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Aesthetic Plastic Surgery

Lipoabdominoplasty with Selective and Safe Undermining

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Abstract. Our objective is to present a new surgical concept for the aesthetic treatment of the abdominal region using the principles of liposuction associated with the traditional abdominoplasty. Lipoabdominoplasty is different from other techniques because it has the advantages of conserving perforator vessels of the abdominal wall, it preserves suprapubic sensibility, results in better abdominal contouring, has a low rate of complications, and a faster recuperation after surgery. The traditional abdominoplasty has been used for many years with several modifications intending to achieve better aesthetic contouring and to reduce complications. However, each modification solves problems only partially. The authors perform the surgery beginning with wet lipoplasty in superficial and deep fat layers. The skin below the umbilical scar is excised as in classical abdominoplasty. After that, selective and safe undermining of the dermocutaneous flap is done in the middle section of the upper abdomen between the borders of the rectus abdominis muscle, preserving mainly supply vessels of the abdominal wall.

Key words: Lipoabdominoplasty—Abdominoplasty—Lipoplasty—Abdomen—Superficial liposuction

In recent decades, there have been changes in tendencies and terminology concerning abdominoplasty since the advent of lipoplasty introduced by Illouz in 1980 [14]. Great progress in the surgical approach of the abdominal region has been made. Abdominoplasty has been subdivided into lipoplasty, with minor skin removal of the region above the pubis [1,12,13,24,28], and the traditional abdominoplasty surgery with safe dorsal and flank lipoplasty, described by Matarasso in 1991 and 95 [18,19].

Willkinson [3] presented his experience using the limited aesthetic abdominoplasty. Hakme [13] described a mini-abdominoplasty associating a liposuction technique with the removal of excessive skin in the region above the pubis in selected cases.

In 1992, Illouz [15] published an abdominoplasty called the "mesh undermining" technique, which was used in obese patients with pendulous abdomens, where an "en bloc" resection was performed above umbilical scar, followed by superior lipoplasty and neo-omphaloplasty. A limited plication of the abdominal rectus diastasis muscle could be performed.

Baroudi [2] described the use of "quilting suture" between the subcutaneous tissue of the abdominal skin flap and the fascia of abdominal wall to prevent seroma.

Shestak in 1999 presented a paper [5] where lipoplasty was associated with partial suprapubic skin removal, with considerably reduced undermining, removing the deep and superficial fatty layer and without umbilicus transposition.

Avelar in 1999 presented a similar paper [1] adding the possibility of submammary region skin removed to the treatment of upper abdomen.

During this evolution great progress was made with superficial liposuction as described by De Souza Pinto [8,9].

In spite of such progress in the treatment of the abdominal region, the classic abdominoplasty [5,6,16,17,20,21] has remained the surgical procedure that achieves the best aesthetic results, but with many complications such as hematoma, seromas, skin suffering , and skin necrosis. The wide undermining of the abdominal flap is undoubtedly the great cause of the high rate of seroma incidence, skin slough, and skin necrosis, mainly in smokers.

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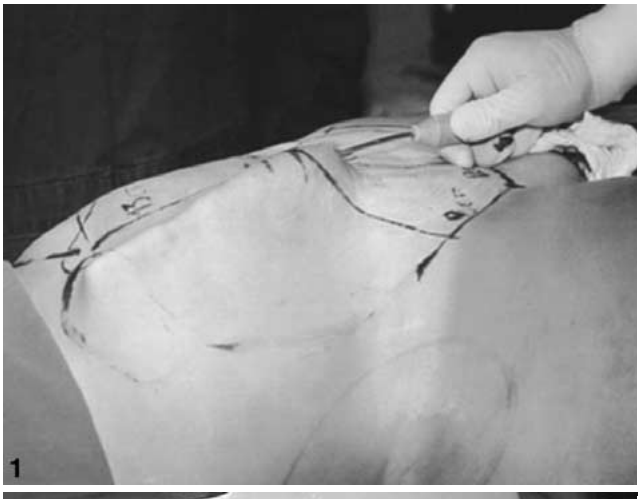
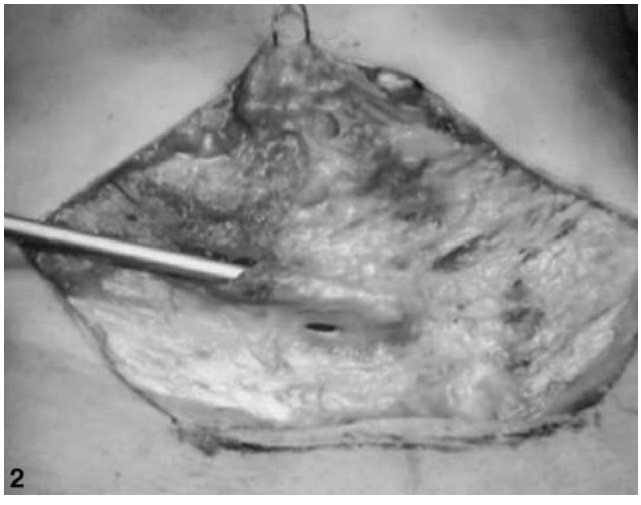
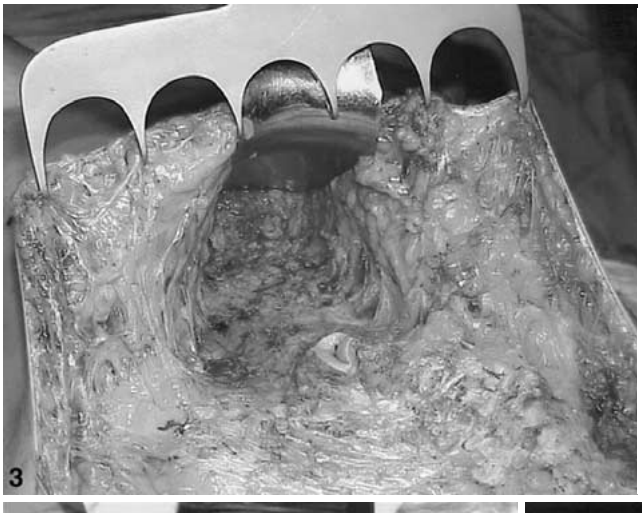
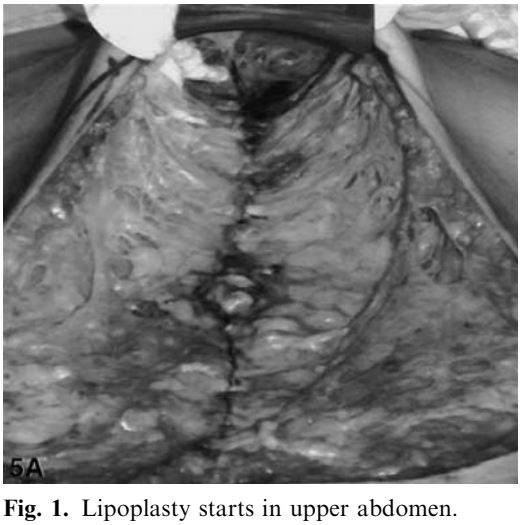








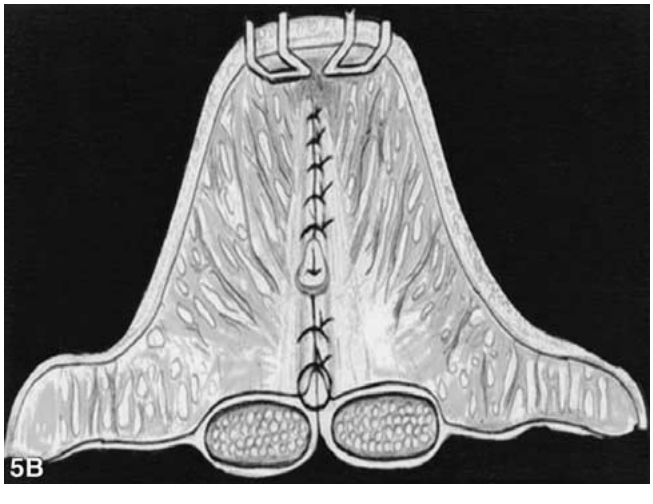
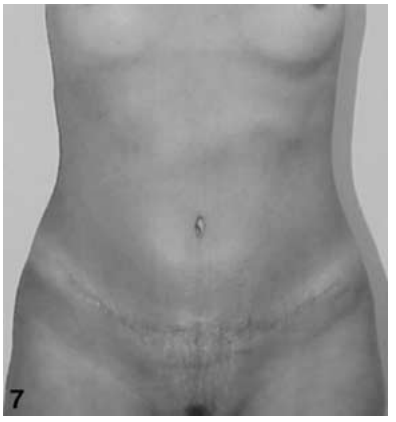
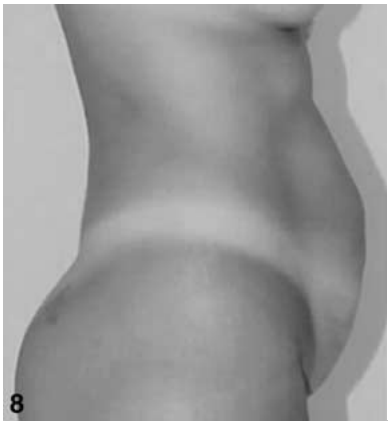


Fig. 1. Lipoplasty starts in upper abdomen.
Fig. 2. Complementary open liposuction.
Fig. 3. Selective and safe undermining in the upper abdomen, bordering the diastasis of the abdominal rectus muscle.
Fig. 4. Infraumbilical tissue removing for plicature.
Fig. 5. (**A**) The plication is done from the xiphoid appendix to the pubis. (**B**) Scheme.





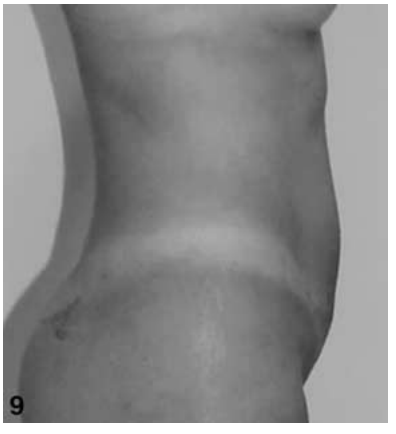
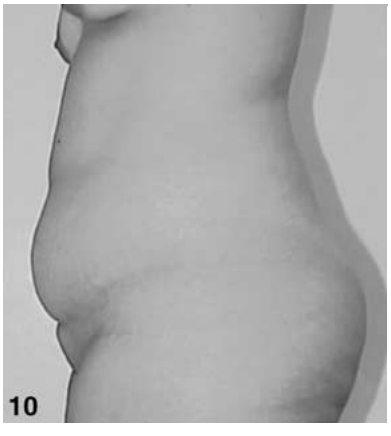
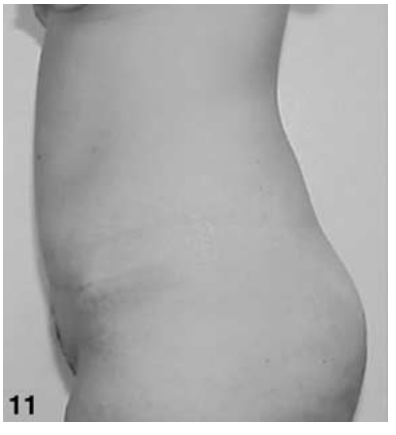


Fig. 6. Patient 1, preop.
Fig. 7. Patient 1, postop.
Fig. 8. Patient 1, preop.
Fig. 9. Patient 1, postop.





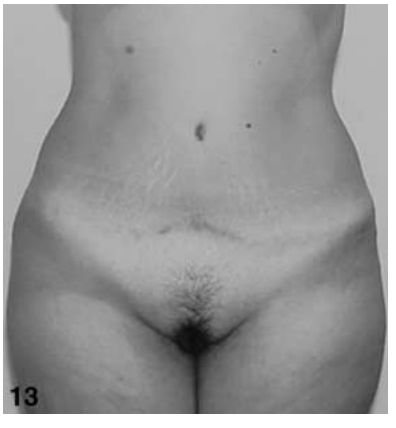


Fig. 10. Patient 2, preop.
Fig. 11. Patient 2, postop.
Fig. 12. Patient 2, preop.
Fig. 13. Patient 2, postop.

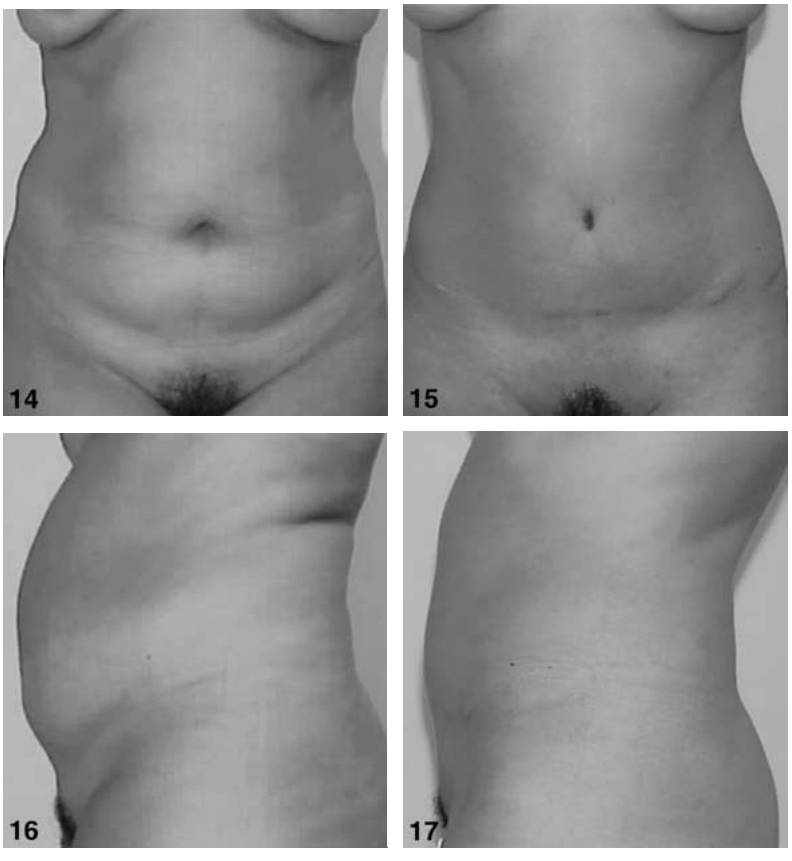


Fig. 14. Patient 3, preop.
Fig. 15. Patient 3, postop.
Fig. 16. Patient 3, preop.
Fig. 17. Patient 3, postop.

Vila-Rovira [27] published a book describing treatment of obese patients, with a complete liposuction on abdomen continuing with a wide undermining, as in traditional abdominoplasty, although the majority of surgeons perform these procedures separately with a 6-month interval to avoid commitment to the blood supply [7].

Since Matarasso [18,19] published a paper describing the safety areas for lipoplasty in the abdominal region, the epigastric and mesogastric areas should not be recommended for lipoplasty at the same time as classical abdominoplasty.

The objective of this paper is to present a new surgical concept for the aesthetic treatment of the abdominal region using the principles of liposuction and the traditional abdominoplasty with selective and safe undermining of the abdominal flap. The sliding of the skin from above the umbilicus to the pubic region is performing without undulations due to the tunnels produced by the cannula in lipoplasty. In this way, vessels are preserved and vascular commitment of the abdominal flap is diminished.

Materials and Methods

Between January 2000 and November 2002, 125 patients (124 female and 1 male), aged 28–67 years, underwent lipoabdominoplasty. All patients indicated for traditional abdominoplasty were selected for this procedure.

Anatomic Bases

Our technique is based on the anatomy studies of Taylor and co-workers [4,26] and El-Mrakby and Milner [10], which demonstrated that many perforating arteries emerge through the anterior rectus sheath, concentrated inside the paraumbilical area. These vessels are terminal branches of the deep inferior epigastric artery [4,26]. The average distance from the umbilicus is 4 cm (range 2.5 to 6). They are more abundant in the upper lateral area (40%), lateral to the umbilicus. The second area of density of perforator vessels is the upper medial area (20%) [10].

According to these principles, we perform a safe undermining of the abdominal flap preserving the integrity of blood supply.

Surgical Procedure

After preoperative marking of the suprapubic incision [3], the abdominal region is infiltrated with a saline solution with adrenaline at a concentration 1:1,000,000 [11]. Lipoplasty starts in the upper abdomen [25] in the region above the umbilicus (Fig. 1) and continues to the

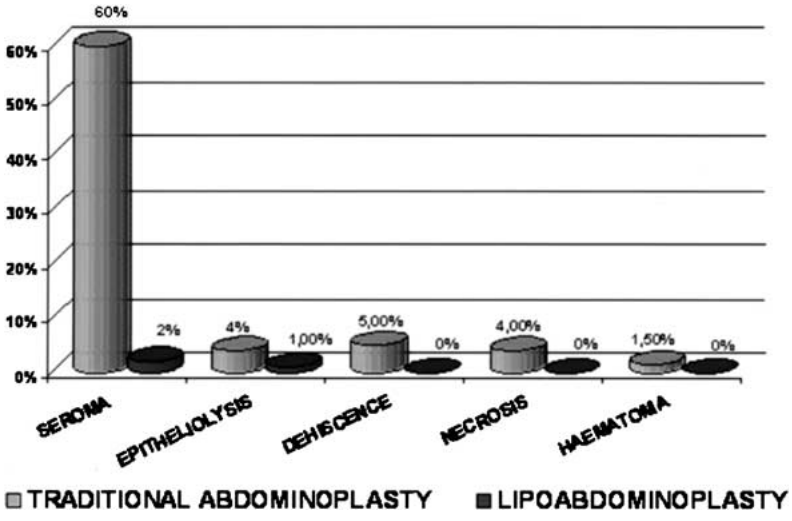


Fig. 18. Complications.

flanks including the region below the umbilicus. After lipoplasty is performed, the umbilical scar is isolated, and the skin below this point is removed, as in the classical abdominoplasty. However, a thin fatty layer with its connective tissue, lymphatic vessels, arteries, and veins is preserved beneath the fascia of Scarpa [23]. If necessary there is a complementary liposuction performed in this area to remove the fat excess (Fig. 2).

At this point a special hook is used to raise the flap, so as to complete liposuction of the excess fat in order to keep the flap with a uniform thickness.

For plicature of abdominal rectus diastasis muscles, the upper abdomen is selectively undermined, bordering the internal margins of abdominal rectus muscle, where there are no perforating vessels [4,10,26] (Fig. 3). In the lower abdomen, the adipose tissue must be removed on the midline, exposing the borders of the rectus muscle (Fig. 4) to complete the plicature from the xiphoid appendix to the pubis (Fig. 5). For the treatment of the umbilical scar, we use the star-shaped omphaloplasty technique [22].

After the neo-omphaloplasty, the flap is pulled down easily, and we use two layers of nonabsorbable sutures to close the abdomen. If necessary, vacuum drains are placed, and removed 2 days after surgery.

Results

The results are considered good for both physician and patients. In two cases, we observed the presence of seroma around the 12th day after surgery. It was solved with aspiration with a syringe. There were no cases of hematoma, rupturing of the suture, skin suffering, or infection.

The superior and inferior borders were effectively accommodated, because of the uniform thickness of the fatty tissue as a result of liposuction. Consequently, we observed that there was a low incidence of "dog ear," and the final scar was shorter.

We also observed an improvement in the body shape and in the body contour line resulting in a more youthful abdomen, thus avoiding the unnatural aspect of the classic abdominoplasty (Figs. 6–17).

Discussion

Classical abdominal surgery is associated with a relatively high complication rate because of the large-scale undermining required. It also involves the rupturing of the lymphatic and neurovascular supply to the abdominal flap.

The lipoabdominoplasty we commend adds a more ample selection of patients and preserves perforate abdominal supply vessels, the neural chain, and lymphatic vessels [11], thereby reducing the incidence of complications such as seroma, hematoma, skin slough, and skin necrosis, and preserving the suprapubic sensibility (Fig. 8). This technique enables the use of liposuction in all regions of the abdomen without increasing the risk to tissue blood supply. It results in a harmonious abdominal profile.

Conclusion

Lipoabdominoplasty with selective and safe undermining promotes a more youthful abdominal silhouette, better accommodation between the abdominal flap and the pubis, faster patient recovery, and a shorter scar. We believe that it is a safer way to treat the abdominal region (than classical abdominoplasty) and that it produces more harmonious results with fewer complications.

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