

Recent trends in abdominoplasty

MASTER DEGREE OF GENERAL SURGERY
(Essay)
Ain Shams University

By
Mahmoud Mohsen Hassouba
M.B.B.Ch

Supervisors

Professor Dr/Osama Aly Elatrash

Professor of general surgery
Ain shams university

Lecturer Dr/ Mohamed bahaa Eldin

Lecturer of general surgery
Ain shams university

Lecturer Dr/Soha Elmekawy

Lecturer of plastic surgery
Ain shams university

INTRODUCTION

Abdominoplasty, one of the most commonly performed aesthetic procedures, has undergone a significant evolution over the past several decades. It is targeted at addressing abdominal deformities characterized by excess skin and subcutaneous tissue and laxity of the abdominal wall musculature. Kelly was one of the first surgeons to attempt to correct excess abdominal skin and fat.^{1,2} Since that time, numerous variations have been suggested. Thorek was the first to devise a procedure that preserved the umbilicus.^{3,4}

Patients usually seek abdominoplasty for abdominal wall laxity, excess skin, striae, or diastasis of the rectus muscles. The ideal patient is within normal limits for his or her weight and height (ie, body mass index), has no plans for future pregnancies, has a moderate amount of excess of skin and fat, and has a mild diastasis of the rectus muscles.⁵

The type of incision is usually determined by the patient's body habitus or by the patient's choice of clothing, ie, bathing apparel or shorts. Most incisions are low on the abdomen, allowing the patient to wear fairly brief apparel. Most abdominoplasty incisions are variations of the Regnault,⁷ Grazer,⁶ or the bicycle-handlebar techniques described by Baroudi.⁸

Numerous designs for abdominoplasty are available. Recently, suction-assisted liposuction (SAL) has been added to the procedure. In 1990, Grazer was one of the first authors to integrate SAL into the procedure.⁶

These procedures are now frequently performed on an outpatient basis, which is a big change from the traditional inpatient hospitalization for up to 2 days. A recent report highlights and supports the safety and effectiveness of abdominoplasty performed on an outpatient basis. Their results showed no correlation between complication incidence and inpatient/outpatient status.⁹

As with all body contouring procedures, complications can occur. The most devastating complication of an abdominoplasty is pulmonary embolus, which is described to be a risk factor at 0.8%.¹⁰

The art of trunk body contouring is continuously evolving and will continue to evolve, as Matos have proposed a new classification for candidacy of lipoabdominoplasty and its variations.¹¹ Clearly, a primary focus for the future is to minimize the amount of surgery necessary to maximize the surgical result.¹¹

Aim of work

To focus on the subject of abdominoplasty as one of the most common aesthetic procedures regarding its different techniques, recent trends in the usual and in post bariatric patients and its benefits versus complications.

References

1. Kelly HA. Report of gynecological cases (excessive growth of fat). *Johns Hopkins Med J.* 1899;10:197.
2. Kelly HA. Excision of fat of the abdominal wall lipectomy. *Surg Gynecol Obstet.* 1910;10:229.
3. Thorek M. *Plastic Surgery of the Breast and Abdominal Wall.* Springfield, Ill: Thomas; 1924.
4. Thorek M. Plastic reconstruction of the female breast and abdomen. *Am J Surg.* 1939;43:268.
5. Rees TD, ed. *Aesthetic Plastic Surgery.* Philadelphia, Pa: WB Saunders; 1980
6. Grazer F. Abdominoplasty. In: McCarty JG, May JW, Littler JW, eds. *Plastic Surgery.* Vol 6. Philadelphia, Pa: WB Saunders; 1990:3929.
7. Grazer F. Abdominoplasty. In: McCarty JG, May JW, Littler JW, eds. *Plastic Surgery.* Vol 6. Philadelphia, Pa: WB Saunders; 1990:3929.
8. Baroudi R, Moraes M. A "bicycle-handlebar" type of incision for primary and secondary abdominoplasty. *Aesthetic Plast Surg.* Jul-Aug 1995;19(4):307-20.
9. Spiegelman JI, Levine RH. Abdominoplasty: a comparison of outpatient and inpatient procedures shows that it is a safe and effective procedure for outpatients in an office-based surgery clinic. *Plast Reconstr Surg.* Aug 2006;118(2):517-22; discussion 523-4.
10. Grazer FM, Goldwyn RM. Abdominoplasty assessed by survey, with emphasis on complications. *Plast Reconstr Surg.* Apr 1977;59(4):513-7.
11. Matos W, Ribeiro R, Marujo R, Porto da Rocha R, Ribeiro S, Jimenez F. Classification for indications of lipoabdominoplasty and its variations. *Aesthetic Surgery Journal.* Jul-Aug 2006;26:417-31

الاتجاهات الحديثه فى شد البطن

دراسة

للحصول على درجة الماجستير فى الجراحة العامة

مقدمة من

الطبيب/ محمود محسن حسوبة

تحت اشراف

أستاذ دكتور/اسامة على الاطرش

أستاذ الجراحة العامة

كلية الطب-جامعة عين شمس

مدرس دكتور/محمد محمد بهاء الدين

مدرس الجراحة العامة

كلية الطب-جامعة عين شمس

مدرس دكتور/سهى المكاوى

مدرس جراحة التجميل

كلية الطب-جامعة عين شمس

المقدمة

تعد عمليات شد البطن من اكثر العمليات الجراحية في التجميل , قد مرت بتطور هائل عبر العقود الماضية. فهي تهدف الى التغلب على تشوهات البطن مثل زيادة الجلد و الانسجه تحت الجلد و الرخو فى عضلات البطن. ومنذ هذا الوقت اختلافات متعددة اقترحت. ثوريك كان من اول من ابتكر اجراء للحفاظ على السرة.

هؤلاء المرضى غالبا يبحثون عن شد البطن للشكوى من الترهلات , الجلد الزائد , الخطوط أو انفراق فى العضلتان المستقيمتان و المريض المثالى يكون داخل الحدود الطبيعية بالنسبة للوزن و الطول (كشاف كتلة الجسم) , ويعانى من انفراق فى العضلتان المستقيمتان.

نوع الشق (الجرح) غالبا يكون مصمم على نمط جسم المريض أو على اختيار المريض للملابس (بدلة سباحه أو بنطلون قصير) . أكثر الشقوق تكون منخفضه على البطن لتسمح للمريض بارتداء لباس معتدل خفيف. أكثر جروح شد البطن تكون اختلافات من تقنيات رينو أو جريزر أو مقود الدراجة الهوائية عند بارودى.

ويوجد عدة تصميمات لشد البطن , وحديثا تم اضافة شفط الدهون لهذه العمليات. فى ١٩٩٠ جريزر كان من أول المؤلفين فى دمج شفط الدهون مع شد البطن.

هذه العمليات الآن متكررة الحدوث على أثاث أن لا يكون المريض مقيم بالمستشفى (عمليات يوم واحد) , ما يكون تحول كبير عن اقامة المريض فى المستشفى تقليديا لمدة يومين.

تقرير سبيجلمان ركز ودعم أمن و فعالية شد البطن التى تحدث على اساس ان لا يكون المريض مقيم بالمستشفى . نتائجهم استعرضت عدم ارتباط بين حدوث المضاعفات وبين وضع المريض داخل أو خارج المستشفى .

ويمكن حدوث المضاعفات مثل كل عمليات تقويم الجسم .ومن أكثر المضاعفات المدمره من شد البطن تكون جلطه رئويه والتى وصفت لتكون عامل خطوره عند ٨,٠%

فن تقويم جزع الجسم مستمر فى التطور و سيستمر فى التطور , مثلما اقترح ماتوس ات آل نضم جديدة الى الترشيح بشأن شد وتجميل البطن واختلافاتها . وضوحا , التركيز الاساسى الى المستقبل يكون لتصغير حجم الجراحة الضرورية لتكبير النتيجة الجراحية.

Contents

<u>Subject</u>	<u>Page No.</u>
• List of figures-----	
• List of tables-----	
• References-----	
• Review of literature :	
➤ Chapter (1): Anatomy -----	1
➤ Chapter (2): Aesthetics of abdomen-----	23
➤ Chapter (3): abdominoplasty Patient selection and indications-	38
➤ Chapter (4): understanding abdominoplasty-----	44
➤ Chapter (5) Recent trends in abdominoplasty-----	53
➤ Chapter (6)Post bariatric abdominoplasty-----	91
➤ Chapter (7) complicationsof abdominoplasty-----	110
• Summary and conclusion-----	
• Arabic summary-----	

List of figures

- 1. Embryo at 12 weeks at time of abdominal wall formation*
- 2. Diagram of superficial fascial system zones of adherence (black bands, most adherent; gray zones, adherent; white zones, least adherent)*
- 3. A diagram illustrating the two layers of the external oblique aponeurosis; the deep layer of one side crosses and emerges as the superficial layer of the opposite side that descends downwards and laterally as a wide S-shaped curve*
- 4. The External, internal and transverses abdominis muscles*
- 5. The rectus sheath at various levels*
- 6. Blood supply – anterior abdominal wall*
- 7. A perforator is demonstrated branching at the level of Scarpa's fascia (dotted line) and anastomosing with adjacent perforators at a subdermal level*
- 8. A perforator is demonstrated branching at the level of Scarpa's fascia (dotted line) and anastomosing with adjacent perforators at a subdermal level*
- 9. Zones of blood supply to the abdominal wall*
- 10. Nerve supply—anterior abdominal wall*
- 11. The cutaneous distribution of the thoraco-abdominal nerves*
- 12. The female abdomen consists of seven aesthetic units (Matarasso and Wallach, 2001).*
- 13. The male abdomen consists of six aesthetic units (Matarasso and Wallach, 2001).*
- 14. Modern abdomen accepted as the standard of beauty*
- 15. The aesthetic mons pubis (Lockwood, 1996).*
- 16. Different shapes of umbilicus (top left) T-shaped umbilicus, (top right) oval shaped umbilicus, (below left) vertical shaped umbilicus, (below right) horizontally shaped umbilicus*

17. *Type A deformity showing rectus diastasis (RD) secondary to pregnancy. (Right) Correction of the rectus diastasis by the plication of the anterior rectus sheath (Fabio Xerfan Nahas,2001).*
18. *(Left) Patient with type A deformity with rectus diastasis. (Right) One year postoperatively after plication of the anterior rectus sheath (Fabio Xerfan Nahas,2001)*
19. *Type B deformity with demarcation at the area of rectus diastasis and the L-shaped and inverted-L-shaped plication of the external oblique aponeurosis. (Right) After correction of the rectus diastasis and plication of the external oblique aponeurosis. (Fabio Xerfan Nahas,2001)*
20. *(Left) Patient with type B deformity with rectus diastasis and laxity of the inferior abdominal wall. The patient also presented with breast ptosis. (Right) Seven months postoperatively with improvement of the abdominal contour by plication of the anterior rectus sheath associated with an L-shaped plication of the external oblique aponeurosis. Correction of breast ptosis was also performed*
21. *(Left) Type C deformity showing congenital rectus diastasis (CRD). (Right) Undermining of both rectus muscles (RM), exposing the posterior recti sheaths (PS)*
22. *(Above, left) Oblique view of a patient with type C deformity with lateral insertion of the rectus muscles diagnosed at the preoperative examination. (Above, right) Six months after correction of the muscular layer by release and advancement of the rectus muscles. (Below, left) Profile view of the same patient showing the forward projection of the abdomen. (Below, right) Six months postoperatively, showing the repositioning of the muscular layer*
23. *(Left) Type D deformity showing elevation of the external oblique muscles. (Right) Advancement of the external oblique muscles and correction of rectus diastasis*
24. *(Left) Patient with type D deformity who wished to improve the waistline. (Right) Six months after the procedure, showing*

- improvement of the waistline caused by the external oblique muscles advancement. Plication of the anterior sheath of the rectus muscle was also performed*
- 25. Hanging panniculus and hanging abdominal apron*
- 26. Position of the surgeon, patient, and monitor during surgery(Martin Iglesias, 2006).*
- 27. Placement of both the Esmarch bandages, to avoid subcutaneous emphysema, and the trocars using the triangulation principles to make the surgery comfortable*
- 28. Technique used to do the extracorporeal fisherman knot.*
- 29. Placement of the “8” figure suture for the muscular-aponeurosis plication*
- 30. Demonstration of the technique*
- 31. Area A is not undermined, but thorough liposuctioning is performed. Area B is an 8- to 10-cm tunnel for rectiplication access. Lipoaspiration and undermining is done in this region. Area C is the incision line*
- 32. Anatomical areas for suction in combined abdominoplasty-liposuction. SA 1, safe; SA 2, limited; SA 3, cautious; SA 4, unrestricted.*
- 33. Summary of the technique. Note the suture at the edge of the deepithelialized dermis sutured to the abdominal fascia*
- 34. Schematic drawing of the reverse abdominoplasty. The dotted line represents the preoperative marking of the line of incision, the gray area represents the area planned to be resected.*
- 35. A 53-year-old woman before (A) and 12 months after (B) a reverse abdominoplasty procedure with a good esthetic result according to the Strasser grading system*
- 36. Illustration of the subpectoral approach for placement of breast implant through the abdominoplasty incision. Reprinted with permission from Wallach, S. G. Ancillary procedures assisted by abdominoplasty.*

37. *Illustration of the approach for harvesting rib cartilage through the abdominoplasty incision. Reprinted with permission from Wallach, S. G. Ancillary procedures assisted by abdominoplasty.*
38. *Illustration of the approach for harvesting autologous filler materials (fat, dermal fat, and fascial grafts). Liposuction can also be accessed through the abdominoplasty incision. Reprinted with permission from Wallach, S. G. Ancillary procedures assisted by abdominoplasty.*
39. *Skin markings are conducted while stretching the lower abdominal skin cranially and drawing a modified Regnault- incision (lazy W).*
40. *the surgical field is infiltrated with a tumescent anesthetic solution (1–2 L) using a pulsatile flow pump, for reduction of blood loss and postoperative pain, as well as improved definition of the suprafascial dissection plane*
41. *Resection of the tuxedo flaps is performed after exertion of an inferomedial pull resulting in rounded resection margins laterally*
42. *It is of outmost importance to remove any residual subcutaneous adipose tissue underneath the lateral dog ears or else the skin will not be subject to shrinkage. Note the extent of subcutaneous fat removal*
43. *Note the marked reduction of postoperative scar length in patients treated with the “rising-sun” closure technique*
44. *Note the marked reduction of postoperative wound healing problems in patients treated with the “risingsun” closure technique*
45. *Pre- and postoperative photographs (24 months postoperative) of a 44-year-old patient (frontal, oblique, and lateral views)*
46. *Pre- and postoperative photographs (24 months postoperative) of a 44-year-old patient (frontal, oblique, and lateral views)*
47. *Design of skin excision for standard transverse abdominoplasty treats only the vertical dimension of skin excess; areas of skin excision are shaded. (Above, right) Modified vertical (fleur-de-lis) abdominoplasty treats both vertical and transverse skin excision in the front of the abdomen. (Below) Circumferential lower body*

procedures treat vertical excess and partially treat transverse skin excess by translating soft tissue caudally over the widest skeletal structures

- 48. Preoperative view of a 32-year-old woman with a maximum body mass index of 38 and a body mass index of 22 at the time of body contouring. (Above, right) View of the inverted T incision resulting from modified vertical abdominoplasty. (Below) Image of excised skin*
- 49. Technique for determining vertical triangle excision and eliminating lateral dog-ears. (Above) After pannus dissection and abdominal wall plication, the lateral dog-ears are worked out toward the center of the abdomen to the level of the iliac crests, and provisional closure of the lateral edges is secured with towel clamps. Only then is the lower end of the pannus excised, to prevent overresection caused by the cephalad rotation of the upper flap that occurs with medial translation. (Below, left) The central skin excess is gathered gently to one side, and the midline is marked (dotted line), outlining one side of the vertical triangular excision. (Below, right) The central skin excess is then moved contralaterally and the remaining side of the vertical triangular excision is determined*
- 50. If the Kocher incision is fairly medial and vertical (above, left), the transverse skin excess may be sufficient to allow excision of the ischemic triangle and an equilateral triangle in the left epigastrium, permitting placement of the scar in the midline and retention of the umbilicus (above, right) (Below) If the Kocher incision is lateral and obtuse (below, left), this is not possible. If the right-sided ischemic triangle is excised, an oblique scar results and the umbilicus cannot be salvaged because of vascular compromise of the left wing of the abdominoplasty flap, but an acceptable result can be obtained*
- 51. Preoperative and postoperative views of a 42-year-old woman who had a maximum body mass index of 61 and now has a body*

- mass index of 28. The pannus weighed 2.5 kg, and a 7-cm ventral hernia was repaired primarily*
- 52.Total, major, and minor complication rates as a function of BMI*
- 53.progressive tension sutures, the skin flap is advanced with placement of each suture and dead space is reduced*
- 54.placement of progressive tension sutures*
- 55.the distribution of Progressive Tension suture*
- 56.A mold of plaster is placed over the soft dressing and serves as a firm shield*
- 57.Abdominoplasty complicated by major skin necrosis*
- 58.Sensory distribution of nerves at risk*
- 59.postoperative view 3-15 months, after full abdominoplasty demonstrate suprapubic scar depression with soft tissue bulges above and below the scar, superior displacement of the pubic hair and asymmetrical hypertrophic scars*