

Combined Liposuction and Dermolipectomy Technique in Huge Abdominoplasty Patients

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ABSTRACT

32 patients with abdominal lipodystrophy were included in this study. They were operated upon using the combined liposuction and dermolipectomy technique. The liposuction was done by the tumescent technique. Aspirate volume ranged from 1300-2650 cc. The dermolipectomy part of the procedure after liposuction was easier with less bleeding and better post operative analgesia. The benefits recognized of the combined technique were (1) small transverse scar (2) easy bloodless elevation of the flap because of tumescent fluid infiltration (3) getting rid of dog ears by suctioning alone (no need to extend the scar laterally) (4) elimination of the discrepancy between upper and lower flap thickness (5) giving that nice-looking epigastrium (6) liposuction of associated deformities can be done, as hips and thighs. Central flap necrosis happened in one case (3% of cases) and minor wound infection in three cases (9% of cases). It is safe and beneficial to do combined liposuction and abdominoplasty in severe cases with excess fat, excess skin and musculo-fascial laxity of the abdominal wall, after following the proper technique and precautions.

INTRODUCTION

The term abdominoplasty covers a range of surgical procedures including dermolipectomy, liposuction and dealing with musculo-fascial abdominal wall layer [1]. As the ideal abdomen is formed by a proper relationship between the osteomuscular system, the subcutaneous adipose tissue and the quantity of skin, reshaping entails dealing with all layers. A firm toned abdomen and a narrow waist line have been universally admired since the antiquity. The surgeon's responsibility in abdominal contour operations is to alter the patient's self-consciousness by providing a flatter and narrower abdomen and creating a scar that is compatible with the limitations of the operation and the patient goals and life-style.

The problems that abdominal contour surgery can correct include damage to lower abdominal

skin, loose upper abdominal skin, varying amounts and locations of excess fatty tissue and bulging of the abdomen caused by musculo-fascial flaccidity [2].

So, it is mandatory to define the abdominal deformities separately; as to achieve the ideal aesthetic and functional result. Hence, the three primary components of the abdominal deformity; the skin, the fat content and the musculo-fascial system help to define the severity of the problem and to select the appropriate treatment [2].

The original abdominal wall procedures reported at the turn of the century were aimed primarily at relieving functional problems associated with hernias and later dermolipectomies were added to relieve the patient of a pendulous abdomen. By 1960s surgery evolved into the classic abdominoplasty, which was performed through a variety of low transverse incisions with wide undermining and muscle plication. During this period undermining became more extensive and the incision had to be extended further to adjust lateral tissue excess. The introduction of liposuction in 1980s ushered in a new dimension and permanently and radically altered the way surgeons approached body contour surgery.

Liposuction became the cornerstone in the management of body contour surgery and actually defined plastic surgery's entry into minimally invasive, small scar surgery [4-6].

In view of these advances the rationale for the continued use of standard abdominoplasty in all situations was re-examined. Several authors propose several classifications of the abdominoplasty candidates. All the classifications are

based on the results of examination and evaluation of the three main components of abdominal deformity, skin; fat and musculofascial contour (Table 1).

Accordingly, Eaves in 1995 [3] classified abdominoplasty candidates into three classes:

Table (1): Eaves classification of abdominoplasty patients.

Skin	Fat excess	Musculofascial
1- Normal-slight excess	Mild-moderate	Normal
2- Normal-slight excess	Mild-moderate	Abnormal
3- Moderate-severe	Moderate-severe	Normal or abnormal

Class 1 patients usually respond to liposuction alone, minimal skin excess is often resolved by the contraction and scarring induced by removal of the underlying fullness with liposuction. Class 2 patients are often treated by mini-abdominoplasty technique; infraumbilical plication of muscles may be added. Endoscopic abdominoplasty may be an alternative to these patients. In class 3 patients, excess skin and fat need to be excised by standard open dermolipectomy plus muscle plication. In the last group liposuction may be added to the technique [7].

This study is made to assess the effectiveness and benefits of doing liposuction as an adjunct to full abdominoplasty in patients with excess skin, excess fat of the abdominal wall and muscle weakness (patients of class 3 in Eaves classification and class IV in Matarasso classification [7].

It is important to study the anatomy of abdominal wall and the blood supply of each part of it (Fig. 1). From that figure we can see that it is important to elevate the upper flap in an inverted T-fashion to preserve the lateral blood supply coming from segmental perforators, intercostal, subcostal and lumbar arteries. Liposuction cannula should not also go in this direction (towards the costal margin) to preserve the lateral blood supply.

Type IV patients in Matarasso classification are patients with severe skin laxity, excess fat and considerable upper and lower flaccidity of the musculofascial system. Areas of the abdomen that are most amenable to simultaneous suction lipectomy cross various anatomic zones and include, mons pubis, the upper and lower skin

flap, the wound margins costal margin, flanks and hips [8].

PATIENTS AND METHODS

The study was done on 32 patients their ages ranged from 30 and 50 years. The follow up period ranged from 6 and 18 months. All patients complained of abdominal contour deformity (abdominal lipodystrophy) either alone or in association with abdominal hernias (para umbilical or epigastric). Patients included in the study were those having excess fat and excess skin (type IV patients in Matarasso classification). In choosing patients for the study some patient groups were excluded, as those with systemic diseases like ischaemic heart diseases and obstructive lung disease. Patients with incisional hernia and previous scars were also excluded.

Full history taking, pre-operative preparation, photography and measuring the abdominal girth are done for every patient.

Pre-operative markings of the liposuction areas mentioned before is done, it should be guided by pinching the skin to assess the quantity of the fat to be removed by liposuction.

Liposuction is done first before dermolipectomy. The suction areas were marked before operation. These were, the flanks, the epigastrium and the whole abdominal wall above the area which will be excised (taking care at the area of costal margin). The suprapubic area is also sucked, so it will be thin to avoid any discrepancy between the upper and lower flap (Fig. 2). The tumescent technique of liposuction is used by infiltration of normal saline containing lidocaine 1% (25 ml per litre) and epinephrine (1: 100,000) by an infiltration cannula. This technique produces a firmness and swelling in the area to be treated making the liposuction procedure more precise and reducing the post-operative skin irregularities. Small incisions are made in the skin in areas that are camouflaged by situating them in areas such as the umbilicus, suprapubic area, the part which will be excised in dermolipectomy, or bathing suit lines. A 6-mm cannula is used. The aspiration ports of the cannula are kept down towards the muscle fascia away from the skin. Using the hand and the pinch test we can judge the amount of fat aspirated and the thickness of the flap. Crisscross technique of liposuction should be avoided.

After completing the liposuction part of the operation we start the abdominoplasty. A lower abdominal crease incision and flap elevation usually by the electrocautery till the xyphoid process with minimal elevation of the lateral supra-umbilical region.

Undermining is done in an inverted V-type fashion. The undermining in this fashion keeping us away from the costal margin, preserving the blood supply coming to the upper flap from the lateral side (segmental perforators). This is an important step in the technique, because after doing liposuction then elevation of the upper flap (area B in Fig. 2) is mandatory to preserve the lateral blood supply of the flap.

Separation of the umbilicus from the flap is a part of flap elevation. Plication of the rectus sheath is done by prolene no. 1. Excision of the excess skin is done.

Reposition of the umbilicus is then done. The last step is closure in two layers after putting a suction drain. Light dressing is used. A compression garment is applied immediately following the operation. Early ambulation is important to avoid deep venous thrombosis. The suction drains are removed when the daily drainage is less than 50 cc. Sutures removed 10 days following the operation. Abdominal binder is worn for 3 months. Regular follow-up on an outpatient basis was done every week for one month to detect early complications (seroma, or infection) then monthly thereafter for 6 months. Post-operative photography is taken for comparison. It is better to be at least 2 months after operation to give a chance for the oedema to resolve. Post-operative measurement of the abdominal girth is done.

RESULTS

The study was done on 32 patients complaining of abdominal contour deformities in the form of bulging, redundancy, or discrepancy in contour (abdominal lipodystrophy) either alone or in conjunction with hernia. 28 patients were females and 4 males. Two of the male patients were smokers. 6 patients (18.75%) had excessive fat accumulation in thighs, buttocks or trochanteric areas, associated liposuction of these areas were done in the same session.

The amount of liposuction ranged from 1300 cc-2650 cc. The flap elevation was easier (due to thinner flap after liposuction) with less bleed-

ing and better postoperative analgesia. The reduction of abdominal girth (at the most bulging point seen from the lateral view) was from 13%-20% (mean reduction was 16%) (Figs. 3-6).

Patient satisfaction was achieved in 28 patients (87.5%). The complications met in the study were in the form of central flap loss in 1 patient (2x3 cm), persistent anaesthesia of the central infraumbilical region for 8 months in one 1 patient and 2 patients with persistent seroma for 3 months. Minor wound infection occurred in 3 patients. Minor skin irregularities or residual redundancy in two patients.

The case of central flap loss was managed by surgical debridement and secondary sutures. The patients with seroma were treated by frequent aspiration drainage and compression. Minor skin irregularities or residual redundancy which occurred in 2 patients were subjected to a second session of liposuction as a refinement. No umbilical complications happened in any patient. No dog ear was noticed in the lateral part of the scar in any patient (Table 2).

Table (2): Complications of the technique.

Complication	No. of patients
Wound infection	3 patients (9%)
Seroma	2 patients (6%)
Central flap necrosis (2x3 cm)	1 patient (3%)
Minor skin irregularities or residual redundancy	2 patients (6%)
Anaesthesia of the central infra umbilical region	1 patient (3%)

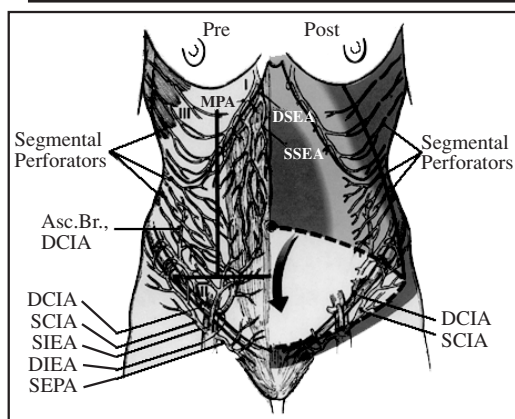


Fig. (1): (Left) Pre (operative): The blood supply to the anterior abdominal wall (Right) Post (operative): vascular anatomy in the postabdominoplasty patient. DSEA, deep superior epigastric artery; SSEA inferior epigastric artery; DCIA, deep circumflex iliac artery; SCIA, superficial circumflex iliac artery; SIEA, superficial inferior epigastric artery; SEPA, superficial external pudendal artery; segmental perforators (zone III), intercostal, subcostal and lumbar arteries (Matarasso A, [7]).

Fig. (2): Marking areas of liposuction.

Area A: Not for liposuction to be away from the segmental perforators.

Area B: Area of liposuction from epigastrium, flanks and abdominal wall above excised part.

Area C: Part which will be removed by dermolipectomy no need for liposuction.

Area D: Suprapubic area also for liposuction to make the lower flap as thin as the upper one.

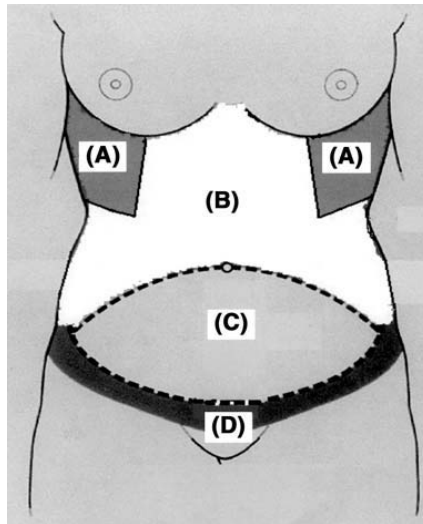


Fig. (3 - A)

Fig. (3 - B)

Fig. (3: A & B): Case 1 pre and post-operative



Fig. (4 - A)

Fig. (4 - B)

Fig. (4: A & B): Case 2 pre and post-operative



Fig. (5 - A)

Fig. (5: A & B): Case 3 pre and post-operative

Fig. (5 - B)



Fig. (6 - A)

Fig. (6: A & B): Case 4 pre and post-operative

Fig. (6 - B)

DISCUSSION

The first dermolipectomies of the abdominal wall were performed by surgeons who were repairing massive umbilical hernias. Subsequently in the evolution of the technique of dermolipectomy of the abdominal wall, three methods have been advocated (1) vertical midline resection (2) transverse resection and (3) a combination of the vertical and transverse methods. During the period 1960's to the 1980's, it became obvious that low transverse incision was the preferred choice for patients undergoing abdominoplasty. The introduction of suction assisted lipectomy in the 1980's, provided another way to improve the results in body contouring patients, especially in the abdomen [9].

In patients who have satisfactory skin turgor with the deformity localized primarily in the lower abdomen, suctioning alone may give the desired result. For those patients in whom suction lipectomy alone will not sufficiently correct the lower abdomen but a full abdominoplasty is essential, combined technique is used (type II & III patients). In those patients the techniques used after suctioning are mini-abdominoplasty or modified abdominoplasty where undermining goes beyond the level of the umbilicus so that rectus musculofascial laxity can be corrected [10].

Patients with severe skin laxity and considerable upper and lower flaccidity of the musculofascial system, full abdominoplasty is done.

This study was done to assess the need and benefits of concomitant suction in those patients candidate for full abdominoplasty with much excess fat and questionable skin condition. After reviewing the results of the study it appeared that it is possible to do combined suctioning lipectomy and abdominoplasty in this group. The benefits were (1) small transverse scar (2) easy bloodless elevation of the flap because of tumescent fluid infiltration (3) getting rid of dog ears by suctioning alone (no need to extend the scar laterally) (4) elimination of the discrepancy between upper and lower flap thickness (5) giving flat nice-looking epigastrium (suction with caution) (6) liposuction of associated deformities can be done, as hips and thighs.

In a previous study done by Matarasso he mentioned suction areas and he named the epigastrium suction area 3. His study revealed that liposuction of the epigastrium is unsafe. In our study liposuction of the epigastrium was done in all cases with no problem concerning the vascularity of the flap except in one case (3%) where central flap necrosis of 2x2 Cm occurred.

Supra-umbilical dissection of the flap is beneficial in patients who need muscle plication to correct hernia, or divarication of recti. It is important for the safety of the flap to stop lateral dissection before reaching the costal margin. This will preserve the vascularity of the flap.

Conclusion:

It is safe and beneficial to do combined liposuction and abdominoplasty in huge cases

with excess fat, excess skin and musculofascial laxity of the abdominal wall, after following the proper technique and precautions.

REFERENCES

- 1- Fowler M.E.: Body contouring surgery. *Nurs. Clin. North Am.*, 29 (4): 753, 1994.
- 2- Greminger R.F.: The miniabdominoplasty. *Plast. Reconstr. Surg.*, 79: 356, 1987.
- 3- Eaves F.F.: Instructional course in endoscopic plast. Surg. Emory University School of Medicine. Division of Plast. And Reconst. and Maxillo-Facial Surgery, 1995.
- 4- Illouz V.G.: Body contouring by lipolysis: A 5 year experience with over 3000 cases. *Plast. Reconstr. Surg.*, 72: 591, 1983.
- 5- Ersek R.A.: Suction assisted lipectomy for correction of 202 figure faults in 101 patient's indications, limitation and applications. *Plast. Reconstr. Surg.*, 78: 615, 1986.
- 6- Courtiss E.H.: Suction lipectomy: A retrospective analysis of 100 patients. *Plast. Reconstr. Surg.*, 73: 780, 1984.
- 7- Matarasso A.: Liposuction as an adjunct to full abdominoplasty. *Plast. Reconstr. Surg.* April, 829, 1995.
- 8- Pitman G.H., Aker J.S., Tripp and Z.D.: Tumescent liposuction: a surgeons' perspective. *Clin. Plast. Surg.*, 23: 633, 1996.
- 9- Avelar J.: Regional distribution and behaviour of the subcutaneous tissue concerning selection and indication for liposuction. *Aesth. Plast. Surg.*, 13: 155-166, 1989.
- 10- Matarasso A.: Liposuction as an adjunct to full abdominoplasty revisited. *Plast. Reconstr. Surg.*, 106 (5): 1197-1202, 2000.