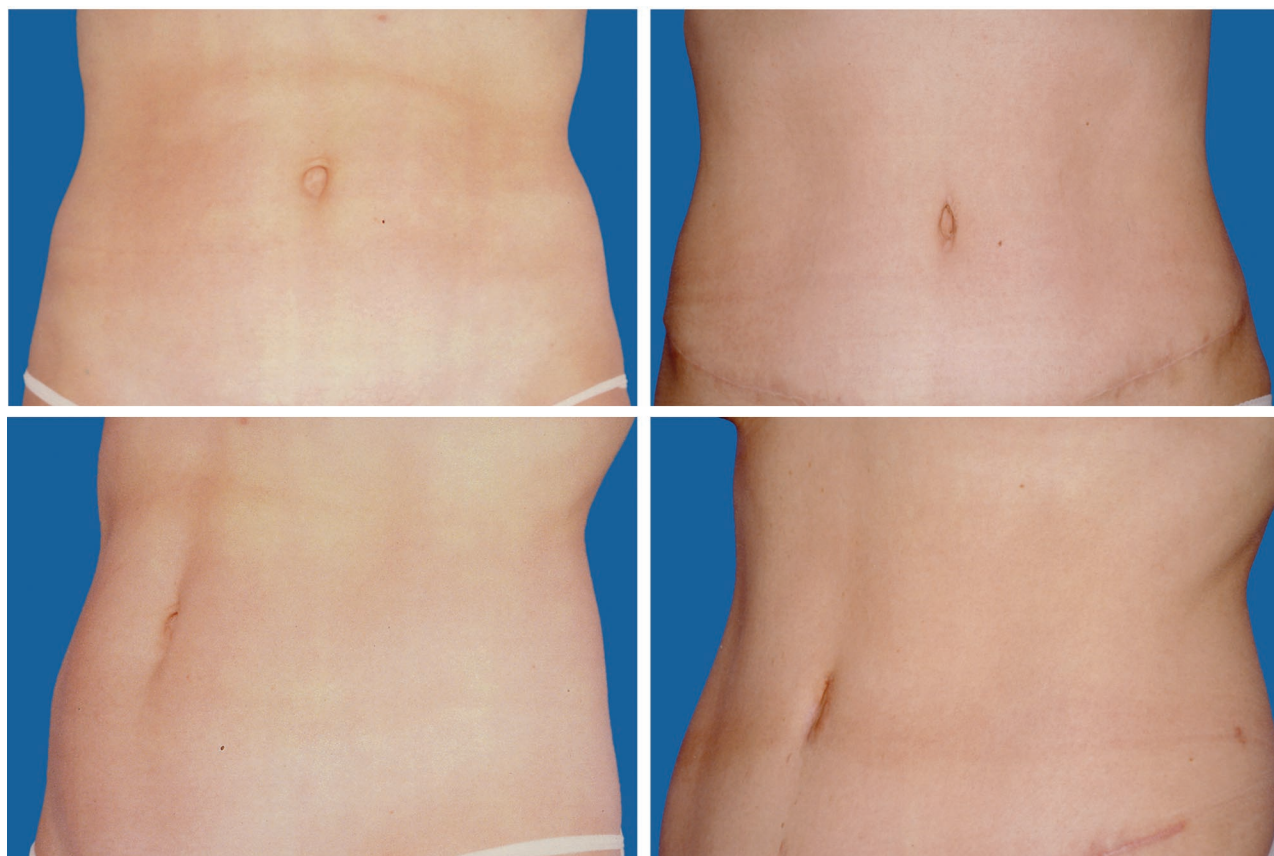


FIG. 5. Anteroposterior and oblique photographs of one patient after abdominoplasty. Suturing the umbilical stalk pulls the scar deep within the umbilicus and creates depth. The vertical incision creates a vertically oriented umbilicus.

ing experience of trying to find the umbilicus after the abdominal flap is closed.

A variety of techniques have been developed to create hooding of the umbilicus. This hooding may create a natural-looking umbilicus at the expense of an increased number of superficial and highly visible incisions. The unpredictable nature of the effect of skin, weight changes, and gravity may change the ultimate position of this artificially created superior fold. Although it is considered natural, hooding is more associated with increased abdominal girth and increased age.<sup>1,12</sup> It may detract from the goal of the abdominoplasty to create a thinner and more youthful appearance of the abdomen.

Our technique effectively hides scars and produces a vertically oriented, youthful umbilicus. The placement of the umbilicus is accurate and predictable. The technique is fast and simple and requires no complicated skin flaps, cartilage grafts, or complicated suture placement. The senior author notes a dramatic increase in satisfaction and positive comments regarding the patient's umbilicus after abdomi-

noplasty with this technique compared with other traditional approaches. The results of the questionnaire support that patients have a high level of satisfaction with the vertical shape, the position, and the scar formation.

One potential drawback is that it does not eliminate the possibility of formation of a cicatricial ring or umbilical stenosis. This type of problem is unusual, and it can be minimized by careful attention to the skin closure with primary healing. Early stenosis can usually be treated with steroid injections. With larger women, the umbilical stalk length and the length of the umbilicus is slightly increased, maintaining good aesthetic proportion with the abdomen as a whole (Fig. 6).

#### CONCLUSION

We believe this approach is simple, predictable, and fast. The umbilical stalk is sutured to the rectus fascia and linea alba and reimplanted into the abdominal flap with a linear incision. This approach balances the aesthetic issues of shape, depth, and scar locations to

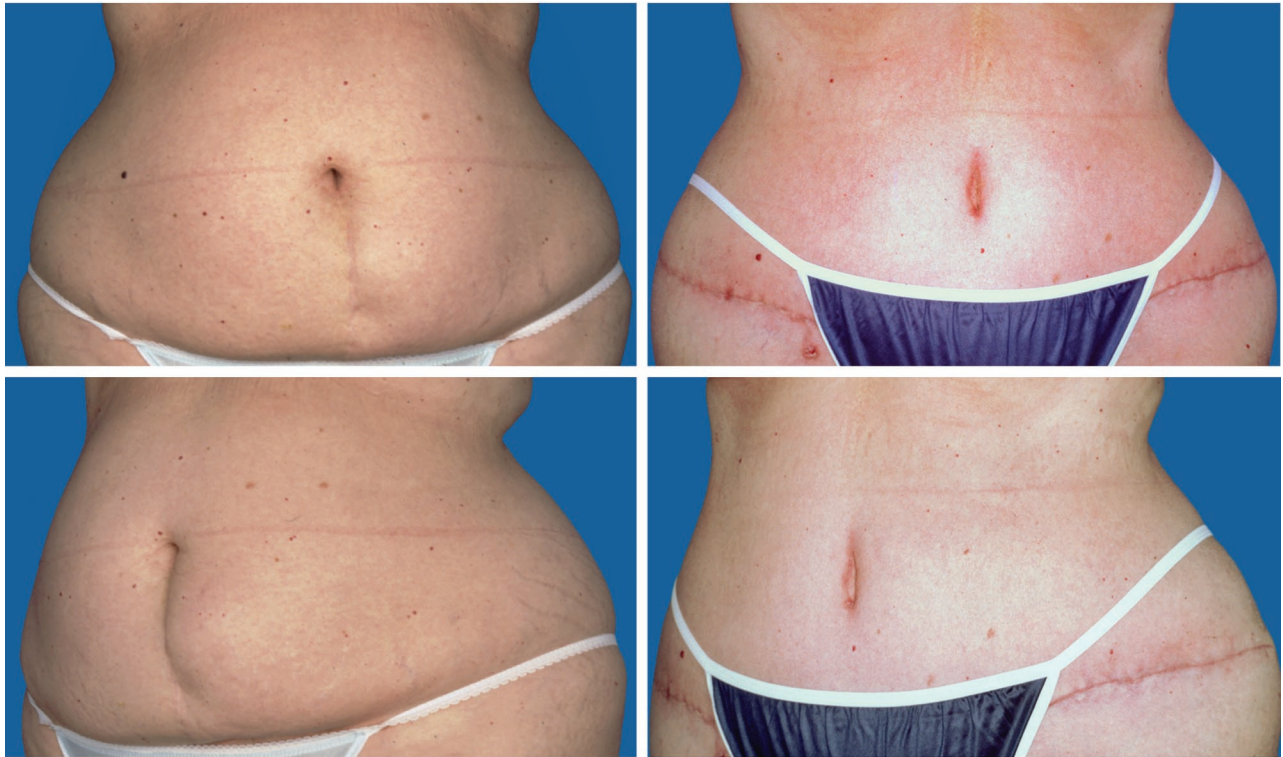


FIG. 6. Anteroposterior and oblique preoperative (above, left; below, left) and postoperative (above, right; below, right) photographs of an obese patient who underwent abdominoplasty. The umbilical stalk and vertical incision are lengthened to create a natural-looking umbilicus.

help create a more youthful and thin appearance of the abdomen.

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#### ACKNOWLEDGMENT

The authors thank Mark Cisco, M.D., for providing the illustrations in this article.

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