

Chapter 8

Creation of the New Umbilicus: My Technique on Abdominoplasty and Further Applications

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Introduction

Abdominoplasty has been performed since 1899 on the first publication by Kelly performing resection of a segment of excess panniculus creating the expression “abdominal lipectomy” [22]. Such procedure used to be the basic principle of several techniques during a long period through panniculus resection without transposition of the umbilicus. However, Vernon in 1957 was the first author to describe umbilical transposition upward during abdominal lipectomy [27]. In his original publication, a circular incision around the umbilicus was performed in order to separate it from the abdominal panniculus wall. Consequently, the cutaneous surface of the umbilicus was a circle (Fig. 8.1). Afterward, traction of the abdominal flap is done downward for resection of the excess panniculus. For reimplantation of the umbilicus on the abdominal flap, another circular incision was done and a circle of skin and a tube of subcutaneous fat tissue were resected in order to introduce the new navel.

Following Vernon’s description, many authors have published other procedures with vertical or horizontal incisions and also a semicircular incision [23], resulting always in a circular scar around the transposed umbilicus. Even when outstanding surgeons perform the operation, the final results have not been satisfactory in most patients. According to a survey by Grazer and Goldwyn [21] regarding 10,540 abdominoplasties earned out by plastic surgeons from the USA and other countries, umbilical scar contractures may occur in 45 % of the surgeries. In that survey, they mentioned that 2 % of the surgeons believe that some sort of retraction or contraction of the umbilical scar always occurs after abdominoplasty when transposition is done.

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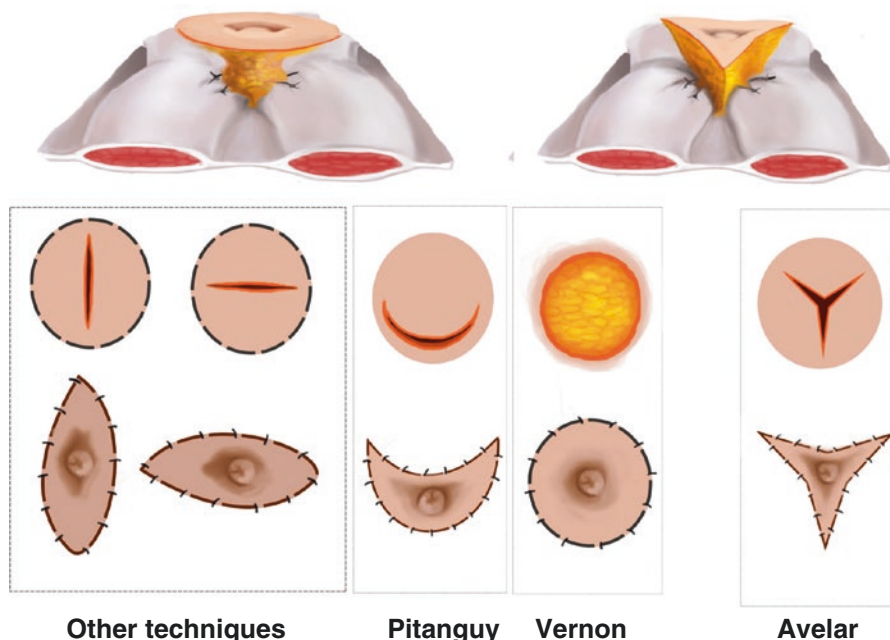


Fig. 8.1 Different cutaneous incisions used in umbilicoplasty and their implantation on the abdominal flap. *Top*: The circular incision used in other techniques and the triangular one in mine for umbilicoplasty; *Middle*: Different cutaneous incisions on the abdominal flap and my triangular one; *Bottom*: Different shapes of the surgical wound after implantation of the umbilicus according to each technique

Since I started my practice in 1974, I gave special attention to create a natural umbilical region during abdominoplasty in attempt to solve some severe problems associated with abdominoplasty. In my original publications [1–3], there are descriptions of an approach that proposed a new possibility, avoiding problems regarding scar retraction and even contraction (Fig. 8.1). Over the years, the basic principles of the method have remained the same, but according to my observations, some technical details have been revised to improve the aesthetic results [4] even later when full lipoabdominoplasty is performed [6–8].

Technique

Surgical demarcations

The operation

- A. Preparation and liberation of the umbilicus
- B. Implantation of the umbilicus
- C. Suture of the umbilicus
- D. Dressing

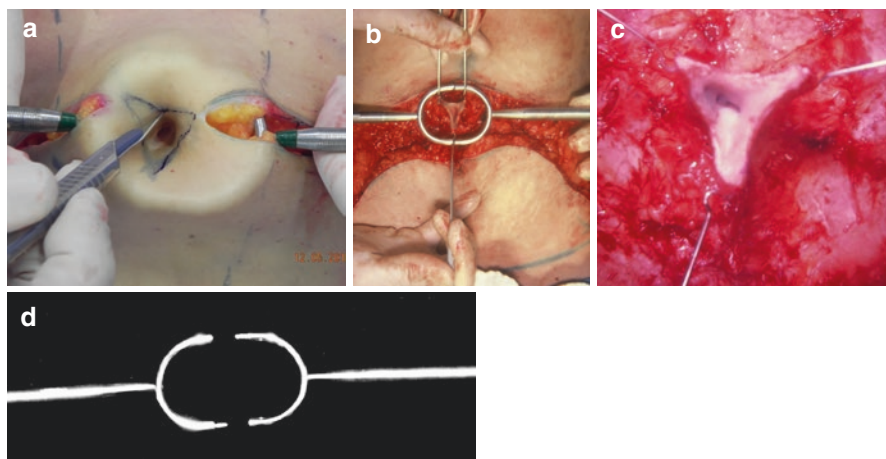


Fig. 8.2 Creation of the umbilicus during full abdominoplasty after liposuction procedure: (a) using my double half-circular instrument, the umbilical area is pulled upward to avoid accidental damage to intra-abdominal organs and triangular cutaneous incisions inside the umbilical cavity are done, one flap being directed downward and the other ones directed obliquely upward to the right and left; (b) after incisions, the triangular umbilicus is isolated; (c) triangular shape of the umbilicus according to my technique; (d) my double half-circular instrument

Surgical Demarcations

Creation of a new umbilical region is a mandatory procedure during all full abdominoplasties since the umbilicus must be transposed during operation. When one performs full abdominoplasty or full lipoabdominoplasty, creation of a new umbilical region is also an obliged stage in order to rebuild the abdominal wall. Surgical planning and demarcations are essential steps before any procedure in plastic surgery. Regarding full abdominoplasty or lipoabdominoplasty, both steps are even fundamental prior to operation and must be done with patient in stand and also in lay-down positions. My preference is to demarcate all reference points at my office on the day before surgery with my patient in front of some mirrors in order to follow my drawings. The demarcations on umbilical region are also done according to my approach published in 1976 and presented at the Brazilian Congress of Plastic Surgery and French Congress of Aesthetic Surgery (Fig. 8.2) [1, 2]. Firstly, a circle of about 2 cm in diameter must be drawn around the umbilicus with the purpose to delimitate the umbilical area on the surface of the abdominal wall. After drawing the circle around the umbilicus, a star-shaped incision with three triangular flaps is also done. One flap must be directed downward and other flaps are directed obliquely upward to the right and to the left (Fig. 8.2).

In patients after massive weight loss or when present with excessive cutaneous flaccidity, the umbilical area shows some downward inclination. However, the umbilical region is always well identified due to its peculiar constitution of skin with depression in the center which is the first scar in every human body due to necrosis of the umbilicus during few days after birth.

The skin area of the abdomen to be resected is also demarcated before operation. My preference is to follow Callia's technique with purpose to achieve the final scar as low as possible [20].

The Operation

Epidural or general anesthesia may be employed to perform full lipoabdominoplasty which is a combination of abdominoplasty without panniculus detachment with liposuction procedure. Local infiltration with a special solution is done prior to liposuction and skin resection which are fundamental procedures during operation. The solution is: 1000 mL of serum plus 2 mg of epinephrine (1/1000), which makes the dilution 2/1,000,000. In the use of this volume, it is possible to infiltrate the entire abdominal wall and lateral sides as well.

All those technical details are meticulously described on a chapter in this book regarding full lipoabdominoplasty.

Preparation and Liberation of the Umbilicus

The first surgical procedure on the umbilical region is to make cutaneous incisions following the star-shaped drawing inside the umbilicus according to my demarcations (Fig. 8.2a–c). In order to do this, I created a new surgical instrument, which is a double half circle with two-in-one type, to be articulated around the umbilical pedicle (Fig. 8.2d). Using this double half-circle instrument, the surgeon's assistant pulls the umbilical area upward. Such maneuver is useful to elevate the cutaneous surface of the umbilical region from the abdominal cavity in order to avoid any accidental perforation of the internal abdominal organs. I have heard about this kind of severe complication during surgery even when it is performed by well-qualified plastic surgeons.

Afterward, with a scissor, the pedicle is dissected downward to reach the aponeurosis of the musculoaponeurotic wall in order to isolate the umbilicus. At the end of this stage, the cutaneous surface of the umbilicus is free, showing its triangular shape (Fig. 8.2).

Afterward, skin resection of the abdominal wall following the demarcated area is a mandatory procedure. My operation is done according to Sinder's technique through which the upper incision of the area of skin to be resected begins at the junction of the curved line on both sides of the umbilicus, with a slight curvature downward following the demarcation [25, 26]. The subcutaneous tissue is held so that the knife does not damage the subdermal layer underneath, and consequently, there is no bleeding.

When there is indication for reinforcement of the musculoaponeurotic structures, this is the appropriate time to do it. I created a device (a dissector instrument) which is introduced from the umbilical area upward on the midline through the connective

tissue in order to expose the central border of the rectus abdominis. The procedure regarding its plication is described in chapter Full Lipoabdominoplasty in this book.

Reimplantation of the Umbilicus

Once the abdominal flap has been pulled downward, the new umbilical area is marked at the point corresponding to its projection on the cutaneous abdominal surface. The midline of the abdominal wall must be drawn before operation in order to give the correct orientation to demarcate the new umbilicus on the aesthetic location on the abdomen. To determine the new location, I created an appropriate surgical instrument (Fig. 8.3) that permits to achieve the exact position of the new umbilicus and simultaneously where the adequate distance from the final scar will be, since the instrument is a marker as well as a ruler (Fig. 8.4). This instrument also protects the aponeurotic wall underneath as well as avoids any damage to the intra-abdominal organs since it lies smoothly on the aponeurotic wall already reinforced. According to my previous publications [4, 5] on late follow-up, the umbilicus is pulled upward by the upper abdominal segment. For this reason, the final position

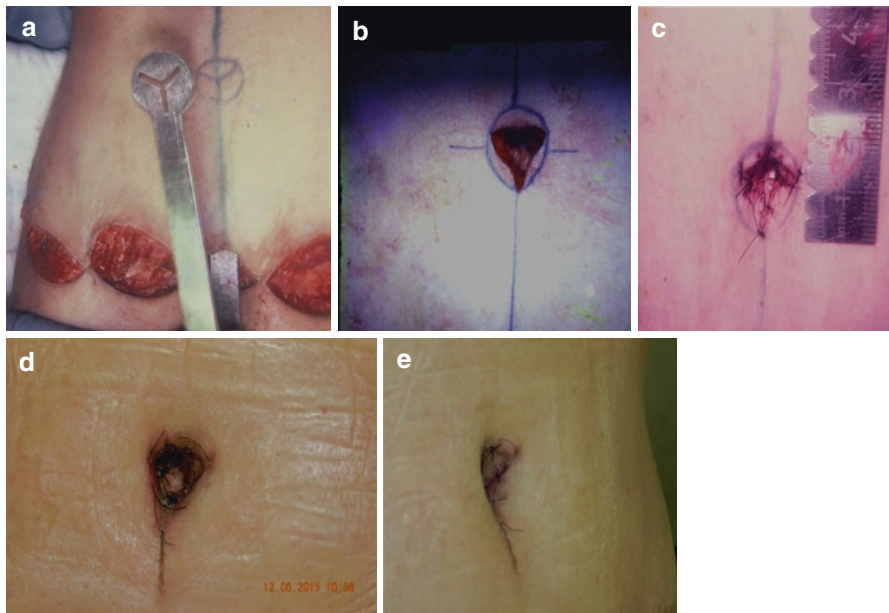


Fig. 8.3 Incisions on the abdominal panniculus flap for reimplantation of the umbilicus: (a) The abdominal flap is already pulled and temporary stitches are done, and one segment of my umbilicus marker is placed on the umbilicus and the other segment lies on the flap where the new area is drawn; (b) three incisions were done to create three triangular flaps inside the circle; (c) the three skin flaps of the umbilicus are sutured to the three flaps created on the abdominal panniculus; (d) after suture in front view; (e) oblique view showing that the three skin flaps of the abdominal panniculus turn downward creating a natural depression on the new umbilical cavity

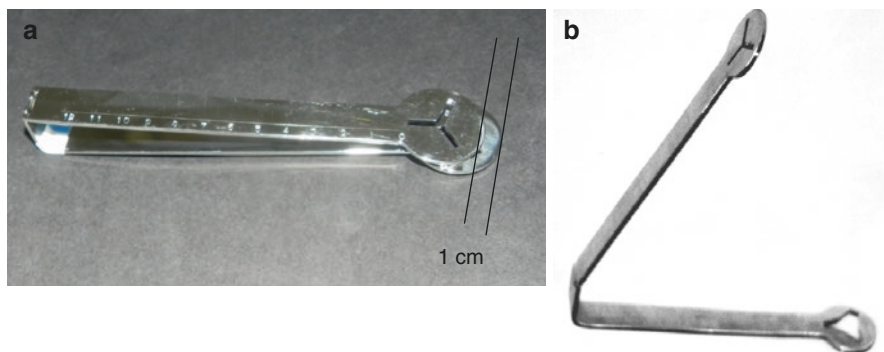


Fig. 8.4 Umbilicus marker has two segments. The superior segment is 1 cm shorter than the inferior one. It is articulated in order to place the lower segment on the umbilicus and the other one lies on the abdominal flap: photo (a) Avelar's instrument in lateral view; (b) photo on oblique view

of the umbilicus is marked at least 1 cm lower than its projection on the abdominal flap (Fig. 8.3).

My personal instrument to determine the new umbilical area has two segments like a forceps, the upper one being 1 cm shorter than the inferior one in order to mark the exact projection of the umbilicus postoperative (Fig. 8.4). Usually, it is placed approximately 7–9 cm above the suprapubic incision. Very frequently, some patients present elongation of that distance from 2 to 4 cm more 1 year after operation.

Suture of the Umbilicus

The umbilicus is then sutured with individual stitches of mononylon 5.0. Following my technique, the tips of the three cutaneous flaps of the umbilicus are sutured between each small triangular skin flap created on the future umbilical region on the abdominal flap. On the other hand, the tips of the skin flaps of the abdominal wall are sutured between the cutaneous flaps of the umbilicus. Therefore, the final scar instead of being a circular one around the umbilicus will be a “broken” line like an atypical multiple Z-plasty (Fig. 8.3) [1–3]. The final scar has a triangular shape, which is very important to avoid scar retraction and even contracture.

Dressing

Dry gauze is placed inside the umbilical cavity and more gauze over it with purpose to make some light pressure over the umbilical area (Fig. 8.5a–c). Performing such procedure keeps the flaps in their adequate position, avoiding scar tissue contracture. The final scar has a triangular shape, which is also very important to achieve good aesthetical result without any scar tissue contracture or even retraction. The dressing

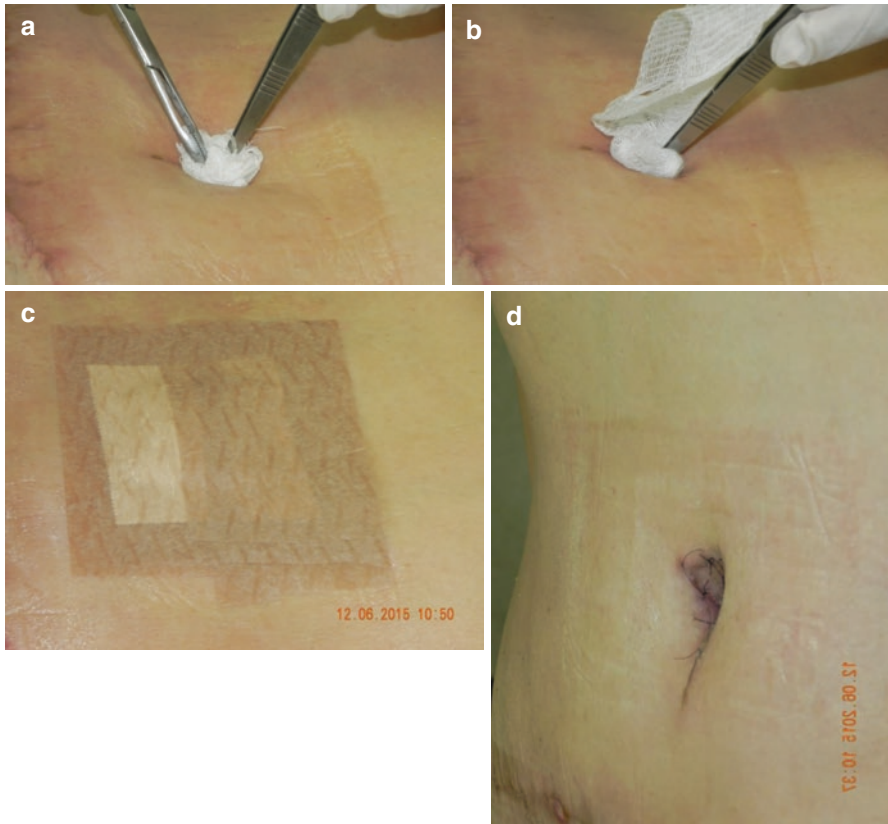


Fig. 8.5 Sequential photos (a–c) To demonstrate how to do dressing after surgery and during postoperative care; photo (d) shows the final aspect after 3 weeks

is removed 5–6 days after surgery when another dressing with dry gauze is placed inside the umbilicus which is changed every 10 days for at least 2 months (Fig. 8.5d). The final result of the umbilical region after abdominoplasty always presents a smooth scar around the umbilicus in harmony with the abdominal wall [4].

Complications

Since Vernon [27] introduced transposition of the umbilicus during abdominoplasty, such technique became a mandatory stage in all operations which may be considered one of the most important contributions on this field. Nevertheless, it brought also many problems to patients and surgeons due to undesirable circumstances after operations, as reported by Grazer and Goldwyn [21] in a remarkable survey in which they found very high incidence of abnormality scars around the umbilicus

with retraction and contraction. Those complications motivated me to create my technique to solve some of them. In fact, when my procedure is properly performed, the final result avoids circular scar around the umbilicus. Therefore, in my patients, it is very seldom such adverse scars appear after surgery. For only one patient I had to make scar revision on the umbilicus since she presented a very bad scar on her suprapubic region. I have repaired and reconstructed the umbilicus in several patients secondarily to abdominoplasty (Figs. 8.6 and 8.7).

In other methods described in medical literature, in the final result, there is tendency to present circular scars which may retract or even contract.

Further Applications of the Technique

Besides employing my technique on abdominoplasty, there are several circumstances that are adequate indication to solving unaesthetic situations on umbilical area as this may happen in children and adults as well. I have had some patients in infancy with umbilical hernia associated with diastasis of the rectus abdominal on midline in supraumbilical and infraumbilical areas (Fig. 8.8). It is useful to employ the surgical principles to solve the problems since the umbilical incisions provide excellent approach with minimal panniculus undermining. Due to evident elasticity of the panniculus, my triangular incisions offer wide view to perform placcation of the aponeurosis and the umbilical hernia as well. Even children with unaesthetic redundancy of skin may also be repaired using the technique through which create a “broken” scar around the umbilicus. The excess skin is removed following surgical demarcations according to my technique (Fig. 8.9).

So far, adult patients with umbilical hernia are good candidates for treatment through application of the technique, even when other procedures on the abdominal wall will be done (Fig. 8.10). Again, it is important to emphasize that the elasticity of the panniculus is a good anatomical characteristic to allow enough view to perform the operation. Although the elasticity of the panniculus in adult is much less than in infancy patients, it is possible to carry out reinforcement of the aponeurosis and correction of umbilical hernia as well.

Nowadays, vertical abdominoplasty is quite frequent due to a great amount of patients after massive weight loss and after bariatric surgery look for operation on the umbilicus that may be treated in the use of umbilical technique (Fig. 8.11). In those peculiar patients, the surgical principles of the technique are helpful to create a smooth scar on the umbilicus which makes a useful interruption of the straight and long scar from the xiphoid process to the pubis. One of the surgical principles of the technique is to push the skin of the abdominal wall to the depth which is very important to achieve good aesthetic result on the new umbilical region when vertical abdominoplasty is performed.

So far, there are severe deformities on the abdominal wall caused by local as well as by burnt traumatism which damaged the skin missing some amount of integument. For reparation and reconstruction of some unaesthetic abnormalities on

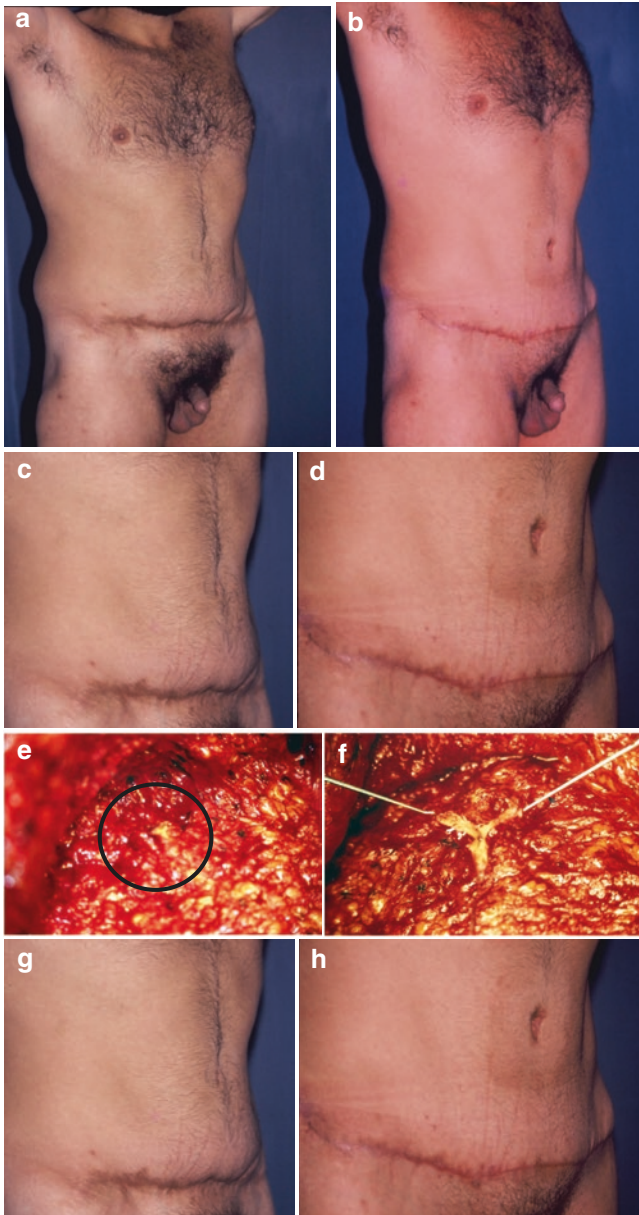


Fig. 8.6 Application of the technique to reconstruct the umbilicus on an unfavorable result after conventional abdominoplasty: (a) A 44-year-old male patient presents unaesthetic scar of the operation and absence of the umbilicus; (b) after reconstruction of the umbilicus created with the remnant cutaneous surface of the umbilicus; (c) close-up of the patient showing ungraceful result and absence of the umbilicus; (d) final surgical result. Photo (e) perioperative view taken from the raw area during conventional abdominoplasty. The *circle* indicates the remaining segment of the umbilicus; (f) two hulks pull the superior flaps created on the remaining surface of the umbilicus; (g) same patient on oblique view showing the unaesthetic scar and absence of the umbilicus; (h) after reconstruction of the umbilicus and reparation of the scar of the abdominoplasty

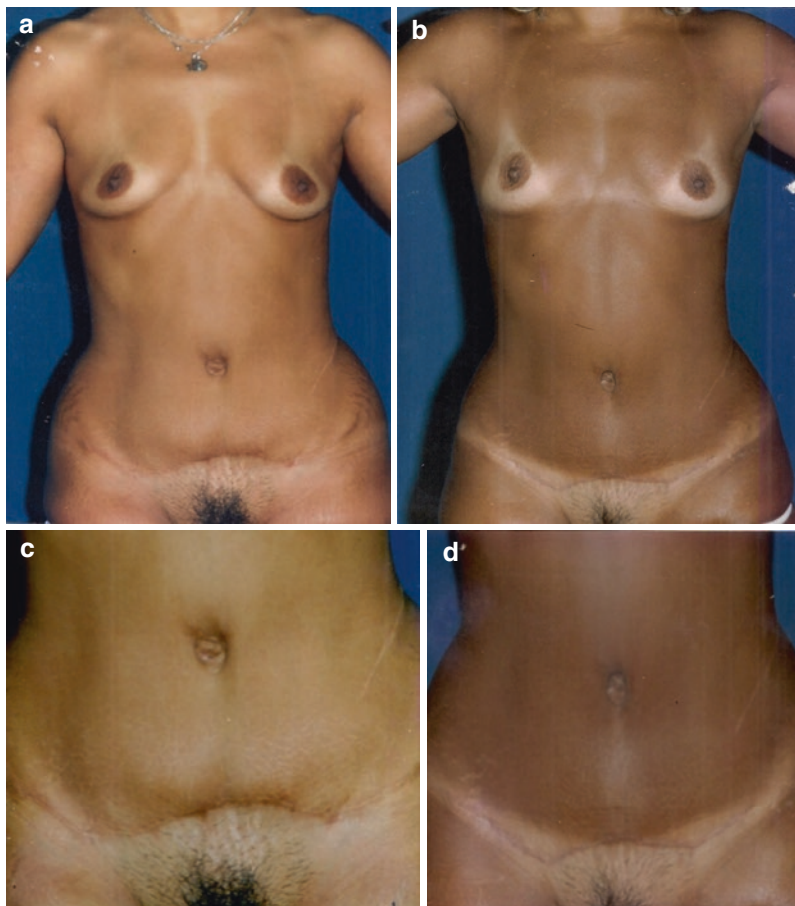
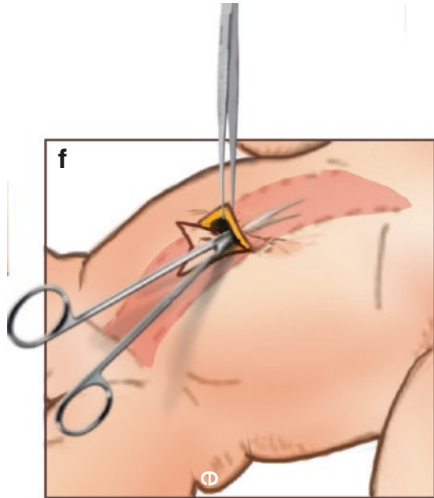
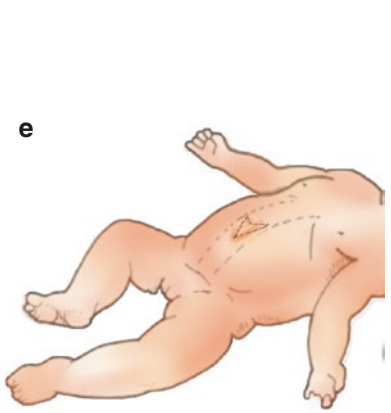
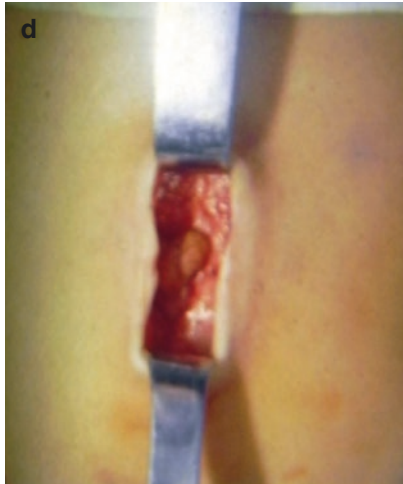
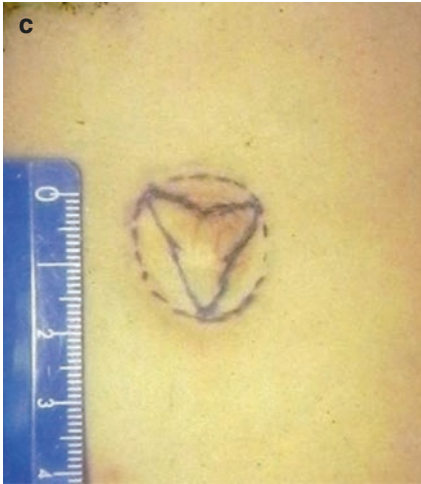
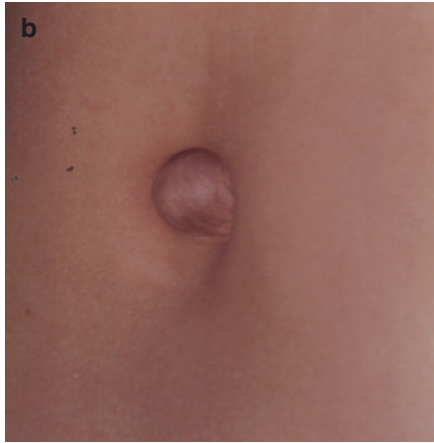
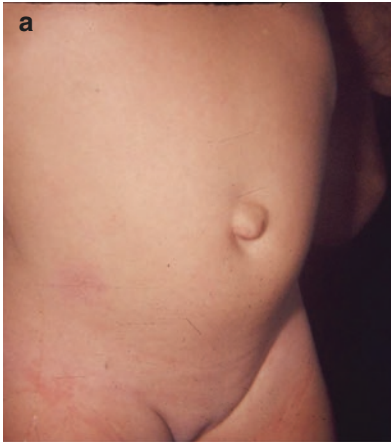


Fig. 8.7 Application of the technique for correction of the umbilicus in unfavorable result after abdominoplasty: (a) ungraceful result after abdominoplasty performed elsewhere with too wide umbilicus; (b) after correction of the umbilicus and secondary abdominoplasty; (c) close-up showing the unaesthetic appearance of the umbilicus and suprapubic scar; (d) surgical result 2 years after surgery

Fig. 8.8 Application of my technique for treatment of umbilical hernia in child with diastasis of the aponeurosis on supra- and infraumbilical. Photo (a) a 2-year-old female child with umbilical hernia and diastasis on midline of the rectus abdominis muscles; (b) close-up of the umbilicus with herniation; (c) during operation with demarcation of the technique: a circle of 2 cm in diameter is marked with dotted line around the umbilicus and a star-shaped incision is drawn in the center; (d) after incisions, one can see the umbilicus on depth; Drawing (e) a child where it is marked with dotted line the projection of the internal borders of the rectura and the triangular incision around the umbilicus; (f) scheme in close-up showing dissection with a scissor through the incisions on the umbilicus; (g) perioperative photo showing panniculus undermining with a scissor above and below the umbilicus; Drawing (h) showing three stages of reinforcement of the aponeurosis above and below the umbilicus and the final cutaneous suture of the umbilicus to the skin of the umbilical region; (i) perioperative photo showing the umbilicus on the center of the umbilical region with three cutaneous flaps around it; photo (j) the same child 1 year after operation showing the natural umbilical region; (k) same patient 18 years later presenting the surgical result



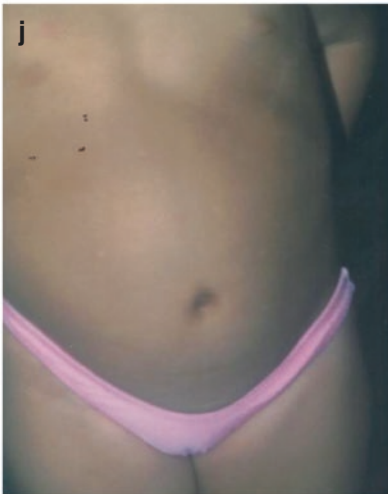
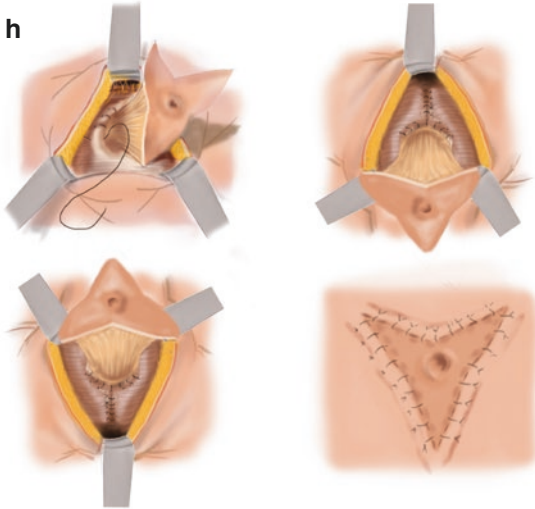


Fig. 8.8 (continued)

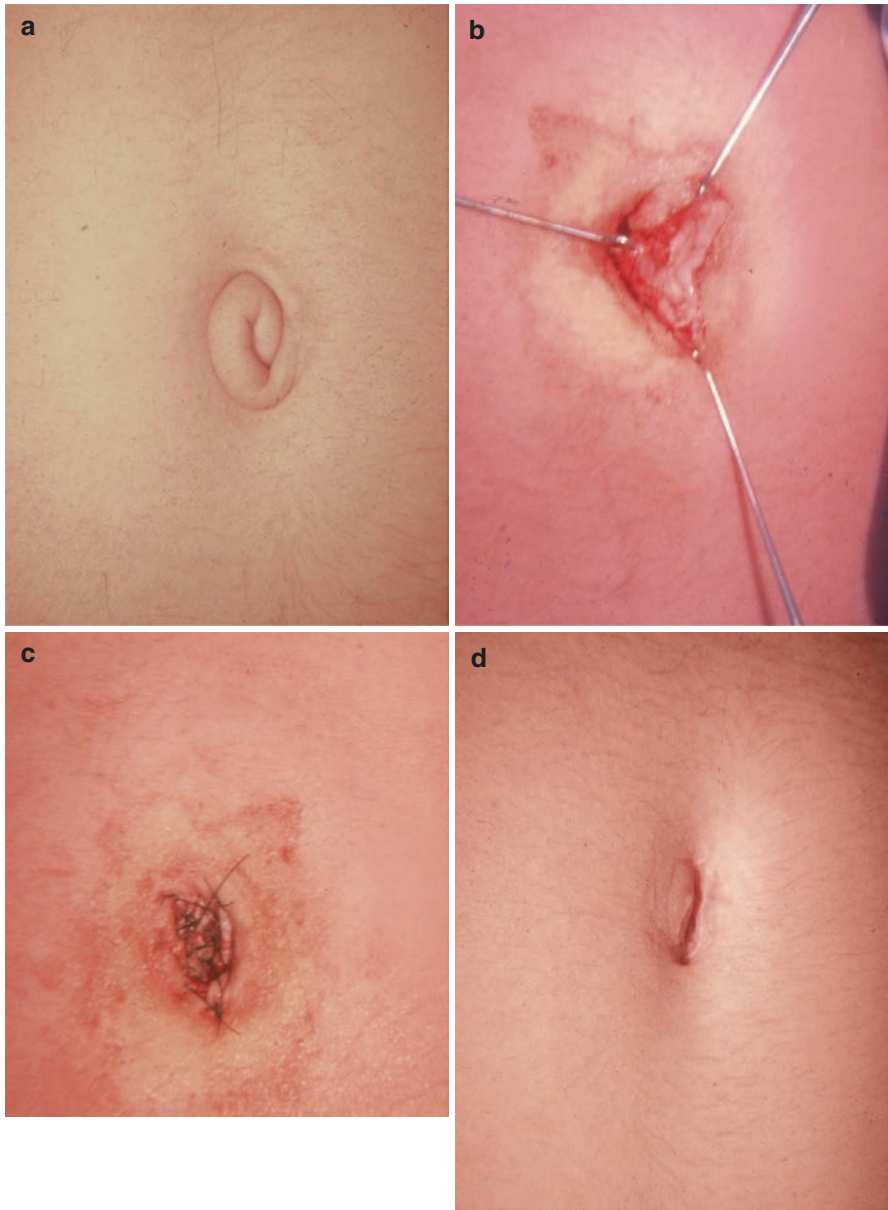


Fig. 8.9 Application of the technique for correction of redundant skin with umbilical hernia. Photo (a) preoperative photo of an 8-year-old girl showing the redundant skin of the umbilicus folded over itself with ungraceful appearance; (b) during operation showing the umbilicus pulled by three hucks after cutaneous incisions with triangular surface of the umbilicus since the excess skin was already resected; (c) photo after suture of the umbilicus to the skin around it; (d) same patient 2 years later

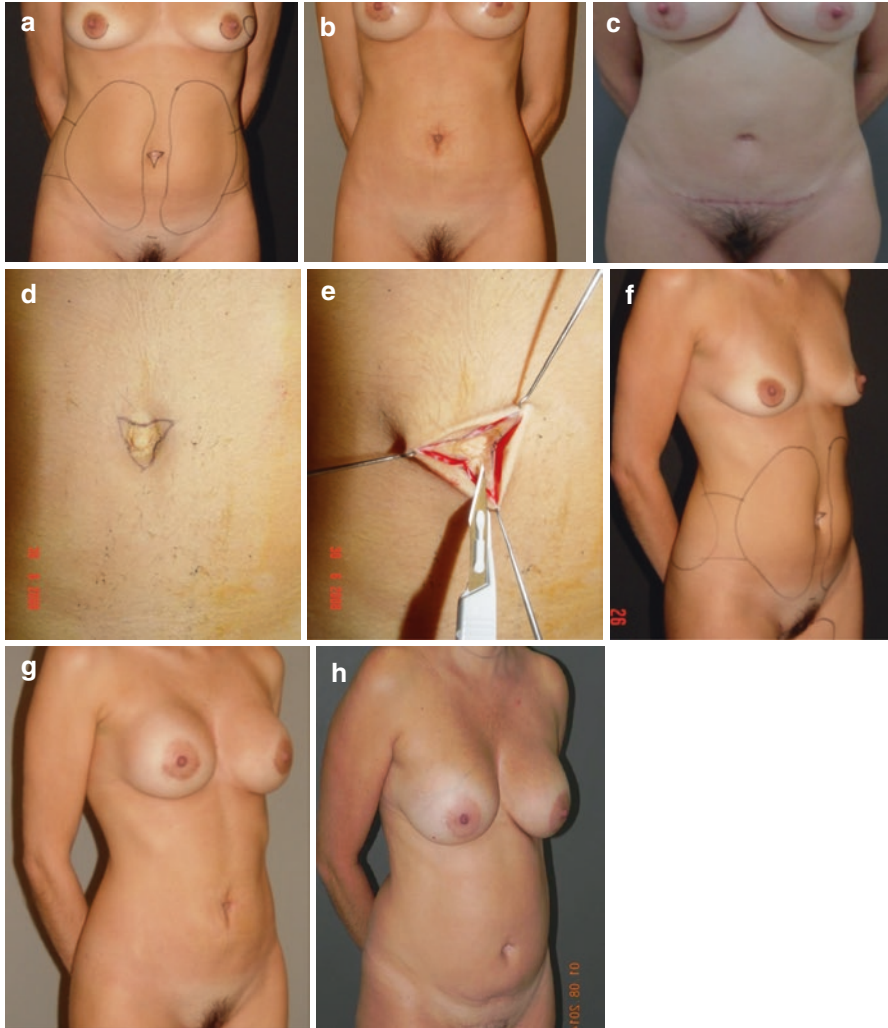


Fig. 8.10 Correction of umbilical hernia employing the technique in a female patient. Photo (a) before surgery showing surgical demarcations on the area for liposuction; (b) same patient 3 months after correction of umbilical area; (c) same patient 6 months after liposuction of abdomen showing the correction of the umbilical hernia; (d) preoperative photo showing demarcations of the incision inside of the umbilical area; (e) incisions are being made inside of the umbilicus; photo (f) same patient in oblique view before surgery showing unaesthetic umbilical area; (g) 3 months after correction of the umbilical hernia; (h) same patient 8 years after operation 2 years after the second pregnancy showing natural umbilical region

abdominal wall and breast, when the umbilicus is deviated from midline, it is possible to transfer it to its normal position on midline (Fig. 8.12a, b). The surgical planning is a fundamental step to demarcate the technique on the umbilicus and

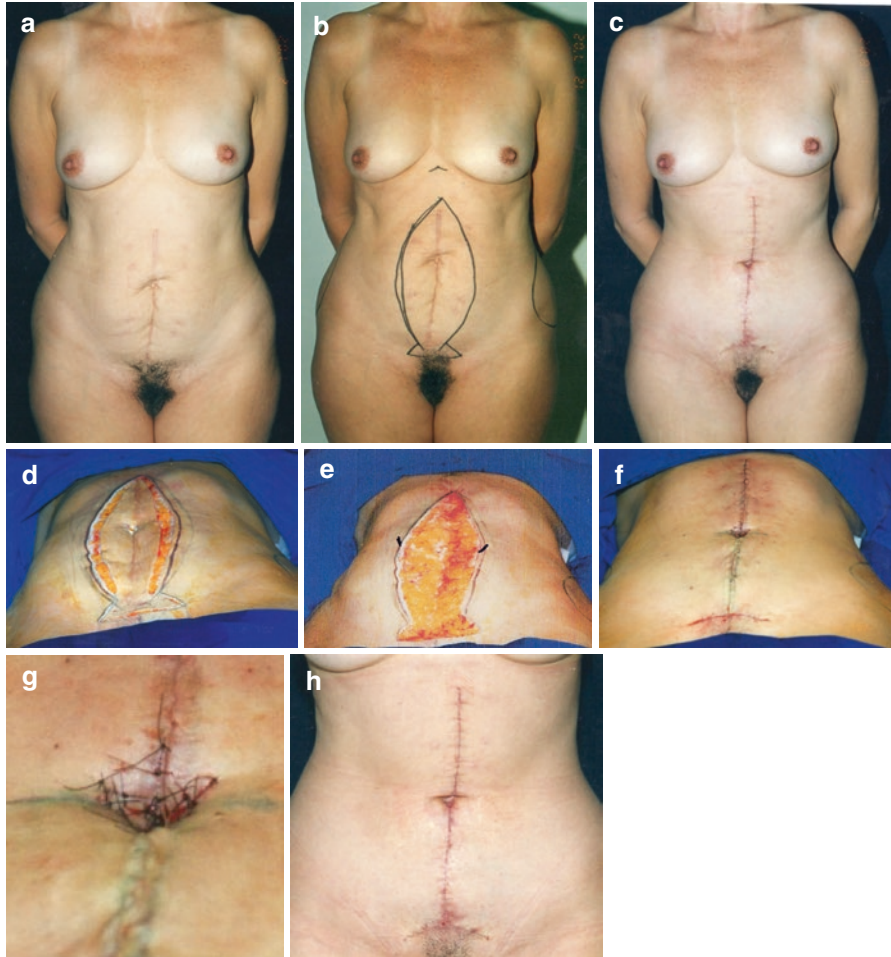


Fig. 8.11 Application of my technique on vertical abdominoplasty with creation of the new umbilical region. Photo (a) preoperative view of a patient presenting ungraceful surgical scar on midline with diastasis of the rectus muscles; (b) surgical planning; (c) postoperative view 6 months later. Photos during operation: (d) cutaneous incisions on each side and short one on suprapubic; (e) after vertical panniculus resection keeping the triangular skin flaps of the umbilicus; (f) after cutaneous suture creating the umbilical cavity on its natural position; (g) close up of the umbilicus; (h) the surgical result of the umbilicus four months after operation

another demarcation on the normal position on midline (Fig. 8.12c, d). After transposition of the umbilicus, the donor area is sutured since the three triangular skin flaps may reconstruct the raw area (Fig. 8.12e-h). After reparation of the abdomen wall with transposition of the umbilicus associated with breast reconstruction, the final aspect may achieve satisfactory result (Fig. 8.12i-l).

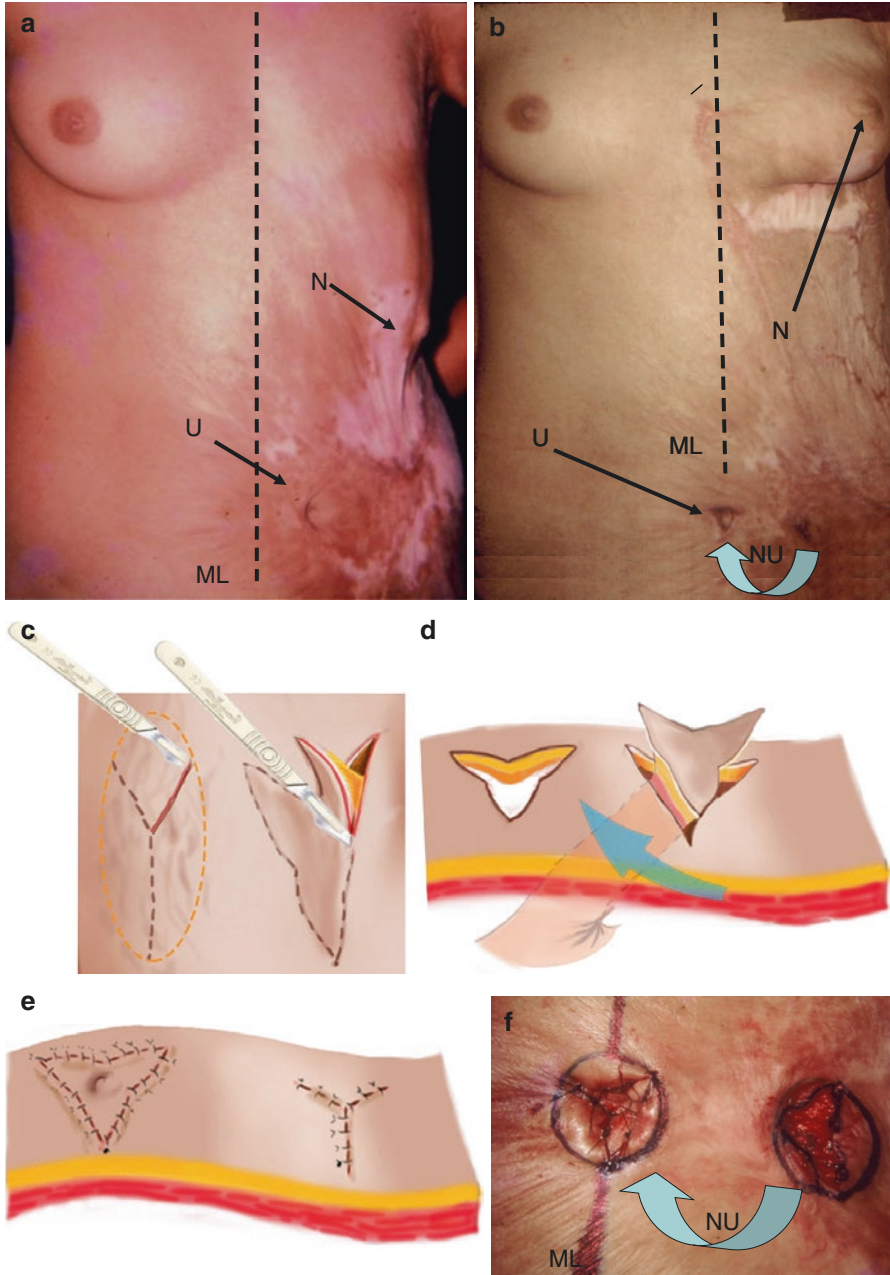
Discussion

Following Vernon's description, many authors have published other procedures with vertical or horizontal incisions and also a semicircular incision [24], resulting always in a circular scar around the transposed umbilicus. Even when outstanding surgeons perform the operation, the final results have not been satisfactory in most patients. One of the most important surgical principles of my technique is to push the skin of the abdominal wall to the deep structures of the musculoaponeurosis (Fig. 8.3). In other methods described in medical literature, the umbilicus is pulled from the depth to the surface of the abdominal wall, leaving a circular scar which may cause retraction and frequent contraction according to Grazer and Goldwing's survey in 1977.

I take this opportunity to point out that no matter how many flaps are created on the umbilical surface as well as on the cutaneous covering of the abdominal panniculus, the main surgical principle is to avoid circular scars afterward. In order to develop my method, I studied all geometric figures and I found out that the most "opposite" one to the circle is a triangle. In case of any other figure with a greater number of cutaneous flaps, there is a tendency to approximate to a circle. Therefore, there are descriptions that four flaps are created on the umbilicus; of course, four small cutaneous flaps must be created on the abdominal wall, and the final scar will be a square star-shaped figure with four tips with four small scars around the umbilicus. Such a procedure is not a new one, since the basic principles are based on my method described in 1976 [1, 2].

Therefore, my technique is a new one because when it was presented and published in the Annals of the XIII Brazilian Congress of Plastic Surgery, held in Porto

Fig. 8.12 A 17-year-old girl presented severe damage of the abdomen and left breast caused by burn. Photo (a) before surgery showing the deviation of the umbilicus (*U*) out of the midline (*ML*) marked with dotted line, the left breast is destroyed and the nipple (*N*) is retracted on the abdomen due to scar tissue formation; photo (b) after breast and nipple-areola reconstruction (*N*) is transposed to the normal position on the breast and the umbilicus (*U*) is transplanted to the new area on midline (*NU*) by my technique. Surgical planning of the operation for transposition of the umbilicus from the lateral position to midline: drawings (c) the dotted line shows the skin incision around the umbilicus and "Y" incision on midline; drawing (d) shows the umbilicus already incised still on lateral position out of midline and the skin incisions where the umbilicus was transposed. (e) on drawing, one can see the location of the final result after transposition of the umbilicus and the triangular skin flaps on donor are sutured; (f) preoperative photo showing the umbilicus (*NU*) is already transposed from its anomaly position to midline (*ML*). One can see the three skin triangular flaps are not yet sutured; (g) photo on close up during operation shows the umbilicus deviated from the midline (*ML*) and the new area is demarcated according to the technique with "Y" shaped incisions inside of a circle; (h) 6 months postoperative photo of the same patient showing transposition of the umbilicus to midline indicate by arrow, and the previous umbilical is adequately repaired by suture of the skin flaps; photos (i, k) before operation showing the left breast destroyed by burnt with the nipple (*N*) is retracted downwards to the abdominal wall; photos (j, l) after two surgical stages of reconstruction the breast and skin graft on the abdomen as well as the nipple was transposed to its normal position on the reconstructed breast



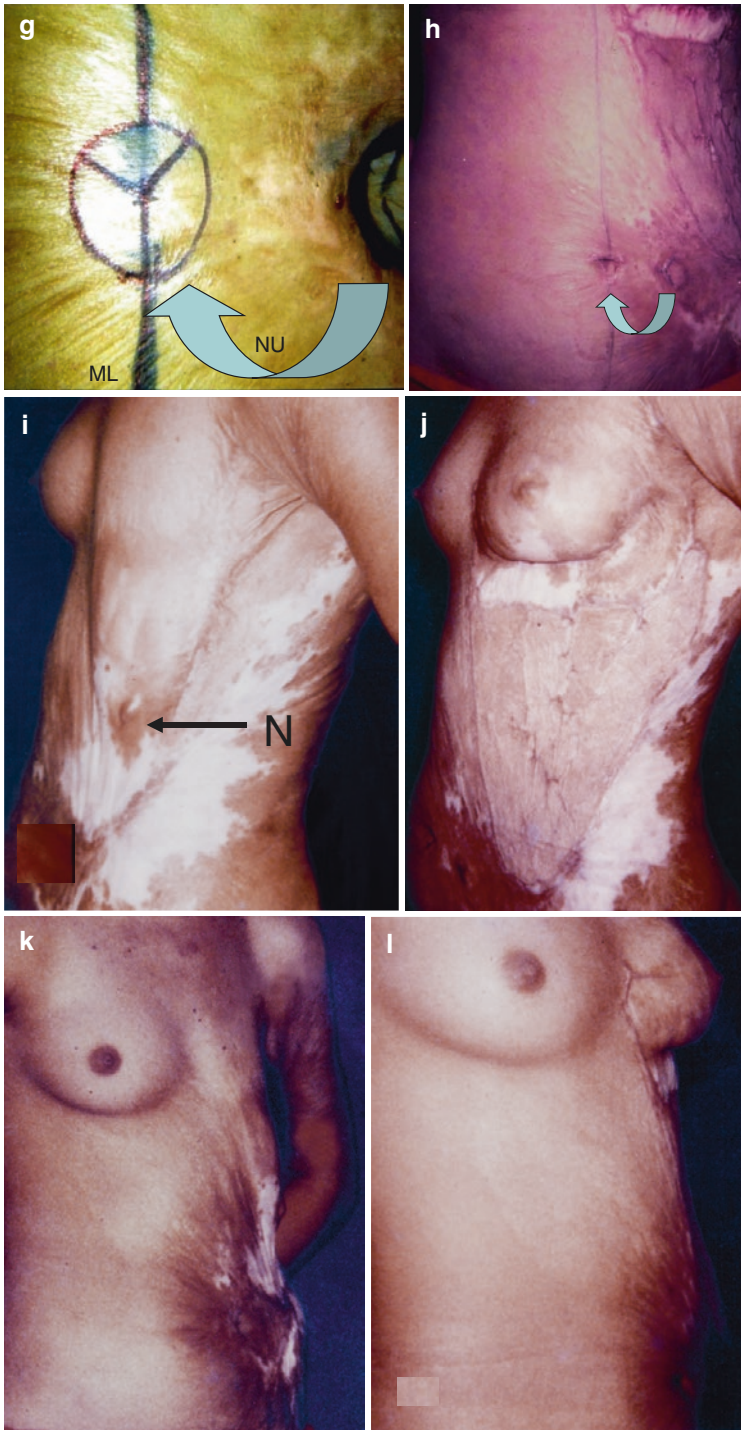


Fig. 8.12 (continued)

Alegre, in 1976, there were no descriptions regarding these fundamental principles. For these reasons, I dedicated a chapter of this book to emphasize the importance of creating a new umbilical area during abdominoplasty, especially when this operation is performed without panniculus undermining and resection [9–15].

Conclusion

Creating the new umbilical region during full lipoabdominoplasty is a mandatory procedure which is a constant challenge, since it is located in the geometric central area of the abdomen and always remains scarred around the umbilicus. Using my technique, it is possible to achieve good aesthetical results, avoiding scar retraction and contraction which are unfavorable stigma postoperatively. According to previous evaluation, planning, and demarcation, the whole area of cutaneous covering of the infraumbilical region is always resected. Cutaneous incisions on the umbilicus are done prior to skin resection [16–19]. When lower and upper abdominoplasty are performed, the umbilicus is not transplanted because the skin resection is limited to the suprapubic area and submammary folds.

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