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ORIGINAL ARTICLE

Secondary Abdominoplasty

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Abstract
Background Abdominoplasty is the most frequent excisional body contour procedure performed in aesthetic surgery. Secondary abdominoplasty refers to a new excisional procedure for a patient who has previously undergone an excisional abdominoplasty. In the authors' practice, more than 7% of abdominoplasties are secondary cases and deserve special consideration.
Methods The authors present a retrospective analysis of their experience with 21 secondary cases among 298 abdominoplasties performed between 2001 and 2006. They have considered as secondary cases only those involving patients who have undergone excisional abdomen contour surgery previously.
Results A total of 17 patients underwent surgery during the first year after the primary procedure, and 4 patients had surgery more than 5 years after that procedure. Following the principles described in this report, it was possible to solve the problem in each particular case and to obtain improvements in both trunk contour and patient satisfaction.
Conclusions In planning and designing the procedure, a precise diagnosis of the abdominal deformities is essential. The risks in secondary abdominoplasty are similar to those in the primary procedure.

Keywords Abdominal deformities · Abdominoplasty · Excisional abdomen contour surgery · Secondary abdominoplasty

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Abdominoplasty is the most frequent excisional body contour procedure performed in aesthetic surgery. Some variations exist with regard to incision design and position. Nevertheless, each surgeon and each patient has his or her own preferences [1, 2].

Two main types of secondary abdominoplasty are performed: early secondary abdominoplasty due to an incorrect primary procedure and late secondary abdominoplasty due to aging [3]. In our practice, more than 7% of the abdominoplasties involve secondary cases coming to us from elsewhere, mostly belonging to the former group.

The principal aspects to be considered in secondary abdominoplasty are the umbilicus location, the excisional design, and the scar positioning. The umbilicus in the abdomen is like the nipple–areolar complex in the breast. Its surgical management is challenging due to variability of anatomic position [4] in relation to the variable cutaneous excess in each abdomen. Other important issues are the abdomen contour and the scar length, size, and position required to obtain symmetry and a harmonious abdominal contour. Lipoplasty should almost always be performed on the hips and flanks to avoid lateral bulging [5].

Although there are some well-established surgical principles, the secondary procedure should be precisely planned in each case [1]. In this report, we summarize our experience and thoughts regarding secondary abdominoplasty.

Patients and Methods

Among the 198 abdominoplasties we performed between 2001 and 2006, 21 involved secondary cases. The patients in all these secondary cases were women. The time elapsed from the first procedure was less than 1 year in 17 cases. The ages of the patients ranged from 26 to 71 years.

Diagnosis and the Main Problems in Secondary Abdominoplasty

Problems in secondary abdominoplasty arise mainly from the excessive central traction the surgeon sometimes must apply to remove the skin that includes the defect resulting necessarily from the umbilicus excision. The anatomic position of the umbilicus in the abdomen varies between 12 and 15 cm, and the real skin excess frequently is less than this distance [4]. Attempts to remove the circular incision from the umbilicus desinsertion results in a low umbilicus as a consequence of excessive traction, high central tension, and asymmetric scar (Fig. 1). All these factors stretch the navel and give to the abdomen a split appearance (Fig. 2).

The umbilicus in the secondary abdomen often is located less than 10 cm from the suprapubic incision, sometimes out of the midline. By contrast, the distance between the incision and the vulval commissura is 10 cm or more because of the high pubic incision design and the excessive central tension.

All these problems are worse when the primary procedure is performed through a classical elliptical incision because this type of incision stresses all the aforementioned deformities. If, additionally, the scar is not properly anchored to the muscle aponeurosis [6], then migration of the scar occurs (Fig. 3).

Another important consequence of performing an elliptic design without lipoplasty instead of a hexagonal design and judicious lipoplasty [1, 4] is flaccidity and bulging in the flanks and hips along with dog ears. Frequently, the scar is wide and distorted, particularly toward the midline, as a consequence of high central tension. Some cases even have two parallel scars because a previous scar has not been removed.

Another problem to resolve with the secondary abdomen is the absence of diastasis recti repair [7]. Sometimes plication has been performed, but only in the infraumbilical portion. If the muscles have not been repaired at all, then the abdomen is globulous, eventually with herniation or pseudoherniations (Fig. 4). If, by contrast, the muscles have been only partially repaired, usually only below the umbilicus, then the abdomen is flat below the navel with epigastric distension.

In summary, the diagnosis and preoperative planning should take into account the umbilicus position, scar width, symmetry, position, dog ears, fat accumulations, skin laxity, and the status of the muscle aponeurotic system of the abdominal wall. All these factors together are the cause of the distortion and asymmetry in the abdomen as well as patient complaints.

Fig. 1 *Top:* Preoperative view. *Bottom:* Postoperative view 5 months after the secondary procedure. In this case, the sequelae of the primary abdominoplasty are severe. The umbilicus was placed 5 cm from an asymmetric scar. There is high central tension, with flaccidity in the flanks. In the secondary procedure, a symmetric incision was designed 7 cm from the vulval commissura. Centrally, no skin resection was performed, whereas laterally, a 6-cm skin resection was necessary

Fig. 2 *Left:* Preoperative view. *Right:* Postoperative view 4 months after the secondary procedure. This 34-year-old woman underwent a "miniabdominoplasty" elsewhere 9 months earlier. The preoperative view shows the result of this insufficient procedure performed without umbilical elevation. The split abdomen appearance is evident. The distance between the scar and the umbilicus is scarce (8 cm) because in the primary procedure, the umbilicus was simply pulled inferiorly, with elliptical skin resection, no resection laterally, and no liposuction in the periumbilical region. During the secondary procedure, the incision was made 7 cm from the vulval commisura and taken laterally to the iliac spine. The umbilicus was replaced 12 cm from the scar

Fig. 3 *Top:* Preoperative views. *Bottom:* Postoperative views 6 months after the secondary procedure. This 44-year-old patient underwent a body contour procedure elsewhere 12 months earlier. She was not satisfied with the results. In this case, we can appreciate, as a consequence of an unsuitable design, the characteristics of a poor result: horizontal scar, dog ears, remaining flaccidity in the hips, remaining fat accumulation, short distance between the umbilicus and the scar (8 cm), and excessive distance between the scar and the vulval commissura (11 cm). To reverse this situation, an incision was planned 7 cm from the vulval commissura. Liposuction was performed in the fat accumulations, and the scar was fixed in smile fashion. The umbilicus was replaced 12 cm from the scar, and recti plication was performed

The Solution to These Problems

It is most important to identify each problem for the particular case and to plan the operation on this basis. During the design (Fig. 5), we first define the position at which the new scar will be placed and fixed [1, 4, 8]. Then the incision is marked below the previous scar. The lower limb of the new incision is placed 7 cm from the vulval commissural [2], and its medial horizontal part determines the pubis width, usually 8 to 11 cm [9]. At this point, we extend the incision laterally as far as necessary, following the principle that the more skin laxity there is, the more horizontal the incision will be. [1, 4].

Fig. 4 *Top:* Preoperative views. *Bottom:* Postoperative views 4 months after the secondary procedure. For this patient, primary abdominoplasty had been performed 8 years earlier. At that time, a simple skin resection with a "W" scar shape was performed. The pubis, flanks, and anterior aspect of the thighs were distorted. Umbilical transposition was not performed. The abdominal wall, weak with pseudoherniations, was repaired via plication of the rectus and oblique muscles, and the scar was redesigned symmetrically. Umbilical transposition was not necessary in this case, but the stalk was freed and fixed 2 cm lower

Fig. 5 *Left:* Posterior view. *Right:* Anterior view of the design proposed for an approach to the case in Fig. 6. The lower line represents the inferior incision. This incision tends to be more horizontal as the flaccidity increases. The middle line is the place at which the new scar will be anchored to the muscle aponeurotic plane. The upper line is approximated because the amount of skin to be removed is defined in the operating room

In the operation, we first perform judicious liposuction of the fat accumulation. Usually, this is a safe procedure in the hips, flanks, and epigastric area [5, 10]. The umbilicus is incised and later fixed in an upper position through a new incision. As in primary abdominoplasty, we then perform the supraumbilical tunnel dissection in triangle fashion toward the midline as wide as necessary, usually about 8 to 10 cm in the higher portion, to accomplish the muscle plication (Fig. 6). This undermining should not be taken to excess laterally because obliteration of the vessels in the superolateral area of the abdomen may cause necrosis. If necessary, the plication is performed also below the umbilicus and in the oblique muscles [7, 11].

Next, the pubis and all the inferior incision margins are anchored to the aponeurotic plane [6] in smile- or bicycle handlebar–shape fashion. These fixation sutures should approximate Scarpa's fascia to the abdominal wall aponeurosis and the iliac spine's periostium [4]. With these maneuvers, we achieve a secure fixation between the lower margin flap through its Scarpa's fascia and deep planes, avoiding migration of the scar. Once the incision is fixed, it is wise to corroborate its position, especially its symmetry.

Fig. 6 Intraoperative images. (**A**) Undermining of the abdominal flap in a triangle fashion. The superior area is about 8 to 10 cm wide. (**B**) Fixation of the inferior flap to avoid scar migration. The right side has already been anchored, whereas the left side is in the original position. (**C**) Detail showing how Scarpa's fascia in the inferior flap is anchored to the muscle-aponeurotic plane of the abdominal wall

The next step is to debulge, in the superior flap, the deep fat layer beneath Scarpa's fascia [4]. This is performed with lipoplasty and completed with sharp dissection.

Two to four drains are placed, which are removed 2 to 4 days later depending on the amount of fat tissue removed. If liposuction has been minimal, then the drains can be removed 48 h later. The next step is closure of the defect that results from the umbilicus transposition through a vertical scar.

At the new umbilicus position, a downward arrow tip incision is made [8]. Its position should match the natural position of the navel stalk. Two sutures fixed to the fascia, the one cranial and the other caudal (at 6 and 12 o'clock positions), create a smooth vertical depression.

Finally, we assess the amount of skin to be removed. Centrally, it generally is very scarce. By contrast, the skin resection often is generous laterally. The incision is lengthened as far as necessary to avoid dog ears [1].

Complications

Our complication rates for secondary abdominoplasty is shown in Table 1. No major complications, no infections, and no seromas deserving surgical evacuation occurred. Although a case of acute pulmonary edema in a primary abdominoplasty patient is reported [4], the current series had no major complications. The main problem, as in primary abdominoplasty, is hypertrophic or wide scars, which used to occur in about 10% of the cases despite the application of available treatments. Another important complication is the asymmetric scar. Because of failure during its fixation, we had two of these cases requiring revision. There were no cases of necrosis in this series, whereas we had four cases in the primary abdominoplasty series [4]. As in primary cases, the factors that may increase the risk are smoking, diabetes, and a history of previous hypertrophic scars [14].

Table 1 Complications in the current series

Complication	No. of cases
Early	
Necrosis	0
Seroma	2
Seroma deserving surgical evacuation	0
Primary dehiscence	0
Asymmetric scar	2
Late	
Wide scar	3
Hypertrophic scar	2

Fig. 7 *Top:* Preoperative views. *Bottom:* Postoperative views 2 months after the secondary procedure. This 53-year-old patient underwent primary abdominoplasty elsewhere 20 years earlier. There is significant flaccidity, with a low horizontal scar. To solve this case, a primary flankplasty and secondary abdominoplasty with umbilical transposition was performed. Note the improvements in the pubis, thighs, buttocks, abdomen, and flanks

Results

This series had 21 patients who underwent secondary abdominoplasty or secondary abdominoflankplasty between 2001 and 2006. Generally, following the principles described earlier, it was possible to solve the problem of each particular case, obtaining improvements in trunk contour and patient satisfaction.

In the early period, 17 of the 21 patients underwent the primary procedure, all during the first year after the first operation. The patients in these cases were dissatisfied with the first procedure, and thus searched for another surgeon.

Four patients underwent surgery after more than 10 years. These patients presented with considerable weight gain and skin flaccidity (Fig. 7) due to aging, along with the typical stigma of an elliptically designed abdominoplasty. In these cases, a primary flankplasty was indicated in combination with the secondary abdominoplasty.

In the final case (Fig. 4), the main problem was the muscle aponeurotic system of the abdominal wall, and a considerable improvement was achieved with recti and oblique muscle plication.

Discussion

The ever-increasing demand for better results from body contour surgery is a fact. As a consequence, more patients who have had surgery previously, seek better results. This is the case with secondary abdominoplasty.

As with any other secondary procedure in plastic surgery, the surgeon needs to have an idea how the primary procedure was performed. In secondary abdominoplasty, the clinician must always suspect that the skin resection is sufficient or even excessive centrally, and by contrast, scarce laterally.

From our point of view, the key to the procedure is correct replacement of the umbilicus to retrieve a proper distance to the pubis, improvement of the contour with liposuction, correction of the scar situation, and accomplishment of a complete muscle aponeurotic repair. Sometimes a flankplasty should be performed (Fig. 7) to obtain a circumferential treatment of the trunk deformity because in the primary operation, flanks and posterior regions were not assessed and approached correctly [12, 13]. Obtaining betters results for body contour surgery represents a challenge similar to that faced in other fields of aesthetic surgery.

References

1. Lockwood T (1995) High-lateral-tension abdominoplasty with superficial fascial system suspension. Plast Reconstr Surg 96:603–615
2. Baroudi R (1989) Body contour surgery. Clin Plast Surg 16:263–277
3. Matarasso A, Wallach SG, Rankin M, Galiano RD (2005) Secondary abdominal contour surgery: a review of early and late reoperative surgery. Plast Reconstr Surg 115:627–632
4. Cormenzana P, Sampron N (2004) Circumferential approach to contouring of the trunk. Aesth Surg J 24:13–23
5. Cormenzana P (2000) Ultrasound-assisted lipoplasty associated with other procedures of body contour surgery. Cir Plást Iberlatinamer 26:295–308
6. Lockwood T (1991) Superficial facial system (SFM) of the trunk and extremities: a new concept. Plast Reconstr Surg 87:1009–1018
7. Ramirez OM (2000) Abdominoplasty and abdominal wall rehabilitation: a comprehensive approach. Plast Reconstr Surg 105:425–435
8. Ramirez OM (1999) U-M abdominoplasty. Aesth Surg J 19:279–286
9. Matarasso A, Wallach SG (2001) Abdominal contour surgery: treating all aesthetic units, including the mons pubis. Aesth Surg J 21:111–119
10. Nahai F, Brown GH, Vasconez LO (1976) Blood supply to the abdominal wall as related to planning abdominal incisions. Am Surg 42:691
11. Cardenas Restrepo JC, Munoz Ahmed JA (2002) New technique of plication for miniabdominoplasty. Plast Reconstr Surg 109:1170–1177
12. Hamra ST (1999) Circumferential body lift. Aesth Surg J 19:244–250
13. Aly AS, Cram AE, Chao M, Pang J, McKeon M (2003) Belt lipectomy for circumferential truncal excess: The University of Iowa Experience. Plast Reconstr Surg 111:398–413
14. Hughes CE III, Baroudi R, Lockwood TE, Matarasso A (2002) Abdominoplasty. Aesth Surg J 22:465–473