



Anchor lipoabdominoplasty

Lipoabdominoplastia em âncora

FRANCISCO MENDONÇA DE
ALBUQUERQUE^{1*}
PATRÍCIA PIMENTEL PIZARRO¹
OSVALDO RIBEIRO SALDANHA²
SÉRGIO MITIAKE SHIMIZU³
IRINEU RASERA JUNIOR¹

Institution: Hospital dos Fornecedores de
Cana de Piracicaba, SP, Brazil.

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■ ABSTRACT

Morbid obesity is characterized by the accumulation of adipose tissues distributed heterogeneously throughout the body, and gastroplasty is the latest method of surgical treatment. After considerable weight loss, patients present with excess skin under which secretions accumulate, increasing susceptibility for skin infections, which can be minimized with dermolipectomy. Herein, we describe the anchor lipoabdominoplasty technique, adapting the principles of reduced flap detachment, abdominal and flank liposuctions, and preservation of the infraumbilical Scarpa's fascia associated with the preoperative fleur-de-lis marking. The technique was used for seventeen patients, including sixteen women and one man, with late postoperative gastroplasty, aged 35–66 years in the period from January 2018 to June 2019. The patients presented with normal preoperative testing, satisfactory clinical conditions, and body mass index scores less than 30 kg/m². In the present case series, one patient had umbilical cord remnant epidermolysis; all patients had edema and ecchymosis; and one patient had seroma on postoperative day 13. Hematoma, necrosis, infection, wound dehiscence, or thromboembolic events were not observed in any patient. The technique is safe and effective in the treatment of patients with abdominal excess skin, improving their body contour. However, longer postoperative follow-up periods and more cases are necessary to better measure the results and incidence of complications.

Keywords: Lipoabdominoplasty; Lipectomy; Gastroplasty; Morbid obesity; Abdominoplasty.

¹Hospital dos Fornecedores de Cana de Piracicaba, Piracicaba, SP, Brazil.

²Hospital São Lucas, Santos, SP, Brazil.

³Hospital Unimed de Rio Claro, Rio Claro, SP, Brazil.

■ RESUMO

A obesidade mórbida se caracteriza por acúmulo de tecido adiposo que se distribui de maneira heterogênea em todo o organismo, tendo a gastroplastia como o mais recente método de tratamento cirúrgico. Após perda considerável de peso, o doente apresenta sobras cutâneas, sob essas sobras acumulam-se secreções que favorecem a instalação de infecções cutâneas que podem ser minimizadas com a execução de dermolipectomias. Os autores descrevem a técnica de lipoabdominoplastia em âncora, adaptando os princípios de descolamento reduzido do retalho, lipoaspiração de abdome e flancos, e preservação da fáscia de Scarpa infraumbilical associado à marcação pré-cirúrgica em “Fleur-de-Lis”. A técnica foi realizada em 17 pacientes em pós-operatório tardio de gastroplastia, entre janeiro de 2018 e junho de 2019, com idade entre 35 a 66 anos, sendo 16 pacientes do sexo feminino e 1 do sexo masculino. Todos os pacientes foram operados com exames pré-operatórios dentro da normalidade, condições clínicas satisfatórias e IMC < 30. Na presente série de casos, um paciente apresentou epidermólise de coto umbilical; todos os pacientes apresentaram edema e equimoses, e um paciente apresentou seroma no 13º dia de pós-operatório. Hematoma, necrose, infecção, deiscência de ferida operatória ou eventos tromboembólicos não foram observados em nenhum paciente. A técnica demonstrou ser segura e eficaz no tratamento de pacientes com excedente cutâneo abdominal, com melhora do contorno corporal, porém há necessidade de maior tempo de acompanhamento pós-operatório e maior número de casos operados para melhor mensurar os resultados, bem como a incidência de complicações.

Descritores: Lipoabdominoplastia; Lipectomia; Gastroplastia; Obesidade mórbida; Abdominoplastia.

INTRODUCTION

Morbid obesity is characterized by the accumulation of adipose tissue distributed heterogeneously throughout the body. It has reached epidemic rates worldwide. Gastroplasty is the latest surgical treatment for morbid obesity.

Obesity is defined by a body mass index (BMI) score above 30 kg/m² and morbid obesity by a BMI score above 40 kg/m² or above 35 kg/m² when associated with comorbidities, such as coronary disease, hypercholesterolemia, arterial hypertension, osteopathy, diabetes mellitus, lung disease, sleep apnea, and psychosocial disorders, affecting the patient's quality of life¹.

After considerable weight loss, the patient presents with extensive excess skin distributed throughout the body, and secretions accumulate under this excess skin because of the volume and difficult access for hygiene, increasing susceptibility to cutaneous infections².

Evaluation by a plastic surgeon and surgical planning are essential to achieve a favorable outcome and minimize complications.

Surgical abdominoplasty originated in the late 19th century. Throughout the century, Demars and Marx (1960³) introduced numerous progressions in the technique and approach. Correa and Iturraspe (1952⁴) first described anchor abdominoplasty, and Castanhães and Goethel (1967⁵) first published the fleur-de-lis design for abdominoplasty with vertical and horizontal incisions, later reviewed by Dellon (1985⁶). In the mid-1960s, Callia⁷ and Pitanguy⁸ described the basis of circumferential abdominoplasty, which was also reviewed by other authors. In 2003, Saldanha et al.⁹ published the lipoabdominoplasty technique, which is performed using the principles of superficial liposuction to improve the body contour, and traditional abdominoplasty, performed without flap detachment, preserving the perforating vessels of the abdomen, thus reducing the vascular impairment of the abdominal skin flap⁹.

Former obese patients present with significant two-dimensional excess skin on the abdomen. It is a technical and tactical challenge for plastic surgeons (Figure 1).

Herein, we describe the anchor lipoabdominoplasty technique to treat patients after severe weight loss, resulting in excessive sagging skin, adapting the principles of reduced flap detachment, abdominal and flank liposuctions, and preservation of the infraumbilical Scarpa's fascia associated with preoperative fleur-de-lis marking.



Figure 1. The patient in the preoperative period with extensive supra- and infraumbilical abdominal excess skin extending bilaterally to the flanks.

METHODS

Surgical evaluation was performed with examination of the patient's clinical conditions, especially the presence of anemia, hydroelectrolytic changes, and nutritional disorders. Stable weight for more than one year and adequate clinical, psychological, and nutritional conditions were required.

The patient's anatomy (whole-body and abdominal) was evaluated for the presence of abdominal hernias and previous scars.

The patients in the present study had a BMI score $< 30 \text{ kg/m}^2$ and normal preoperative test results.

Seventeen patients, including sixteen women and one man, aged 35–66 years underwent surgery in the period from January 2018 to June 2019. All patients had previously undergone open gastroplasty at least two years before the first evaluation for the restorative plastic surgery, with significant weight loss and presence of significant abdominal skin sagging ("apron abdomen"). The patients were treated through the Unified Health System at the Forneceadores de Cana Hospital of Piracicaba, SP.

In the anamnesis, five patients reported of type II diabetes mellitus before gastroplasty (controlled with oral hypoglycemic agents and insulin) and three patients reported of a present prediabetes status. The glycemic level of these patients was normalized after the gastroplasty.

Before the gastroplasty, five patients had systemic arterial hypertension, which was treated with the regular administration of antihypertensive drugs and was reversed after the bariatric surgery. These patients no longer needed blood pressure medication at the time of the anchor lipoabdominoplasty.

Preoperative testing showed that two patients were anemic (hemoglobin = 8.3 and 8.1 g/dL) and were treated with oral supplementation (hemoglobin = 11.5 and 12.3 g/dL) before the surgery. One patient had hypoalbuminemia (albumin = 2.8 g/dL), also being treated with oral supplementation before the surgery. Six patients reported of depression and anxiety and were under regular use of antidepressants and neuroleptics.

In the present study, four patients presented with abdominal wall hernias (two incisional, one umbilical, and one incisional and umbilical), which were corrected with the same surgical procedure.

Five patients reported of dermatitis and previous skin infections in the apron abdomen and pubic skin folds. These conditions were not present at the preoperative evaluation in any patient.

Technique

The patients were operated under general anesthesia by the same surgical team. Surgical marking was similar to the technique standardized by Spina. The midline was marked from the xiphoid process to the pubic symphysis, with the patient standing upright. A bidigital maneuver was used to examine the lateral excess skin. The excess tissues were marked in a triangular shape, with a slight arch reaching the xiphoid process. The horizontal excess skin was marked in the same way as in classic abdominoplasties, with

the lower incision site positioned 6–7 cm from the vaginal commissure in the pubis or from the base of the penis and laterally extended for approximately 0.5–1 cm below the natural folds. The upper limit of this incision was marked after the bidigital maneuver. The intersection points of the vertical and horizontal incisions were extended to the suprapubic region without tension. The marking was checked with the patient in the supine position (Figure 2). Liposuction areas were also marked.



Figure 2. Preoperative marking in a man in the horizontal supine position.

The surgery was started with liposuctions of the flanks, pubis, and upper abdomen to improve the abdominal contour and to facilitate flap detachment and mobilization. A laterally extending suprapubic incision was made, and the skin above the Scarpa's fascia was detached, continuing until the umbilical cord remnant (Figure 3). The umbilical scar was preserved, and the detachment was continued across the upper abdomen, with resection of the excess supraumbilical skin previously marked to the level of the aponeurosis. After the excision of the excess fat tissues, hemostasis was strictly verified, followed by supraumbilical plication of the rectus abdominis diastasis with separate "X" stitches using nonabsorbable sutures (Mononylon 2.0) and correction of abdominal hernias, if present. A medial fusion of the preserved Scarpa's fascia was resected in the infraumbilical region for plication and approximation of the rectus abdominis muscles (correction of infraumbilical diastasis). Subsequently, the remnants of the Scarpa's fascia were approximated

with unabsorbable sutures (Mononylon 3.0) (Figure 4). Open liposuction was performed in regions below the Scarpa's fascia, if necessary (Figure 5). The navel was attached to the muscle aponeurosis, and a suction drain was placed in the lower abdomen, with a pubic exit point. Finally, the wound was closed in layers (Monocryl® 3.0 and 4.0) (Figure 6).



Figure 3. Infraumbilical detachment of the abdomen preserving the Scarpa's fascia



Figure 4. Approximation of the remnants of the infraumbilical Scarpa's fascia after excision of excess fat

RESULTS

After the surgery, one patient presented with umbilical cord remnant epidermolysis, which was treated with moist dressings and showed satisfactory progress with epithelialization after approximately two weeks.

On postoperative day 13, one patient had seroma, which was treated with an aspiration puncture of 30 mL of serohematic secretion from the pubic and periumbilical regions.



Figure 5. Open liposuction of the flaps performed after repairing the Scarpa's fascia



Figure 7. Frontal views of a woman in the preoperative period and on postoperative day 30.



Figure 6. A man in the immediate postoperative period before dressing showing the final aspect of the surgery with a suction drain externalized in the pubis



Figure 8. Lateral views of a woman in the preoperative period and on postoperative day 30.

Minor changes, such as edema and bruising, were observed in all cases. No patient required surgical revision or blood transfusion or had major complications, such as hematoma, necrosis, infection, dehiscence, or thromboembolic events.

The suction drain was removed after seven to ten days with a low serohematic flow.

In the sixth postoperative month, all patients declared that they were satisfied with the result obtained (Figures 7 and 8) in their body contour.

DISCUSSION

Morbid obesity has reached epidemic levels worldwide, and the exponential growth of gastroplasty has increased the number of patients presenting with extensive sagging abdominal skin, which results in an unwanted esthetic effect and increases the risk for skin disorders in the fold regions. Plastic surgeons who perform post-bariatric surgeries aim at delivering increasingly refined results to the patients, minimizing the onset of these skin disorders¹⁰.

After massive weight loss, patients experience new health conditions, with improvement or even resolution of comorbidities, especially type II diabetes, and positive biopsychosocial results. In the present study, previously diabetic and hypertensive patients reported resolution of these comorbidities after gastroplasty. However, almost simultaneously, the patient experiences a new body image. The loss of excess weight may produce a thin, normal, or even overweight or obese body, depending on the severity of the previous weight condition¹⁰.

A common condition in this new body image is the sagging skin associated with ptosis of various anatomical regions, such as the breasts, arms, thighs, buttocks, and trunk. In addition to the psychosocial impact of generalized dermatochalasis, there are medical implications, such as intertrigo, functional limitations of ambulation, urination, and sexual activity. In the scope of plastic surgery, the treatment of excess skin after massive weight loss can be challenging, since it affects the entire body of the patient and requires strategies to minimize complications through comprehensive care from incision planning to patient evaluation in the late postoperative period. Evaluating results is a complex task in plastic surgery that involves subjective parameters and a few comparative publications; however, it is a necessary tool to allow progress. Regarding the patient, the result of plastic surgery, either dermolipectomy or ptotic tissue lifting, in the late postoperative period after massive weight loss is the maintenance of different levels of residual sagging. It can be frustrating to both the surgeon and patient¹⁰.

After the bariatric surgery, the estimated weight loss is approximately 50% of the excess weight, which means that many patients will remain overweight or obese (BMI scores of 25–30 kg/m² and 30–35 kg/m², respectively), and some will remain morbidly obese, depending on the disease severity at the time of the surgery^{11–17}. In this study, we selected patients with a BMI score less than 30 kg/m².

Many authors associate higher complication rates, especially in cases of torso- or abdominoplasty, with the group of patients who remain obese^{11–17}. Complications include seroma, hematoma, infection, fat necrosis, marginal skin necrosis, skin dehiscence, need for blood transfusion, and prolonged hospital stay. Complication rates include approximately 35% of the nonobese patients (normal to overweight BMI) and up to 80% of the patients who maintain some degree of obesity. Potentially more severe systemic complications, such as deep vein thrombosis and pulmonary embolism, are also higher in patients who remain obese after a successful therapeutic bariatric surgery. The rate of deep vein thrombosis ranges from

0.04% to 2.9% in the general population undergoing abdominoplasty, while may reach up to 8.9% in obese patients after weight loss^{18–22}.

In the present case series, one patient had umbilical cord remnant epidermolysis; all patients had edema and bruising; and one patient had seroma. No patient had hematoma, necrosis, infection, wound dehiscence, or thromboembolic events.

We always take preventive measures and strongly recommend the intraoperative use of intermittent calf compression devices, prophylactic heparin, postoperative compression stockings, early ambulation, and reduction in surgical time^{18–22}. These measures were strictly followed in this study for the operated patients.

Due to local and systemic peculiarities, standardization and training are good instruments to minimize the risks for patients after massive weight loss, in addition to the careful selection of candidates for longer procedures²³.

The association of liposuction with various dermolipectomy techniques should be considered to facilitate flap dissection and mobility and to try to obtain greater skin retraction. Saldanha et al.³ (2003) reported that the maintenance of the Scarpa's fascia in lipoabdominoplasty reduces the rate of postoperative complications, is associated with the resection of the significant excess skin with fleur-de-lis marking, and benefits post-bariatric patients with considerable body contour improvement. With the technique described, we intend to associate the established surgical techniques to deliver more refined results to patients in an easily reproducible and safe manner.

Although the technique is safe, and patients have reported satisfaction with the results obtained, longer postoperative follow-up periods and more operated cases are necessary to better measure the outcomes and incidence of complications.

CONCLUSION

This technique is safe and effective in the treatment of patients with extensive abdominal excess skin after severe weight loss, providing substantial improvement in the body contour.

COLLABORATIONS

FMA

Analysis and/or data interpretation, Conception and design study, Data Curation, Final manuscript approval, Methodology, Project Administration, Realization of operations and/or trials, Supervision, Writing - Original Draft Preparation, Writing - Review & Editing

PPP	Conceptualization, Data Curation, Realization of operations and/or trials, Writing - Review & Editing
ORS	Conceptualization, Final manuscript approval, Supervision, Writing - Review & Editing
SMS	Validation, Writing - Original Draft Preparation
IRJ	Writing - Original Draft Preparation

REFERENCES

- Matory Junior WE, O'Sullivan J, Fudem G, Dunn R. Abdominal surgery in patients with severe morbid obesity. *Plast Reconstr Surg.* 1994 Dec;94(7):976-87.
- Ravussin E, Swinburn BA. Pathophysiology of obesity. *Lancet.* 1992 Aug;340(8816):404-8.
- Demars & Marx - citado em Voloir P. Opérations plastiques susaponévrotiques sur la paroi abdominale antérieure. Thèse, Paris, 1960.
- Corrêa-Iturraspe M. Tratamiento quirúrgico de la obesidad. *Rev Med Argent.* 1952;66:340-56.
- Castañares S, Goethel JA. Abdominal lipectomy: a modification in technique. *Plast Reconstr Surg.* 1967;40(4):378-83.
- Dellon AL. Fleur-de-lis abdominoplasty. *Aesthetic Plast Surg.* 1985;9(1):27-32.
- Callia W. Contribuição para o estudo da correção cirúrgica do abdome pêndulo e globoso-técnica original [Tese de doutorado]. São Paulo: Universidade de São Paulo, Faculdade de Medicina; 1963.
- Pitanguy I. Abdominallipectomy: Na approach to it through an analysis of 300 consecutive cases. *Plast Reconst Surg.* 1967;40:384.
- Saldanha OR, Pinto EBS, Matos Junior WN, Lucon RL, Magalhães F, Bello EML, et al. Lipoabdominoplastia - técnica Saldanha. *Rev Bras Cir Plást.* 2003;18(1):37-46.
- Orpheu SC, Coltro PS, Scopel GP, Saito FL, Ferreira MC. Cirurgia do contorno corporal no paciente após perda ponderal maciça: experiência de três anos em hospital público secundário. *Rev Assoc Med Bras.* 2009;55(4):427-33.
- Shermak MA. Hernia repair and abdominoplasty in gastric bypass patients. *Plast Reconstr Surg.* 2006 Apr;117(4):1145-50;discussion:1151-2.
- Shons AR. Plastic reconstruction after bypass surgery and massive weight loss. *Surg Clin North Am.* 1979 Dec;59(6):1139-52.
- Biaunie G, Kalis B. Cutaneous complications of massive obesity. *Rev Prat.* 1993 Oct;43(15):1930-4.
- Hurwitz DJ, Agha-Mohammadi S. Postbariatric surgery breast reshaping: the spiral flap. *Ann Plast Surg.* 2006 May;56(5):481-6;discussion:486.
- Song AY, Jean RD, Hurwitz DJ, Fernstrom MH, Scott JA, Rubin JP. A classification of contour deformities after bariatric weight loss: the Pittsburgh rating scale. *Plast Reconstr Surg.* 2005 Oct;116(5):1535-44;discussion:1545-6.
- Rubin JP, Nguyen V, Schwentker A. Perioperative management of the post gastric bypass patient presenting for body contour surgery. *Clin Plast Surg.* 2004 Oct;31(4):601-10.
- Sanger C, David LR. Impact of significant weight loss on outcome of body-contouring surgery. *Ann Plast Surg.* 2006;56(1):9-13;discussion:13.
- Aly AS, Cram AE, Heddens C. Truncal body contouring surgery in the massive weight loss patient. *Clin Plast Surg.* 2004 Oct;31(4):611-24.
- Menderes A, Baytekin C, Hacıyanlı M, Yılmaz M. Dermalipectomy for body contouring after bariatric surgery in Aegean region of Turkey. *Obes Surg.* 2003 Aug;13(4):637-41.
- Carwell GR, Horton CE. Circumferential torsoplasty. *Ann Plast Surg.* 1997 Mar;38(3):213-6.
- Shermak MA, Chang DC, Heller J. Factors impacting thromboembolism after bariatric body contouring surgery. *Plast Reconstr Surg.* 2007 Apr;119(5):1590-96;discussion:1597-8.
- Rhomberg M, Pülzl P, Piza-Katzer H. Single stage abdominoplasty and mastopexy after weight loss following gastric banding. *Obes Surg.* 2003 Jun;13(3):418-23.
- Modolin M, Cintra Junior W, Gobbi CI, Ferreira MC. Circumferential abdominoplasty for sequential treatment after morbid obesity. *Obes Surg.* 2003 Feb;13(1):95-100.

*Corresponding author:

Francisco Mendonça de Albuquerque
 Rua Três, 139, Saúde, Rio Claro, SP, Brazil.
 Zip code: 13500-313
 E-mail: francisco.m.albuquerque@hotmail.com