

Abdominoplasty: A Proposal of Results by Measurement

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Background: Among body contouring procedures, abdominoplasty is a procedure, which cosmetic surgery patients seek most frequently. The aim of abdominoplasty is to fulfill the ideal appearance of the abdomen without complication. Optimal results and proposed best accuracy measurement tool for abdominal dimension will be presented.

Patients and Methods: Two female patients with abdomen type III and IV, underwent surgical correction with choice of total abdominolipectomy. Pre-operative and post-operative evaluations and photographs of patients were documented. Appearance of abdomen, quality of the scar, and navel were evaluated.

Results: Total abdominolipectomy was performed in two cases of woman with abdomen type III and IV. All of the patients have shown abdominal dimension reduction and the result was good and satisfying. Author proposed a measurement including abdominal dimension in three different levels of circumference : midline point circumference between navel to xyphoid, navel level circumference, and anterior superior spina illiac level circumference, quality of scar, navel, and abdominal appearance, which are documented before surgery, three weeks after surgery and three months post surgery.

Summary: Optimal outcome in abdominoplasty is determined not only by appropriate surgical technique, but also by the selection design, how the dissection is done, the excision, suturing technique, and post-surgical care treatment. Author proposed a measurement form evaluated by the surgeon, patient, and observer to collect more precise objective and subjective results.

Keywords : *Abdominoplasty, Measurement, Circumference*

Latar Belakang: Diantara prosedur pembentukan tubuh, abdominoplasty merupakan prosedur yang paling sering dicari oleh pasien bedah kosmetik. Tujuan dari abdominoplasty adalah untuk mendapatkan penampilan abdomen yang ideal tanpa komplikasi. Hasil yang optimal dan usulan pengukuran yang akurat untuk dimensi abdomen akan ditampilkan.

Pasien dan Metode: Dua pasien wanita dengan perut tipe III dan IV menjalani operasi perbaikan dengan pilihan total abdominolipektomi. Dilakukan evaluasi dan pengambilan foto pasien sebelum dan sesudah operasi, termasuk evaluasi terhadap penampilan abdomen, kualitas parut, dan pusar.

Hasil: Dilakukan total abdominolipektomi pada dua kasus wanita dengan perut tipe III dan IV. Didapatkan hasil operasi yang baik dan memuaskan serta dimensi abdomen yang berkurang. Penulis mengusulkan sebuah pengukuran yang mencakup tiga tingkat lingkaran abdomen : lingkaran abdomen melalui titik tengah antara pusar dan *xyphoid*, lingkaran abdomen setinggi pusar, dan lingkaran abdomen setinggi spina iliaca superior, kualitas parut, pusar, dan penampilan abdomen yang didokumentasikan sebelum operasi serta tiga minggu dan tiga bulan pasca operasi.

Kesimpulan: Hasil yang optimal pada abdominoplasty tidak hanya ditentukan oleh teknik bedah yang baik, tetapi juga desain pemilihan, bagaimana melakukan diseksi, eksisi, teknik menjahit, dan perawatan pasca operasi. Penulis mengusulkan sebuah pengukuran yang dievaluasi oleh dokter bedah, pasien, dan pengamat untuk mendapatkan hasil objektif dan subjektif yang lebih tepat.

Kata Kunci : *Abdominoplasty, Measurement, Circumference*

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Abdominoplasty is a common aesthetic procedure to treat the excessive abdominal fat and skin, laxity, and weakness of the rectus muscle due to multiple labors and elder age. Choice of surgical technique is important aspect, particularly to maximize outcome results and reduce complication for each patient. Abdominoplasty aims to reach more natural appearance result

and minimal visible scar of the abdomen.¹

Foad Nahai et al² reported different outcome values of abdominoplasty procedure between young and elder age. Good abdominoplasty outcome in elder age determined by good abdomen outside, while in younger age patients, they expected good performance outside and inside of abdomen. In order to achieve a good outside performance for

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elder age patients, a standardized operation with optimal outcome is required.

Pre-operative evaluation includes the area of the abdomen: skin tissue, fat, muscle and fascia, and adjacent area. It is important to perform pre-operative evaluation on skin quality and quantity. Skin quality can be assessed by careful examination of abdomen appearance including stretch mark, quality of scars and pinch test. Skin quantity can be evaluated by the

amount of excess skin in upper or lower umbilicus and umbilical hooding.

Bulge of the abdomen can represent the weakness of the abdominal wall, excessive fat and skin or excessive content of the abdomen. However, persistence bulging appearance and contour in upright and supine position indicate excessive content of intra abdomen and not suitable for abdominoplasty patient selection (Figure 2).



Figure 1. Comparison of abdomen appearance. **Left :** Poor laxity/ severe excess of the skin. **Right :** mild laxity/ mild excess of the skin.



Figure 2. A case of excessive content intra abdomen appearance, which is not a good candidate for abdominoplasty.

Table 1. Abdominoplasty classification system categorizes patients according to physical examination

Category	Skin Quantity	Fat	Musculofascial Strength
Type I	Minimal excess	Variable	Minimal flaccidity
Type II	Mild excess	Variable	Mild lower abdominal flaccidity
Type III	Moderate excess	Variable	Moderate lower and/or upper abdominal flaccidity
Type IV	Poor / Severe excess	Variable	Significant lower and/or upper abdominal flaccidity

Modified from abdominoplasty classification system based on evaluation of the skin, fat, and musculoskeletal system, Matarasso, 1991)

Table 2. Abdominoplasty classification system and correlation choice of treatment

Abdominoplasty Category	Treatment
Type I	Liposuction
Type II	Mini abdominoplasty and Liposuction
Type III	Total Abdominoplasty and Liposuction
Type IV	Total abdominoplasty and Liposuction with adjacent area

Adjacent area involving waist, back and thigh must be evaluated cautiously and may require additional surgical treatment/liposuction to reach maximal result.^{2,3} Nahai et al (2005) described abdominoplasty procedure performed in case of poor elasticity and excess abdominal skin appearance. Patient with good elastic skin and minimal skin excess with abdomen fat bulking is treated with liposuction.²

PATIENTS AND METHODS

Two female patients came to author's clinic with problems of their abdomen appearance and shape. The first patient presented with abdomen type IV, and hanging contour (Figure 2). The second patient came with abdomen type III after caesarean delivery (Figure 3). They were given choice of surgical technique, total abdominolipectomy. Pre-operative and post-operative evaluations and

photographs of patients were documented. Appearance of abdomen, quality of the scar, and navel were evaluated.

RESULTS

Total abdominolipectomy and liposuction was performed in those two cases of woman with abdomen type III and IV. The result was good and showed no complications. All of patients have shown reduced abdominal circumference and better appearance of abdomen and navel and a good scar quality. However, we have not made measurements of abdominal circumferences of those two cases.

Author suggests that abdominal circumference including midpoint circumference between navel and xyphoid, navel level circumference, and at the level of anterior superior iliac spine circumference should be recorded before surgery, three weeks post surgery and three months after surgery.



Figure 3. Accurate planning and design to be symmetrical on both sides achieved by measuring incision lines between midline and relevant references.

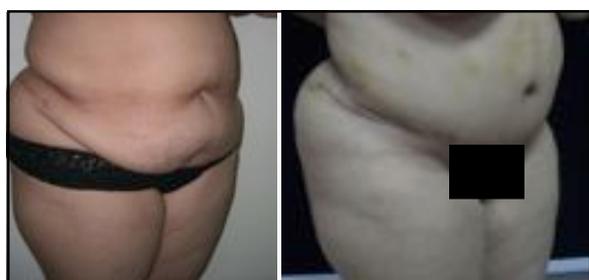


Figure 4. Left: first patient, nullipara female presented with abdomen type IV, pre-operative appearance. Right: Three weeks after surgery.



Figure 5. Left : Second patient, 40 years old female with type III abdomen after caesarean section, pre-operative appearance. Right : Three weeks after surgery (right).



Quality of the scar, appearance of the navel and abdomen, skin irregularity, and contour of the abdomen should also be evaluated. Therefore, author proposes a result measurement form to collect more precise objective and subjective operation outcome.

Total abdominoplasty is a proper treatment for female case presented with abdomen type IV. To gain optimal results and avoid dog ear, the length of incision suggested to perform depends on bulging shape of lower lateral abdomen, and additional belt lipectomy, if required. Application of Colorado micro-dissection needle, to create precise soft-tissue dissection tip, is necessary to reduce bleeding and seroma after surgery. Author suggests plication of the fascia rectus muscle with vertical direction stitch and includes part of muscle to reach maximal strength of abdomen wall.⁴

The application of half circle design or mercy in the beginning of new navel site and excision the rest of circle are needed to shape new navel site. Trimming abdominal wall around new hole of navel and create a hollow of navel after stitching, are another crucial steps to create a good appearance of new navel. Thinning of lower flap must be done carefully to prevent skin ischemia and necrosis especially in supra pubic level.^{3,5}

To shape abdominal appearance we have to do plication of fascia and muscle by vertical direction stitch.⁴ In upper navel and in the waist, liposuction performed in deep plane for hypogastric, while epigastric liposuction is both deep layer and superficial layer (Figure 6). Thinning abdominal wall in lower part navel done by scissor after liposuction.^{3,6}

Several sutures were applied between

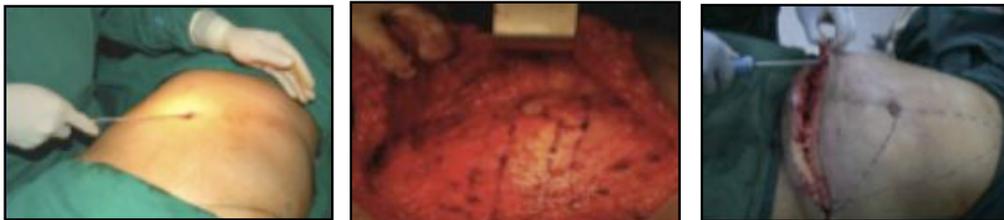


Figure 6. Left : Liposuction to hypogastric and epigastric area. Middle : Marking of fascial and part of rectus muscle plication. Right : Followed by skin excision.

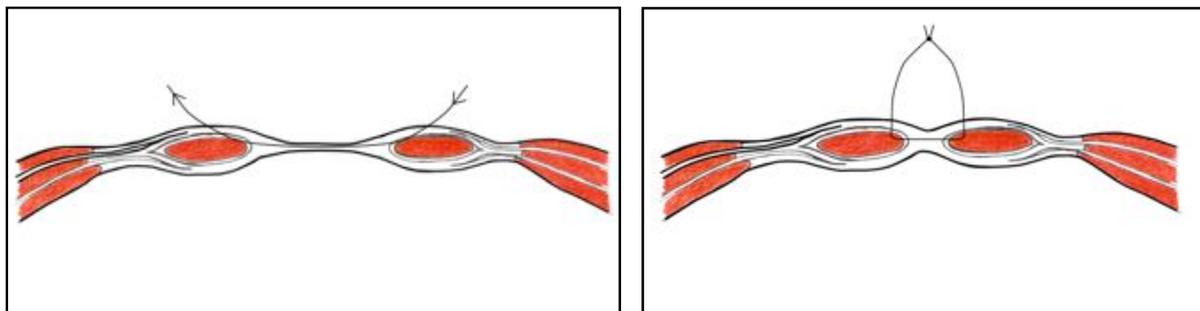


Figure 7. Plication of fascia and part of rectus muscle in vertical direction suture.⁴



Figure 8. Three abdominal dimension measurement. Upper line indicate circumference at the midline point between navel and xiphoid. Middle line indicate navel level circumference. Bottom line indicate circumference at anterior superior iliac spine (ASIS) level.

PROPOSAL OF MEASUREMENT

Patient Name :

Age :

1. Form of abdominal dimension(F 1)

Abdominal circumference	Before surgery	After surgery	% of decrease circumference
a. Half navel to xyphoid			
b. Navel			
c. Anterior superior iliac spine (ASIS)			

2. Form of picture evaluation of scar from anterior view(F 2)

S C A R	Surgeon	Patient	Observer
Navel	G F B	G F B	G F B
Supra pubic	G F B	G F B	G F B

3. Form of picture evaluation of abdominal appearance from anterior and lateral view(F 3)

Abdominal Appearance	Surgeon	Patient	Observer
Contour	G F B	G F B	G F B
Skin irregularity	G F B	G F B	G F B
Position of navel (upward (G), middle(F), or downward(B))	G F B	G F B	G F B

G : good F : Fair B : Bad

Figure 9. Proposal of Measurement Form

abdominal wall and abdominal fascia, so excessive seroma production will be reduced. Note that the suturing level in abdominal wall was not performed at superficial level, so indentation in abdominal wall can be prevented. Therefore author suggests the location of these sutures are between navel and lower of abdomen.

We have to avoid excessive tension between abdominal flap and lower edge of abdomen, because it will reduce scar hypertrophy and maceration in middle lower flap. Several layer of suture in abdominal flap also will reduce possibility of hypertrophic scar and disruption of suturing flap, thus creates a soft and linier scar.³

Using vacuum drain tube in left and right upper pubic area will avoid seroma accumulation under abdominal wall flap. The drain tube will be detached if fluid production is below than 30 cc/day. Abdominal pressure garment will help reduce pain and seroma, thus patient will feel more comfortable. Author used intradermal suture with 5-0 poliglecaprone to suture the lower abdomen area, and simple interrupted suture with 5-0 polypropylene. For postoperative care, patients placed in semi fowler position with indwelling catheter.

Abdominoplasty complications vary from skin irregularity, poor appearance scar, poor navel appearance, high level of supra pubic scar, minimal waist deformity, decreased supra pubic sensibility to maceration of supra pubic skin, bowel perforation (when combined with liposuction), phlegmon of abdominal wall, sepsis to mortality.⁵ Michele Di Canela et al (2011) reported liposuction mortality rate is 0,019 % due to thromboemboly and bowel perforation.⁷ Sabrina Caguo et al (2010) found esophageal stricture and metaplasia following abdominoplasty due to increase of intra abdominal tension.⁸

In this paper, author proposed a form of pre and post-abdominoplasty evaluation of picture by surgeon, observer and patient themselves (Figure 9). Assessment starts from pre surgery, three weeks after surgery and three months after surgery.

SUMMARY

We reported two cases of elderly patients with moderate excess and severe excess of abdominal skin and we treated them with liposuction and removal of excess skin. Author proposed a measurement including several data such as abdominal dimension in three difference levels of circumference, quality of scar, navel, and abdominal appearance defined by surgeon, patient, and observer. Further abdominoplasty studies need to be conducted with assessment of completed proposed evaluation form before and after surgery.

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