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Circular Abdominoplasty (Belt Lipectomy) in Obese Patients

Hossam ElKafrawy and Sherif Wasief

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Abstract

Circular abdominoplasty, belt lipectomy, 360° abdominoplasty and lower body lift are all synonyms of a body contouring procedure with the aim of sculpting the torso, modifying abdominal contour, loins and lower back contours. Apart from buttock lifting and affecting lateral thighs, these procedures tremendously affect patients' waist size and body image. In the literature, different incision levels, different dissection extents according to the sex of the patient, with different areas of anatomical adherence and different modifications like buttock enhancement by de-epithelialized lower back flaps are described. Most of these operations target post-weight reduction patients. Still these procedures can be performed in obese patients, either after failed diet control, failed bariatric surgery or patients refusing GIT operations though seeking lifestyle modification through body contouring. A group of patients with obesity affecting pre-, intra- and post-operative course, with increased complication rate, when performed with a knowing what-to-do team takes about 3–4 hours. However, with the help of anaesthetists accustomed to this risky group of patients, it could be executed safely and efficiently.

Keywords: abdominoplasty, circular abdominoplasty, 360° abdominoplasty, belt lipectomy, lower body lift

1. Introduction

Abdominoplasty has evolved since a simple dermo-lipectomy was satisfactory for the patient and the plastic surgeon. Nowadays, it may be performed for a very demanding patient. Concealing the final scars became an important goal. With the advent of suction-assisted

liposuction, remodelling of the entire trunk in a single operation became possible with superior aesthetic results [1].

The methodology of the plastic surgeon has evolved from a simple dermo-lipectomy to various combinations and techniques targeting aesthetic remodelling of the abdominal wall and waist re-creation [1].

Circular abdominoplasty, belt lipectomy, 360° abdominoplasty and lower body lift are all synonyms of body contouring procedures with the aim of sculpting the torso, modifying abdomen, loins and lower back contour, lifting buttocks and affecting anterior and lateral thighs. These procedures tremendously affect the patient waist size and overall body image [2].

Originally, these procedures were performed on patients who wanted to lose weight by a great extent after successful diet management and lifestyle remodelling, or in bariatric surgery patients.

A good share in the literature described different incision levels, different dissection extents according to the sex of the patient, with different areas of anatomical adherence, and different modifications like buttock enhancement by de-epithelialized back flaps [3–6].

Still these operations can be performed in the waist of locally obese patients. These procedures can also be performed in patients with failed diet control, failed bariatric surgery, weight gain after years of bariatric operations, border-line obese patients which are not recommended for bariatric surgery and patients refusing GIT operations though seeking lifestyle modification through body contouring.

2. Anatomy

The anatomical area of concern extends to include anterior abdomen, lateral abdomen, mons pubis, anterior thighs, lateral thighs, lower back and buttocks.

Aesthetic thinking of the whole area as a unit, which is divided into further sub-units, is more convenient and gives better aesthetic outcomes.

2.1. Layers of the abdominal wall

The anterolateral abdominal wall consists, from the outside in, of the skin, superficial fascia, deep fascia, external and internal abdominal oblique, transverse abdominis and associated aponeuroses, rectus abdominis and pyramidalis and the transversalis fascia [7].

The skin has average thickness and loosely attaches to the underlying tissue. It exhibits certain surface markings such as the umbilicus, linea alba and linea semilunaris [7].

The superficial fascia comprises a variably fatty superficial layer known as Camper's fascia [7]. In the lower wall of the anterior abdomen, a deeper membranous layer known as Scarpa's fascia becomes more evident [7]. This layer remains connected, though loosely, to the deep

fascia that covers the aponeurosis of the external abdominal oblique muscle. The strength of the Scarpa's fascia can stabilize sutures placed when closing incisions of the abdominal wall [8].

3. Patient consultation

3.1. Abdominoplasty classification and patient selection

A lot of techniques are used for different types of patients as follows:

- (1) Liposuction only (suction, laser, ultrasound and power assisted).
- (2) Mini abdominoplasty (with or without liposuction).
- (3) Conventional abdominoplasty (with or without liposuction).
- (4) High lateral tension abdominoplasty (after Lockwood) [9, 10].
- (5) Circular abdominoplasty (belt lipectomy/lower body lift): When excess tissues (skin and/or adipose tissue) are present at the lateral abdomen and lower back (**Figure 1**), circular abdominoplasty is proposed as one surgical option.



Figure 1. 29 years old, female patient, 97 kg, showing lower abdominal obesity, anterior lateral and posterior areas are all affected. (a) Anterior view, (b) posterior view, (c) right lateral view and (d) left lateral view.

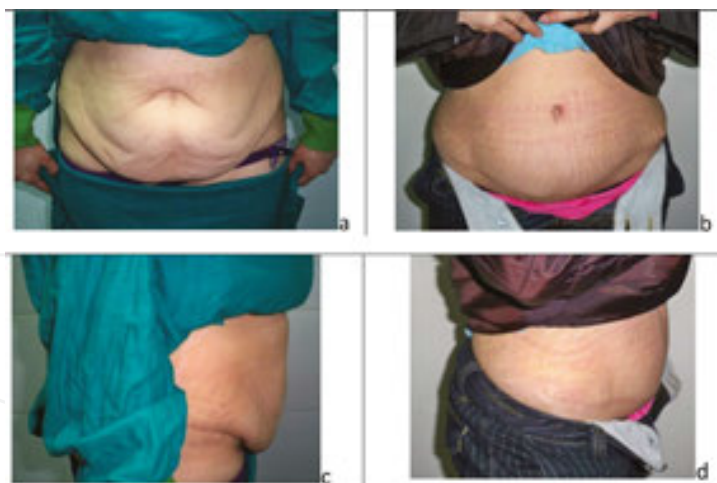


Figure 2. 31 years old female patient undergone abdominoplasty operation, (a) pre-operative anterior view, (b) post-operative anterior view, (c) pre-operative right lateral view and (d) post-operative right lateral view.

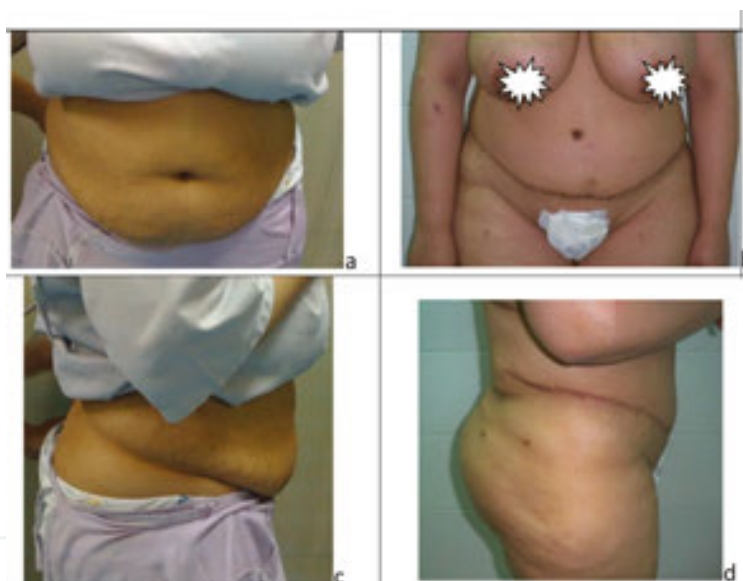


Figure 3. 28 years old female patient undergone an abdominoplasty operation with extended wound attacking lateral abdominal obesity, (a) pre-operative anterior view, (b) post-operative anterior view, (c) pre-operative right lateral view and (d) post-operative right lateral view.

3.2. Main problem

Abdominoplasty is a very common procedure in plastic surgery (**Figure 2**). It is very effective in managing anterior contour problems, especially lower part of the abdomen, and to a lesser extent lateral and upper areas, which improve a lot but to a lesser extent than the lower part.

In most of obese patients, lateral abdomen remains a problem for the plastic surgeon. If left, it certainly affects the aesthetic result, and if managed in the supine position, it could be

controlled but the most lateral part of the procedure is actually on the posterior surface of the body, very uncomfortable during wound closure (**Figure 3**).

4. Surgical technique

4.1. Patient marking

While standing the patient, back markings are done first; a very important beginning landmark is the upper limit of the natal cleft. Noting the buttock length is variable in-between different sex, ethnic groups and patient body length.

The tissues are pulled superiorly by an assistant to mimic the effect of our surgery – expecting the end scar position, putting in mind the effect of liposuction (if done) in increasing tissue laxity in the lower (buttock) flap.

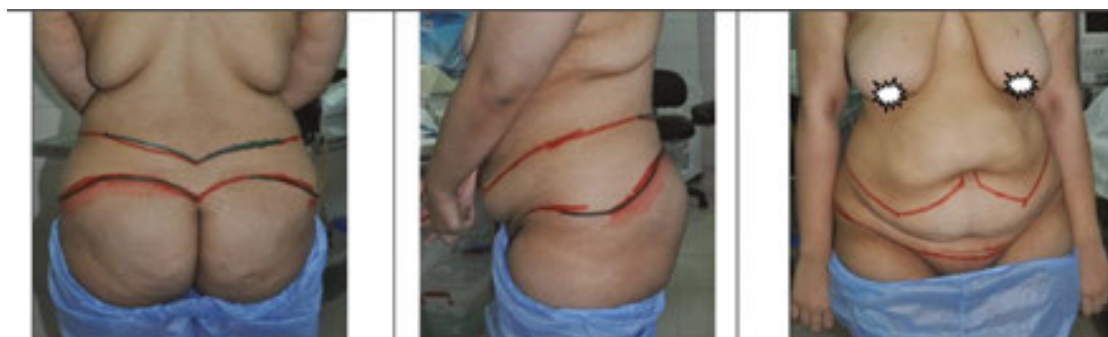


Figure 4. Patient marked for upper and lower incision lines.

The mid-scapular line meets the maximum convexity in the lower marking; then, the lateral down shift of the line is designed to meet the cellulite correction design of lateral high tension abdominoplasty proposed by Lockwood T [11].

The main target is ending in a nicely placed seagull wing scar on the back easily concealed by undergarments.

El-kafrawy H. technique implies estimation of the tissue excess and marking of the upper excision limit from the start (**Figure 4**). Wasief Sh. technique implies a cut as you go method after tissue dissection and intraoperative estimation of tissue excess before final determination of upper incision (**Figure 5**). Both methods target a closure with least tension especially at the natal cleft line and central parts with adherent tissues; with least tissue mobility.

Then, the patient turns to face the operator with right side, tissue pull by the assistant to abolish the lateral thigh laxity (cellulite) and the lower limit of the excision is marked. It is designed as a continuation of the back markings. The left side in turn is marked in a similar manner.

The abdominoplasty marking is done while the patient is lying supine, 6–8 cm from anterior fourchette is marked after surgeon assessment of the particular tissue proportions and patient

consultation about self-image in the mons area. Low abdominoplasty incision is marked at the mid-clavicular line, 2–3 cm from the thigh crease, which is an important landmark in such an area with minimal tissue laxity. Then, the markings meet the lateral marking according to lateral tissue laxity.

Liposuction will increase tissue laxity and should be estimated in markings for the upper incision in the pre-operative markings proposed by El-Kafrawy H.



Figure 5. Patient marked for the lower incision only as proposed by Wasief Sh.

4.2. Anaesthesia

Operations were done under general anaesthesia.

4.3. Positioning

Patients were anaesthetized on patient trolley, airway secured and then transmitted by our team into prone position on the operating table.

4.4. Sterilization and draping

4.4.1. Tumescence injection

1:100,000 adrenaline solution in saline injected sub-dermally all over the markings to decrease blood loss during skin incision.

1:1,000,000 tumescent solution is used all over the liposuction and excision area.

4.5. Surgery

Skin incised at lower markings till the deep dermis by scalpel, mono-bolar diathermy is used through the fatty tissue and fascia of the back. Thin layer of fat is left covering the muscles of the back. At the lower incision, fat modulation is done according to the body proportions. Slight cephalic sloping dissection is done if no volume is needed for the buttocks and large degree of sloping is done if volume is needed for buttocks, up to de-epithelialisation only in patients with deflated buttocks seeking augmentation gluteoplasty.

El-kafrawy H. technique implies cutting on the upper marking with tissues excised en-block beginning on the right side.

Wasief Sh. technique implies intra-operative skin marking for the upper limit by methylene blue, followed by excision according to tissue laxity.

Closure of back incision in three layers, superficial fascia closed by absorbable size 0 sutures, sub-dermal 3-0 or 2-0 absorbable and sub-cuticular skin closure by 3-0 absorbable or non-absorbable sutures. Stay sutures at the most lateral parts are advised allowing tissue modulation when the abdominoplasty flap is cut.

Temporary dressing is done, changed at the end of procedure after it gets soaked with fluids during the anterior part of the operation.

Patient is repositioned on trolley in the supine position and then transferred to the operating table in the supine position.

Prepped and draped, tumescent fluid is injected; low abdominoplasty incision is chosen by the authors. Skin incised till dermis by scalpel, and then mono-polar diathermy is used.

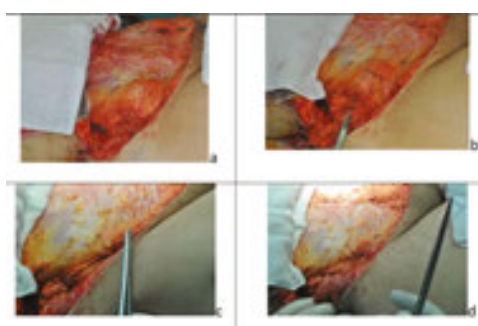


Figure 6. (a) An intra-operative view showing lateral area with fat left to obliterate dead space. (b–d) Intra-operative view showing superficial fascia sutures to iliac crest.

Fatty layers are preserved in the lower part containing lymphatics; superficial fascia is left in a more extended fashion, used to bear fascial suspension sutures to iliac crest (**Figure 6**). One row suture line by 1 poly prolene or 0 non-absorbable multifilament suture is used routinely by El-kafrawy H. Two row suspension lines to distribute tension were proposed by Wasief Sh. after patients complained feeling sutures cutting through tissues during trunk movement 5 days post-operatively.

5. Results

From February 2009 till April 2016, 37 patients were included in this series, ages 23–54 years old, 12 patients (32.4%) with co-morbidities (DM and hypertension), BMI 27–33, four patients (10.8%) were smokers and stopped smoking 4 weeks before surgery, seven patients (18.9%) with previous failed bariatric interventions, two lap band and five sleeve gastrectomy, 18 patients (48.6%) refused to undergo bariatric surgeries after failure to reduce weight with nutrition control regimens and 12 patients (32.4%) were over-weight in the range of BMI 27–30.

Eleven patients (29.7%) were not satisfied with the long 360° scar in the first 6 months, reduced to seven patients (18.9%) after scar maturation, two patients (5.4%) were not satisfied with the high position of the back scar and all 37 patients (100%) were satisfied with the waist creation with the hour glass body transformation; all patients were satisfied with the buttock cellulite left, lateral thigh cellulite lift.

Sixteen patients (43.2%) had minor delayed wound healing along with incision line managed conservatively, 11 patients (29.7%) had blood constituent transfusions, hospital admission ranged 2–4 days and one patient admitted to ICU post-operatively.

Surgeon assessment of patients after surgery resulted in 100% satisfaction for the waist creation, buttock lift and lateral thigh lift, anterior thigh improvement noticed but not corrected totally, two patients (5.4%) had higher incisions than planned, hypertrophic back scars notices in eight patients (21.6%) managed by topical silicon products application, CO₂ fractional laser drilling and five fluro-uracil injections (see **Figures 7–12**).



Figure 7. 42 years old obese patient with superadded localized obesity in lateral abdomen and trochanteric area. a,c,e,g,i,k pre-operative views b,d,f,h,j,l post-operative views.



Figure 8. 36 years old patient undergone combined circular abdominoplasty with breast reduction mastopexy. (a-f) Pre-operative view and (g-i) post-operative view.



Figure 9. 28 years old patient. (a, c, e, g) Pre-operative view. (b, d, f, h) Post-operative view.



Figure 10. 36 years old patient undergone circular abdominoplasty. (a) Pre-operative anterior view, (b) pre-operative posterior view, (c) pre-operative left lateral view, (d) post-operative anterior view, (e) post-operative posterior view and (f) post-operative left lateral view.



Figure 11. (a) Pre-operative anterior view, (b) pre-operative posterior view, (c) pre-operative left lateral view, (d) post-operative anterior view, (e) post-operative posterior view and (f) post-operative left lateral view.



Figure 12. 38 years old patient undergone circular abdominoplasty operation. (a) Pre-operative anterior view, (b) pre-operative posterior view, (c) pre-operative left lateral view, (d) pre-operative anterior view, (e) pre-operative posterior view and (f) pre-operative left lateral view. (g) post-operative anterior view, (h) post-operative posterior view, (i) post-operative left lateral view, (j) post-operative anterior view, (k) post-operative posterior view and (l) post-operative left lateral view.

6. Discussion

Obese patients are at risk of developing various health-related problems [10]. However, they have a myriad of options such as diet control, practicing physical activities and surgi-

cal interventions to reach a normal body mass index, thus, decreasing the life time risk of co-morbidities.

Some patients may have difficulties in weight reduction, failed diet control, failed bariatric surgeries and refusal to undergo surgical gastrointestinal interventions. In this group of patients, circular abdominoplasty may be an option with the following advantages and disadvantages:

Advantages:

1. Abdominoplasty with aesthetic remodelling of antero-lateral abdominal wall.
2. Creation of a defined waist.
3. Decreasing cellulite in anterior thighs, lateral thighs and buttocks.
4. Defining the aesthetic angle between lower back and buttocks.

Disadvantages:

1. Operating on a riskier group of patients with higher BMI.
2. Longer operation time and increased operation risk.
3. Nearly double the scar length and double the time for wound healing.
4. Longer convalescence period.

The operative time in the beginning took about 4–5 h which was reduced to 3–4 h in our centre with a trained team accustomed to this type of patients and operation. In the event of two-team approach, working on both sides simultaneously may reduce the time to 2:30 h.

In our practice using a post-operative questionnaire, consulted patients who refused the idea of circular abdominoplasty and ended with long abdominoplasty scars may substantially say that 'we should have circular abdominoplasty if we expected such long scars'.

Prevention and management of abdominoplasty complications is very important in this group of patients.

Thrombo-embolism protection is very important in this patient group because of increased risk of obesity and increased operative time.

7. Conclusion

Circular abdominoplasty is an option in obese patients, provided that the surgical environment is prepared to commence on a smooth fast track surgery to decrease the operative risk. The procedure gives a better defined waist and a better body contouring of the whole area. However, when liposuction is done in the same operation, the risk of bleeding increases.

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Author details

Hossam ElKafrawy¹ and Sherif Wasief^{2*}

*Address all correspondence to: sherif_wasief@yahoo.com

1 Department of Plastic Surgery, Alexandria University, Alexandria, Egypt

2 Plastic Surgery Unit, Shark El Madina Hospital, Alexandria, Egypt

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