



POST-BARIATRIC ABDOMINAL DERMOLIPECTOMY: INDICATIONS, SURGICAL TECHNIQUES, COMPLICATIONS, AND OUTCOMES IN PATIENTS FOLLOWING MASSIVE WEIGHT LOSS

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ABSTRACT

Introduction: massive weight loss, achieved through bariatric surgery or conservative treatments, has led to a growing number of patients presenting with residual abdominal skin excess. This condition may result in functional limitations, hygiene difficulties, recurrent dermatological complications, and psychosocial impairment, significantly affecting quality of life. In this context, abdominal dermolipectomy has become one of the primary surgical options for managing excess skin and restoring body contour.

Objective: to analyze the current scientific evidence regarding the role of abdominal dermolipectomy in patients following massive weight loss, addressing its indications, preoperative assessment, surgical techniques, complications, functional and aesthetic outcomes, and impact on quality of life.

Methodology: a narrative literature review was conducted using publications retrieved from PubMed/MEDLINE, Google Scholar, and the Cochrane Library. A total of 40 articles, including original studies, systematic reviews, narrative reviews, and case reports, were analyzed. After assessing scientific relevance and alignment with the objectives of the study, 28 references were selected for inclusion. Search terms used in English, Spanish, and Portuguese included: abdominal dermolipectomy, abdominoplasty, body contouring, massive weight loss, post-bariatric surgery, panniculectomy, dermolipectomia abdominal, abdominoplastia, and abdominoplastia pós-bariátrica.

Results: the reviewed literature demonstrates that abdominal dermolipectomy provides significant benefits for patients following massive weight loss, including improved mobility, personal hygiene, reduction of recurrent dermatitis and skin infections, as well as substantial improvements in body image and quality of life. The most commonly employed techniques include conventional abdominoplasty, Fleur-de-Lis abdominoplasty, and circumferential dermolipectomy (lower body lift). Although the most frequent complications are seroma formation, wound dehiscence, and surgical site infection, appropriate patient selection and preoperative optimization significantly reduce these risks.

Conclusions: abdominal dermolipectomy represents a fundamental therapeutic intervention in the comprehensive management of patients following massive weight loss. Beyond its aesthetic benefits, the procedure provides important functional and psychological improvements that help consolidate the outcomes achieved through weight reduction. Multidisciplinary evaluation, weight stabilization, and correction of nutritional deficiencies are essential factors for optimizing surgical outcomes and minimizing postoperative complications.

KEYWORDS: Abdominal Dermolipectomy; Abdominoplasty; Post-Bariatric Surgery; Massive Weight Loss; Body Contouring; Excess Skin; Panniculectomy; Quality Of Life.



INTRODUCTION

Obesity is one of the leading public health challenges worldwide. The increasing number of bariatric procedures and weight-loss programs has enabled a growing number of patients to achieve significant weight reduction. However, massive loss of adipose tissue is often accompanied by substantial residual skin excess, particularly in the abdominal region, which may result in functional limitations, hygiene difficulties, recurrent infections of skin folds, and psychological distress related to body image (1).

Following massive weight loss, the skin frequently loses its ability to retract due to alterations in elastic fibers and the prolonged stretching experienced during obesity. Consequently, many patients develop a redundant abdominal panniculus that impairs mobility, physical activity, and overall quality of life. In these cases, body contouring procedures, particularly abdominal dermolipectomy, represent the primary therapeutic option for restoring functionality and improving body appearance (2).

Abdominal dermolipectomy has become one of the most commonly performed procedures in post-bariatric body contouring surgery. In addition to removing excess skin and adipose tissue, it improves body contour, reduces symptoms associated with the abdominal panniculus, and enhances patient satisfaction. Several technical modifications have been developed to optimize aesthetic outcomes and reduce complications such as seroma formation, wound dehiscence, and surgical site infections (3).

The aim of this narrative review is to analyze the available scientific evidence regarding the role of abdominal dermolipectomy in patients following massive weight loss, addressing its indications, principal surgical techniques, functional and aesthetic benefits, complications, and clinical outcomes reported in the recent literature.

METHODOLOGY

A narrative review of the scientific literature was conducted to evaluate the role of abdominal dermolipectomy in patients following massive weight loss. The literature search was performed between January and February 2026 using the PubMed/MEDLINE, Scopus, Web of Science, and Google Scholar databases. The search strategy included combinations of the following descriptors in English and Portuguese: *abdominoplasty*, *dermolipectomy*, *body contouring*, *massive weight loss*, *post-bariatric surgery*, *panniculectomy*, *skin redundancy*, *excess skin*, *cirurgia pós-bariátrica*, and *dermolipectomia abdominal*, combined using the Boolean operators AND and OR.

Original articles, systematic reviews, meta-analyses, observational studies, and clinical guidelines published between 2010 and 2026 in English, Portuguese, or Spanish were considered. Studies addressing indications, surgical techniques, functional and aesthetic outcomes, quality of life, and complications associated with abdominal dermolipectomy after massive weight loss were included. Letters to the editor, isolated case reports, animal studies, duplicate publications, and studies not primarily focused on post-weight-loss abdominal body contouring were excluded. Relevant studies were identified through title and abstract screening, followed by full-

text assessment, and the findings were organized thematically for analysis and discussion.

DEVELOPMENT

Excess Skin Following Massive Weight Loss: Pathophysiological Basis

Massive weight loss, whether achieved through bariatric surgery or conservative treatments, leads to significant changes in body composition. Although the reduction of adipose tissue provides substantial metabolic benefits, the skin often fails to regain its original elasticity due to structural alterations that develop during years of obesity. Prolonged tissue distension causes damage to collagen and elastin fibers within the dermis, reducing the skin's ability to retract even after a stable body weight has been achieved. As a result, patients may develop varying degrees of skin laxity and redundancy, particularly in the abdomen, upper arms, thighs, and breasts, leading to functional impairment, hygiene difficulties, recurrent intertriginous dermatitis, and a negative impact on body image and quality of life. The severity of excess skin is generally associated with the amount of weight lost, patient age, duration of obesity, and genetic factors influencing tissue elasticity (4).

Functional and Psychological Impact of Excess Skin

Excess skin following massive weight loss represents much more than an aesthetic concern. Several studies have demonstrated that redundant skin folds may lead to limitations in physical activity, difficulties with personal hygiene, recurrent skin infections, and impaired sexual function. Furthermore, many patients report dissatisfaction with their body image despite successful weight reduction. These issues may negatively affect self-esteem, social interactions, and overall well-being. Consequently, body contouring surgery has become an important component of the comprehensive management of post-bariatric patients, contributing to both functional and psychological improvement (5).

Indications for Abdominal Dermolipectomy

Abdominal dermolipectomy is indicated for patients presenting with persistent abdominal skin excess following massive weight loss who have achieved adequate weight stability. The main indications include the presence of a redundant abdominal panniculus, recurrent dermatitis and infections within skin folds, functional limitations affecting mobility or physical activity, hygiene difficulties, and significant body image concerns. Patients are generally advised to maintain a stable weight for at least six to twelve months before surgery, and associated comorbidities should be appropriately controlled to minimize the risk of postoperative complications (2,4,6).

PREOPERATIVE ASSESSMENT AND NUTRITIONAL CONSIDERATIONS

Weight Stability and Patient Selection

Appropriate patient selection is one of the fundamental pillars for successful abdominal dermolipectomy following massive weight loss. Most authors recommend that patients achieve a stable weight phase before undergoing surgery, typically for a minimum period of six to twelve months. Persistent weight fluctuations may compromise aesthetic

outcomes and increase the incidence of postoperative complications. Furthermore, an interval of 12 to 18 months after bariatric surgery is generally recommended to allow for metabolic and nutritional stabilization before body contouring procedures are performed (4,7).

Nutritional Status and Wound Healing

Patients who undergo bariatric surgery frequently develop nutritional deficiencies secondary to reduced dietary intake and alterations in intestinal absorption. The most common deficiencies involve proteins, iron, vitamin B12, folic acid, zinc, and vitamin D. These deficiencies may negatively affect wound-healing mechanisms, increase the risk of infection, and contribute to wound dehiscence. Therefore, preoperative nutritional assessment should be considered a routine component of the evaluation of all candidates for abdominal dermolipectomy (8,9).

Recommended Laboratory Parameters

Preoperative evaluation should include a comprehensive clinical assessment and laboratory investigations aimed at identifying nutritional deficiencies that may interfere with postoperative recovery. Commonly recommended tests include a complete blood count, serum albumin, prealbumin, ferritin, serum iron, vitamin B12, folic acid, vitamin D levels, and a metabolic profile. Correction of identified abnormalities before surgery has been shown to reduce wound-healing complications and improve overall surgical outcomes (4).

Smoking Cessation and Control of Comorbidities

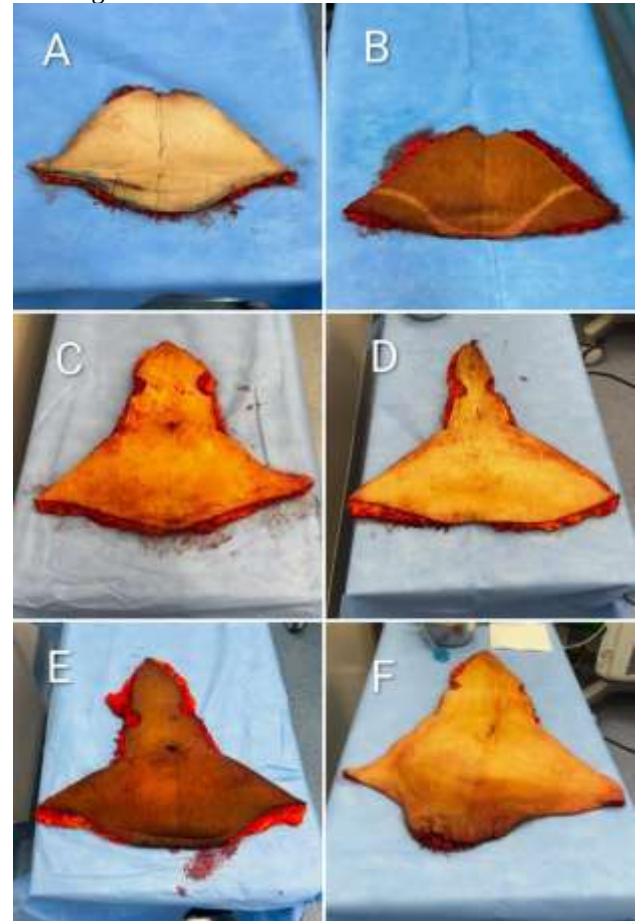
Smoking remains one of the most important modifiable risk factors associated with complications in body contouring surgery. Nicotine induces peripheral vasoconstriction and reduces tissue perfusion, thereby increasing the risk of skin necrosis, wound dehiscence, and infection. Similarly, poorly controlled diabetes mellitus, hypertension, and residual obesity have been associated with a higher incidence of postoperative adverse events. Current guidelines recommend complete smoking cessation at least four to six weeks before surgery, along with optimization of chronic medical conditions prior to intervention (10,11).

Venous Thromboembolism Prophylaxis

Patients undergoing abdominal dermolipectomy often present risk factors that predispose them to venous thromboembolism, including residual obesity, prolonged operative times, and reduced mobility during the immediate postoperative period. Consequently, individualized thrombotic risk stratification using validated tools, such as the Caprini Risk Assessment Model, is recommended, together with the implementation of mechanical and pharmacological prophylactic measures when indicated. Early ambulation and the use of intermittent pneumatic compression devices are widely accepted complementary strategies for reducing the incidence of thromboembolic events (12).

Figure 1. Representative abdominal dermolipectomy specimens from post-bariatric patients following massive weight loss.

The specimens illustrate the wide variability in abdominal skin redundancy and dermofat tissue excess encountered during body contouring surgery. (A–F) Examples of resected abdominal tissue demonstrating different patterns of deformity and surgical resection.



Source: The Authors.

SURGICAL TECHNIQUES FOR ABDOMINAL DERMOLIPECTOMY

Conventional Abdominoplasty

Conventional abdominoplasty remains one of the most widely used techniques for the treatment of abdominal skin excess. The procedure consists of a horizontal resection of redundant dermoadipose tissue from the lower abdomen, frequently combined with rectus abdominis muscle plication and umbilical transposition. In patients following massive weight loss, this technique provides satisfactory outcomes when skin redundancy predominates along the vertical axis and there is minimal transverse excess. However, it may be insufficient in patients with significant horizontal laxity or circumferential skin excess, conditions commonly encountered after bariatric surgery. Appropriate patient selection is essential to optimize both functional and aesthetic outcomes while minimizing the need for secondary procedures (7).



Fleur-de-Lis Abdominoplasty

The Fleur-de-Lis abdominoplasty was developed to address the complex deformities commonly observed in patients following massive weight loss. Unlike conventional abdominoplasty, this technique incorporates an additional vertical excision that allows removal of excess skin in both the horizontal and vertical dimensions. This feature enables improved waist definition and a more comprehensive correction of central abdominal laxity. Although it results in an additional midline vertical scar, numerous studies have demonstrated that patients generally accept this trade-off because of the substantial improvement in body contour achieved. Currently, Fleur-de-Lis abdominoplasty is considered one of the most effective options for post-bariatric patients with severe skin excess and multidirectional redundancy (13).

Technical Modifications of the Fleur-de-Lis Technique

In an effort to reduce postoperative complications, particularly seroma formation, wound dehiscence, and ischemia at the intersection of the scars, several modifications of the Fleur-de-Lis technique have been proposed. These include selective preservation of flap vascularization, the use of progressive tension sutures, and modifications in skin resection design. Such strategies have been shown to significantly reduce wound-healing complications and improve long-term stability of outcomes, particularly in patients with a history of bariatric surgery and substantial weight loss (14,15).

Circumferential Dermolipectomy (Lower Body Lift)

In patients with massive weight loss who present deformities involving not only the abdomen but also the flanks, lower back, buttocks, and proximal thighs, circumferential dermolipectomy, or lower body lift, represents a valuable surgical option. This procedure combines circumferential excision of excess skin with elevation of the gluteal and lateral thigh tissues, allowing comprehensive reshaping of the lower trunk. Although associated with longer operative times and a more complex recovery, several studies have demonstrated high patient satisfaction rates and significant improvements in quality of life among appropriately selected individuals (16,17).

COMPLICATIONS OF ABDOMINAL DERMOLIPECTOMY

Incidence and Clinical Relevance of Complications

Despite its important functional and aesthetic benefits, abdominal dermolipectomy remains associated with a considerable rate of complications, particularly among patients who have undergone massive weight loss. Extensive tissue dissection, disruption of lymphatic drainage pathways, residual nutritional deficiencies, and associated comorbidities increase susceptibility to postoperative adverse events. The literature reports overall complication rates ranging from 10% to 50%, depending on the characteristics of the study population, the surgical technique employed, and the definition of complications used. Most complications are minor and can be managed conservatively; however, some may require additional procedures, prolong recovery, and negatively affect final outcomes (10).

Seroma: The Most Common Complication

Seroma formation is the most frequently reported complication following abdominal dermolipectomy. It results from the accumulation of serous fluid within the dead space created during abdominal flap elevation and the disruption of lymphatic channels. Its incidence varies considerably among published series, but it may account for up to 40% of postoperative complications. Clinically, seromas present as localized swelling, fluctuance, and a sensation of fluid movement beneath the skin. Management typically involves serial needle aspirations, prolonged drainage, or, in persistent cases, additional surgical intervention. In recent years, preservation of Scarpa's fascia and the use of progressive tension sutures have been shown to significantly reduce the incidence of this complication (10,18).

Wound Dehiscence and Surgical Site Infection

Wound dehiscence and surgical site infections are other common complications in patients undergoing abdominal dermolipectomy following massive weight loss. Factors such as smoking, diabetes mellitus, residual obesity, nutritional deficiencies, and excessive tension on the suture line significantly increase the risk of these adverse events. Most cases can be managed with local wound care and antibiotic therapy when indicated; however, extensive wound dehiscence may require surgical revision and can considerably prolong the recovery period (10,19).

Hematoma, Skin Necrosis, and Thromboembolic Events

Hematomas, skin necrosis, and thromboembolic events are less common but potentially more serious complications. Hematomas typically occur during the early postoperative period and may require surgical evacuation. Skin necrosis is generally associated with vascular compromise, smoking, or excessive tension on the surgical flaps, whereas deep vein thrombosis and pulmonary embolism represent infrequent but potentially life-threatening complications. For this reason, current strategies emphasize preoperative optimization of nutritional status, smoking cessation, and the implementation of perioperative thromboprophylaxis protocols (10,20).

Risk Factors for Complications

Several factors have been identified as independent predictors of complications following abdominal dermolipectomy. Among the most consistently reported are an elevated body mass index at the time of surgery, active smoking, diabetes mellitus, hypoalbuminemia, the volume of tissue resected, and the performance of concomitant surgical procedures. In addition, psychiatric disorders, a history of bariatric surgery, and large-volume liposuction may negatively influence postoperative outcomes. Identification and correction of these factors before surgery represent fundamental measures for improving outcomes and reducing morbidity (11,21).

FUNCTIONAL, AESTHETIC, AND QUALITY-OF-LIFE OUTCOMES

Functional Improvement Following Abdominal Dermolipectomy

Abdominal dermolipectomy provides significant functional benefits for patients following massive weight loss.



Resection of excess abdominal skin reduces friction between skin folds, facilitates personal hygiene, and decreases the frequency of intertriginous dermatitis and recurrent skin infections. In addition, many patients experience improved mobility, greater ease in performing physical activities, and relief from discomfort associated with the weight and displacement of the abdominal panniculus. These functional improvements contribute to a more active reintegration into daily activities and support the long-term maintenance of healthy lifestyle habits established after weight loss (4,22).

Aesthetic Outcomes and Patient Satisfaction

In addition to its functional benefits, abdominal dermolipectomy produces substantial improvements in body contour and patients' aesthetic perception of their appearance. Removal of redundant tissue helps restore more harmonious body proportions and enhances waistline and abdominal definition. Several studies have reported high levels of postoperative satisfaction, even among patients who experience minor complications. Positive perceptions of the surgical outcome are often maintained in the long term and represent one of the primary factors associated with acceptance of the scars resulting from the procedure (23,24).

Impact on Body Image

The presence of residual excess skin may limit patients' perception of success following massive weight loss. Many individuals continue to experience body image dissatisfaction due to persistent skin deformities, even after achieving substantial weight reduction. Abdominal dermolipectomy contributes to improved body image by reducing the discrepancy between achieved weight loss and perceived physical appearance. This improvement has been associated with significant increases in self-esteem, self-confidence, and participation in social and recreational activities (25,26).

Health-Related Quality of Life

Available evidence demonstrates that body contouring surgery following massive weight loss is associated with significant improvements across multiple domains of quality of life. Reported benefits include enhanced physical well-being, improved social functioning, reduced depressive symptoms, and increased overall satisfaction with the outcomes of the weight-loss process. Several validated instruments, including the BODY-Q and the SF-36, have documented sustained positive changes following abdominal dermolipectomy. These findings support the consideration of this procedure not only as an aesthetic intervention but also as a reconstructive strategy with meaningful functional and psychological benefits (5,27).

DISCUSSION

Main Findings of the Review

The present review demonstrates that abdominal dermolipectomy is a fundamental component in the management of patients who have experienced massive weight loss. Beyond its aesthetic benefits, the literature consistently reports significant improvements in functional, psychological, and social outcomes. Removal of excess abdominal skin contributes to a reduction in intertriginous dermatitis, facilitates personal hygiene, and improves mobility, thereby promoting

reintegration into daily activities. Furthermore, several studies have documented substantial improvements in body satisfaction and health-related quality of life following body contouring surgery (4,5).

Comparison with the Existing Literature

The findings identified in this review are consistent with those reported by numerous authors over the past two decades. Observational studies and systematic reviews have consistently demonstrated that patients undergoing body contouring procedures after bariatric surgery experience higher levels of body satisfaction and improved quality of life compared with those who do not receive surgical treatment for residual excess skin. Nevertheless, differences remain among studies regarding complication rates and the superiority of specific surgical techniques. While some authors advocate conventional abdominoplasty in selected cases, others consider Fleur-de-Lis abdominoplasty to provide superior outcomes in patients with complex abdominal deformities resulting from extreme weight loss (7,13).

Patient Selection and Preoperative Optimization

One of the most important aspects identified in the literature is the need for appropriate preoperative patient selection. Weight stabilization for at least six to twelve months, correction of nutritional deficiencies, and control of comorbidities such as diabetes mellitus and smoking have been shown to significantly reduce postoperative complication rates. Several authors recommend a multidisciplinary evaluation involving plastic surgeons, nutritionists, psychologists, and bariatric specialists to optimize clinical outcomes and minimize procedure-related risks (4,11).

Evolution of Surgical Techniques

Advances in surgical techniques have considerably improved the safety and outcomes of abdominal dermolipectomy. Strategies such as preservation of Scarpa's fascia, the use of progressive tension sutures, and modifications of the Fleur-de-Lis technique have contributed to reducing the incidence of seromas, wound dehiscence, and other wound-healing complications. Likewise, the development of circumferential body contouring procedures has expanded reconstructive options for patients with complex lower trunk deformities, providing a more comprehensive correction of body contour abnormalities (15,18).

Limitations of the Available Evidence

Despite the growing number of publications on post-bariatric body contouring surgery, the methodological quality of the available evidence remains limited. Most studies consist of retrospective case series, observational cohorts, or single-center analyses with relatively small sample sizes. In addition, considerable heterogeneity exists regarding patient selection criteria, surgical techniques, definitions of complications, and methods used to assess quality of life. These limitations hinder direct comparisons between studies and restrict the ability to establish definitive recommendations regarding the superiority of any specific surgical technique (28).

Future Perspectives



Future research should focus on the development of prospective multicenter studies using standardized methodologies to enable more accurate comparisons among different abdominal dermolipectomy techniques. Furthermore, the incorporation of validated patient-reported outcome measures, such as the BODY-Q, will be essential for objectively assessing patient satisfaction and quality-of-life outcomes. The integration of emerging surgical technologies and strategies aimed at minimizing complications may further optimize outcomes in this patient population.

CONCLUSIONS

Abdominal dermolipectomy plays a fundamental role in the treatment of patients with massive weight loss who present with residual excess skin. Available scientific evidence demonstrates that this procedure not only improves body contour but also provides important functional, psychological, and social benefits. The reduction of hygiene-related problems, recurrent dermatitis, and physical limitations, together with improvements in body image and quality of life, supports its consideration as a comprehensive reconstructive intervention rather than a purely aesthetic procedure.

Appropriate patient selection, weight stabilization, and optimization of clinical and nutritional conditions are essential elements for minimizing complications and maximizing surgical outcomes. Although challenges related to postoperative morbidity and the heterogeneity of the available evidence persist, recent technical advances have contributed to improving the safety and effectiveness of these procedures.

In conclusion, abdominal dermolipectomy represents a valuable therapeutic tool within the multidisciplinary management of patients following massive weight loss, promoting complete functional recovery and enhancing the long-term benefits achieved through weight reduction.

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Patient Consent for Publication of Images

Written informed consent was obtained from all patients for the publication of clinical and surgical images included in this article. All images were anonymized to protect patient privacy and confidentiality, in accordance with ethical standards and institutional requirements.

Ethical Considerations

All procedures performed were conducted in accordance with institutional ethical standards and the principles of the Declaration of Helsinki. Written informed consent was obtained from patients for the use of clinical information and images for scientific publication purposes.