4 Abdominoplasty History and Techniques

Sid Mirrafati

4.1 Introduction

Numerous papers and articles have been written about the different techniques of the abdominoplasty procedure and date back from over a century ago. Body sculpting and contouring has been a fascination of many cosmetic surgeons. With the advent and popularity of the liposuction procedure these days and with a better understanding of skin retraction postliposuction surgery, many of the previously treated abdominoplasty procedures are now treated by the less invasive and more rapid recovery procedure of liposuction surgery. Nevertheless, abdominoplasty still holds a very intricate and self-satisfying place in the world of cosmetic surgery. Abdominoplasty not only deals with the excess abdominal pannus but also corrects diastasis of the rectus muscle and sometimes the external oblique muscle as well. It is a more invasive and a more complete surgery and therefore it also carries a higher morbidity and mortality. It is a procedure that also requires sculpting ability and the knowledge to place the incision to suit the particular body type.

4.2 History and Techniques

Throughout the past century there have been many surgeons who have described different abdominoplasty procedures to achieve better sculpting or to hide the abdominal scar. Body contouring dates back to 1870, which was the beginning of the modern surgical era. This was limited to a small resection of the abdominal wall. The surgeons who were repairing massive umbilical hernias did the first dermolipectomy of the abdomen. Excision of the abdominal pannus facilitated the hernia repair and relieved the patient from the hanging pannus.

In 1890 Demars and Marx [1] reported the first limited dermolipectomy in France. Kelly [2], a gynecologic surgeon, was the first to report this procedure in the United States at John Hopkins Hospital in Baltimore in 1899. Kelly called the procedure "transverse abdominal lipectomy". He performed herniorrhaphy through a transverse incision extending across both flanks. The hanging abdominal pannus was resected and the incision closed without undermining; however, this resulted in sacrificing the umbilicus (Fig. 4.1).

After this there were many more reported cases in Europe especially in France. In 1905, Gaudet and Morestin [3] reported on a transverse incision of the abdomen in repairing large hernias along with the resection of the excess abdominal skin and fat and were the first to report preservation of the umbilicus. In 1909 Weinhold [4] from Germany reported the cloverleaf incision, which is the combination of vertical and oblique incisions (Fig. 4.2), to improve the contour of the abdominal wall. In 1911, Desjardin [5] reported the excision of excess skin and fat weighing over 22.4 kg through an elliptical vertical abdominal incision. In the same year Amedee Morestin [6], the younger brother of the Hippolyte Morestin, reported five cases of massive

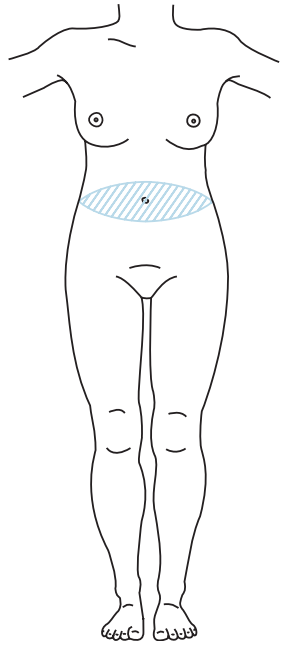

Fig. 4.1. Kelly (1899) [2]

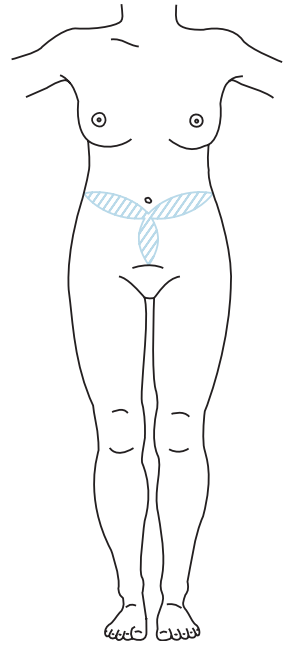

Fig. 4.2. Weinhold (1909) [4]

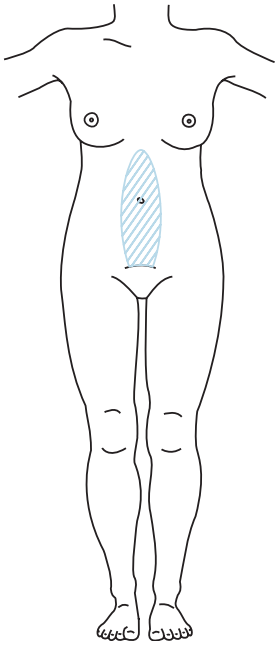

Fig. 4.3. Babcock (1916) [8]

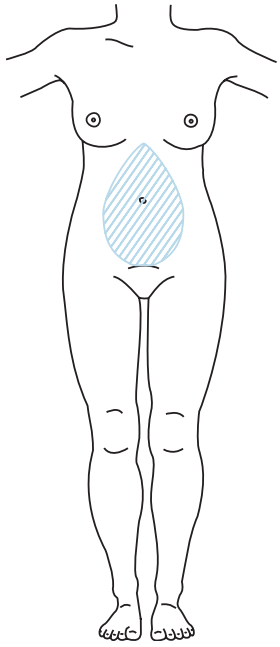

Fig. 4.4. Schepelmann (1918) [9]

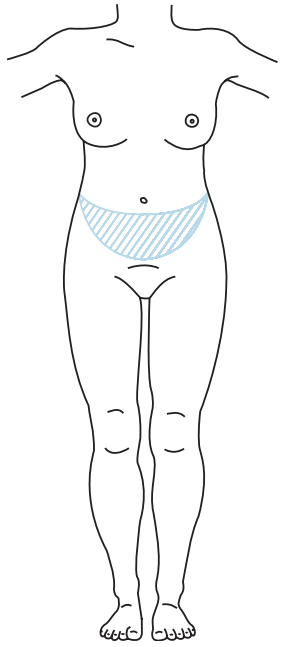

Fig. 4.5. Thorek (1924) [10]

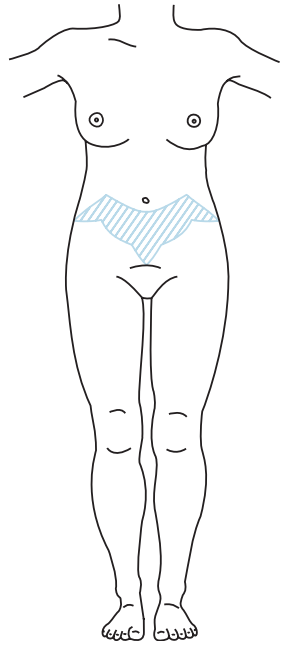

Fig. 4.6. Pick (1949) [13], Barsky (1950) [14]

abdominal lipectomy through an elliptical transverse incision similar to that reported by Kelly. Jolly, in 1911 [7], reported a low transverse elliptical abdominal lipectomy.

In 1916, Babcock [8] was the first to report vertical elliptical resection with wide undermining of the abdominal wall. He described a vertical elliptical incision the length of the abdomen (Fig. 4.3). He also dealt with the abdominal wall laxity with the buried silver chain technique. In 1918, Schepelmann [9] modified the Babcock elliptical incision into a transverse teardrop incision extending from the xyphoid to the pubis (Fig. 4.4). This allowed for more contouring of the lower abdominal excess.

In 1924, Thorek [10] started the technique of placing the incision below the umbilicus in a transverse fashion and removed the excess skin and fat down to the fascia in a wedge shaped form. He called the technique plastic adipectomy (Fig. 4.5). He described the removal of the umbilicus if required in a crescent excision, and transplanting it to its new place at the end of the case as a composite graft. In 1931, Flesch-Thebesius and Wheisheimer [11] modified the Thorek incision and included the umbilicus. In 1939, Thorek [12] reported his technique of plastic adipectomy. In 1949 Pick [13] reported his technique, followed by Barsky in 1950 [14], which was a modification of the Thorek transverse incision with the addition of the vertical incision at the ends (Fig. 4.6).

In 1955, Galtier [15] reported his technique of resection in four quadrants (Fig. 4.7). Vernon in 1957 [16] reported his technique of low transverse incision with wide undermining and transposition of the umbilicus (Fig. 4.8). This was followed by Dufourmental and Mouly in 1959 [17], who included the Vernon technique with the addition of a small vertical incision at the center (Fig. 4.9).

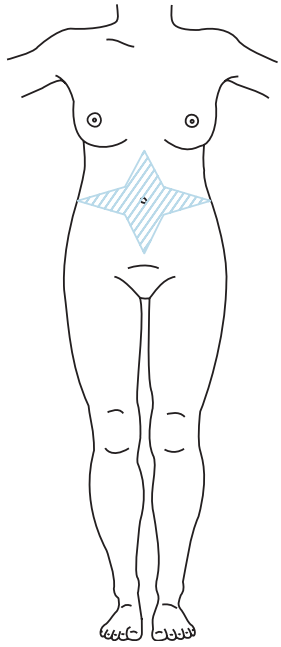

Fig. 4.7. Galtier (1955) [15]

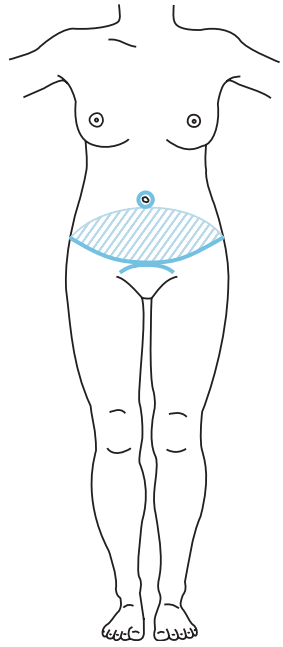

Fig. 4.8. Vernon (1957) [16]

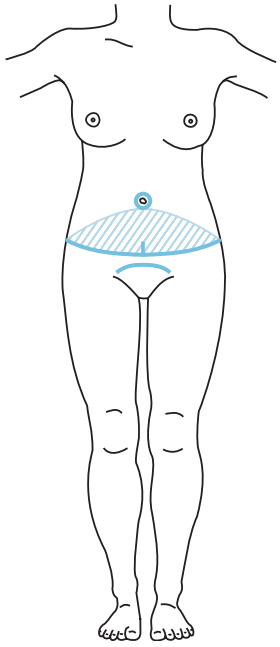

Fig. 4.9. Dufourmental and Mouly (1959) [17]

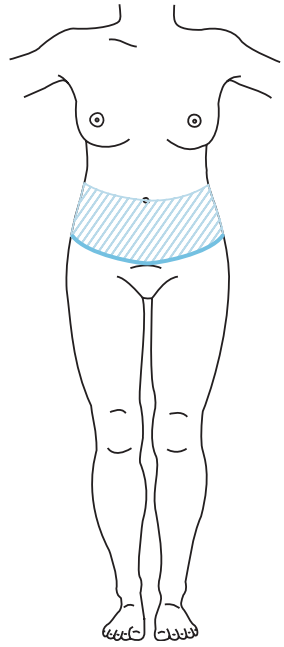

Fig. 4.10. Gonzalez-Ulloa (1960) [18], Vilain (1964) [19]

Gonzalez-Ulloa in 1960 [18] and Vilain and Dubouset in 1964 [19] reported circular abdominoplasty similar to that of Pick and Barsky (Fig. 4.6). In 1965 Spadafora [20] reported a similar technique to Vernon's, but he lowered the incision to a less conspicuous site. His incision started at the center, curving around the mons pubis, and at the groin crease the incision curved upward toward the anterior superior iliac spine. In 1967, Callia [21] reported a similar incision to Spadafora's except the incision was placed below the inguinal crease (Fig. 4.10). Staying below the inguinal crease not only had a less conspicuous scar but also had the added advantage of some degree of lateral thigh lift.

In reviewing the literature up to 1967, the abdominoplasty procedure can be divided into three main categories: (1) surgeons that favored the transverse incision, (2) those that favored the vertical incision (3) and the remainder that reported a combination of vertical and transverse incisions (Fig. 4.11). After 1967 there were many modifications of Callia's technique, but surgeons started favoring the low transverse, inconspicuous scarring.

In 1967 Pitanguy [22] published his technique, which was considered to produce successful results. From 1967 to 1975 he reported more than 500 cases of abdominoplasty and mammaplasty at the same time [23]. Pitanguy not only favored a low transverse abdominal and groin incision but also advocated extensive undermining over the costal margins, muscle tightening, and compression dressing (Fig. 4.12).

In 1972 Regnault [24] reported the "W" technique incision, which she later modified in 1975. The incision started from 1–3 cm within the pubic hair line and curved around the mons pubis to the groin crease and then extended laterally upward (Fig. 4.13). This technique minimizes the long-term superior pull of the mons pubis and unsightly suprapubic scaring. Grazer,

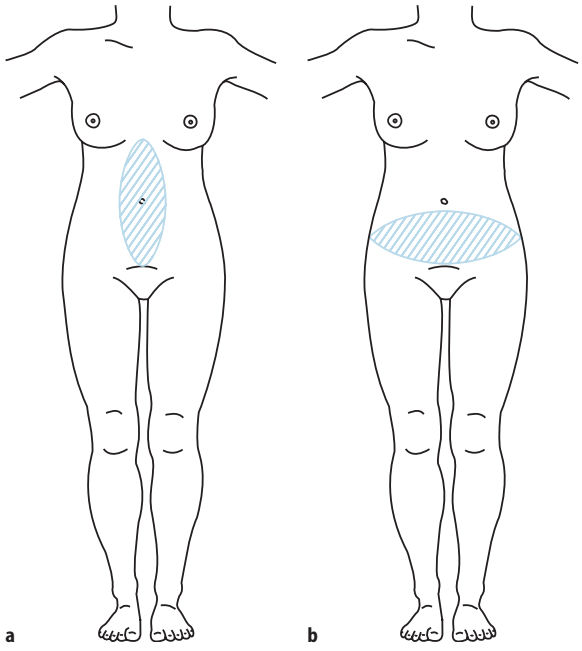

Fig. 4.11. a Transverse incision; **b** vertical incision; **c** combined incisions

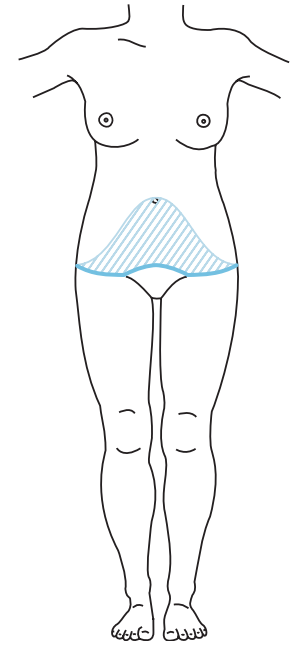

Fig. 4.12. Pitanguy (1967) [22]

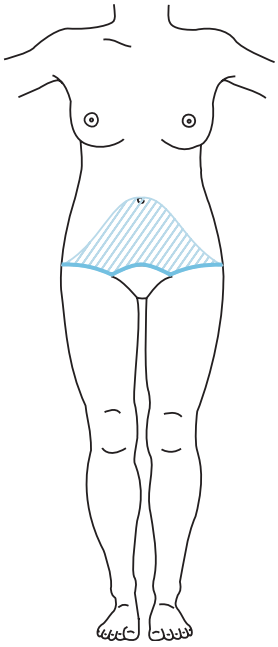

Fig. 4.13. Regnault (1972) [24]

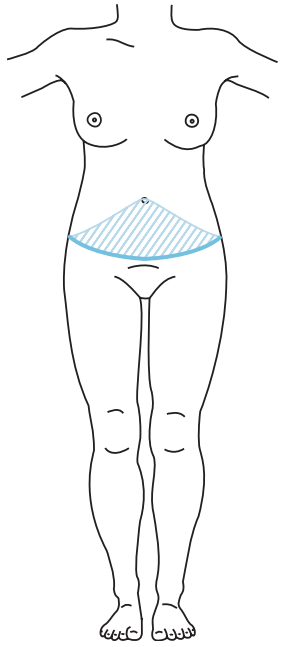

Fig. 4.14. Grazer (1973) [25]

in 1973 [25], reported 44 cases of abdominoplasty and mostly combining other surgeries as well. Grazer advocated a low transverse incision along the skin crease and extended laterally up to the level of the old umbilicus along the bikini line (Fig. 4.14). In 1977, Baker, Gordon, and Mosienko [26] reported the template method of abdominoplasty.

In 1978, Planas [27] advocated the "vest over pants" technique. This technique starts the incision from the umbilicus and extends diagonally down to the lateral extension of the low transverse incision. The upper abdomen is then undermined and pulled down over the lower abdomen and the incision is tailored and closed like a vest over pants. For individuals with extensive abdominal and flank pannus the surgery of belt lipectomy, which is a transverse incision extending to the back around the waist in a belt-like fashion, was first introduced by Somalo in 1940 [28] and later popularized by Gonzalez-Ulloa in 1959 [29].

The belt lipectomy was superseded by suction assisted lipectomy (liposuction) and abdominoplasty in 1980 that was popularized by Illouz [30] in 1983. The use of liposuctioning and abdominoplasty has revolutionized the concept of body contouring. Abdominoplasty will serve to repair the underlying muscles, which are plicated, and liposuction will contour the overlying fat, but attention must be given to the danger zone and the safe zone when doing a liposuction.

With the advent of suction-assisted lipectomy in 1975, there was also a rebirth of mini-abdominoplasty. Prior to this time mini-abdominoplasty was of limited use because it only provided corrections for a small amount of lower abdominal skin and fat. Mini-abdominoplasty was first introduced by Elbaz and Flageul in 1971 [31] and was modified by Glicenstein in 1975 [32]. After the introduction of suction-assisted lipectomy, Wilkinson and Swartz [33] reported 35 patients with mini-abdominoplasty in 1986 and in 1987 Greminger [34] reported a series of 14 patients.

The history of full abdominoplasty and mini-abdominoplasty has taken many different routes, but these techniques have certainly evolved to be an integral part of cosmetic surgery and body contouring, and there are still more developments on the way with newer techniques that have less blood loss and faster recovery.

References

1. Voloir P (1960) Operations plastiques sous-aponeurotiques sur la paroi abdominale anterieure. Thesis, Paris
2. Kelly HA (1899) Report of gynecological cases. Johns Hopkins Med J 10:197
3. Gaudet F, Morestin H (1905) French Congress of Surgeons, Paris
4. Weinhold S (1909) Bauchdeckenplastik. Zentralbl F Gynak 38:1332
5. Desjardins P (1911) Resection de la couche adi d'obesite extreme (lipectomie). Rapport par Dartigues. Paris Chi 3:466
6. Morestin A (1911) La restauration de la paroi abdominale par resection etendue des teguments et de la graisse sous-cutanee et le plissement des aponeuroses superficielles envisage comme complement de la cure radicale des hernies ombilicales. These, Paris
7. Jolly R (1911) Abdominoplasty. Berl Klin Wochenschr 48:1317
8. Babcock W (1916) The correction of the obese and relaxed abdominal wall with special reference to the use of buried silver chain. Phila Obstet Soc May 14, 1916
9. Schepelmann E (1918) Bauchdeckenplastik mit besonderer Berücksichtigung des Hangebauches. Beitr Klin Chir 3:372
10. Thorek M (1924) Plastic surgery of the breast and abdominal wall. Charles C. Thomas, Springfield, IL
11. Flesch-Thebesius M, Wheisheimer K (1931) Die operation des hangebauches. Chirurg 3:841
12. Thorek M (1939) Plastic reconstruction of the female breast and abdomen. Am J Surg 43:268
13. Pick JF (1949) Surgery of repair: principles, problems, procedures. Abdomen (abdereplasty), vol 2. JB Lippincott, Philadelphia, p 435
14. Barsky AJ (1950) Principles and practice of plastic surgery. Williams & Wilkins, Baltimore
15. Galtier M (1955) Surgical therapy of obesity of the abdominal wall with ptosis. Mem Acad Chir 81:341
16. Vernon S (1957) Umbilical transplantation upward and abdominal contouring in lipectomy. Am J Surg 94:490 – 492
17. Dufourmental C, Mouly R (1959) Chirurgie plastique. Flammarion, Paris, pp 381 – 389
18. Gonzalez-Ulloa M (1960) Belt lipectomy. Br J Plast Surg 13:179
19. Vilain R, Dubousset J (1964) Technique et indications de la lipectomie circulaire. 1250 observations. Ann Chir 18:289
20. Spadafora A (1965) Abdomen adiposa y pendulo-dermolipectomia iliaco-inguino-pubiana. Prensa Universitaria (Buenos Aires) 114:1839

21. Callia W (1967) Uma plastica para um cirurgiao geral. Med Hosp 1:40
22. Pitanguy I (1967) Abdominal lipectomy: an approach to it through an analysis of 300 consecutive cases. Plast Reconstr Surg 40:384
23. Pitanguy I (1975) Abdominal lipectomy. Clin Plast Surg 2:401
24. Regnault P (1972) Abdominal lipectomy, a low "W" incision. Internal microfilm. Aesthet Plast Surg
25. Regnault P (1975) Abdominoplasty by the "W" technique. Plast Reconstr Surg 55:265
26. Baker TJ, Gordon HL, Mosienko P (1977) A template (pattern) method of abdominal lipectomy. Aesthet Plast Surg 1:167
27. Planas J (1978) The "vest over pants abdominoplasty". Plast Reconstr Surg 61:694
28. Somalo M (1940) Circular dermolipectomy of the trunk. Semin Med 1:1435
29. Gonzalez-Ulloa M (1959) Circular lipectomy with transposition of the umbilicus and aponeurolytic technique. Cirurgia 27:394
30. Illouz Y (1983) Body contouring by lipolysis: a 5 year experience with over 3000 cases. Plast Reconstr Surg 72:591
31. Elbaz JS, Flageul G (1971) Chirurgie plastique de l'abdomen. Masson, Paris
32. Glicenstein J (1975) Difficulties of surgical treatment of abdominal lipodystrophies. Ann Chir Plast 20:147
33. Wilkinson TS, Swartz BE (1986) Individual modifications in body contour surgery. Plast Reconstr Surg 77:779–784
34. Greminger RF (1987) The mini-abdominoplasty. Plast Reconstr Surg 79:356