International Surgery Journal
Carranza VA. Int Surg J. 2025 Dec;12(12):2256-2260
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: https://dx.doi.org/10.18203/2349-2902.isj20253735

Review Article

Lipoabdominoplasty complications: an update

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Received: 12 October 2025
Revised: 27 October 2025
Accepted: 28 October 2025

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ABSTRACT

Lipoabdominoplasty, which combines abdominoplasty with liposuction, has become a widely accepted technique for abdominal contouring. Although it carries a risk of complications, its overall safety profile is favorable compared to traditional abdominoplasty when performed with proper patient selection and technique. A review of the literature was conducted to summarize the most common complications associated with lipoabdominoplasty and outline evidence-based management strategies. The most frequently reported complications include seroma (6.5-8.8%), wound infection, minor dehiscence, hypertrophic scarring (up to 30% in post-bariatric patients), and fat necrosis. Major events such as full-thickness flap necrosis, deep venous thrombosis, and necrotizing fasciitis are rare but potentially life-threatening. Risk factors include elevated BMI, smoking, diabetes, and advanced age. Preventive techniques-such as preservation of Scarpa's fascia, progressive tension sutures, and careful hemostasis-reduce the incidence of seroma and wound complications. Management strategies include aspiration or drainage for seroma, culture-directed antibiotics for infection, and surgical debridement for necrotizing fasciitis when indicated. Lipoabdominoplasty is a safe and effective procedure when performed by experienced surgeons with careful patient optimization. Complications are generally minor and manageable with early recognition and targeted treatment. Adherence to refined surgical principles and evidence-based preventive measures minimizes morbidity and ensures optimal functional and aesthetic outcomes.

Keywords: Lipoabdominoplasty, Complications, Seroma, Wound infection, Necrotizing fasciitis, Scarpa's fascia preservation, Abdominoplasty outcomes

INTRODUCTION

Lipoabdominoplasty, which combines abdominoplasty with liposuction, is associated with a range of complications, though the overall risk profile is generally favorable compared to traditional abdominoplasty when performed with appropriate technique and patient selection.[1,2] The most frequently reported complications include seroma formation, wound infection (Figures 1 and 2), wound dehiscence, hypertrophic scarring, and fat necrosis.[1-5] Seroma rates in large series range from approximately 6.5% to 8.8%, while hypertrophic scarring is reported in up to 30% in certain populations, such as post-bariatric patients.[3-5] Superficial wound dehiscence and minor skin necrosis are less common, typically occurring in less than 5% of cases.[4-6]

Major complications such as full-thickness flap necrosis, deep venous thrombosis, and life-threatening infections (e. g., necrotizing fasciitis) are rare but have been documented.[1,7] Necrotizing fascitis (Figures 4-7), while extremely uncommon, can occur and requires prompt recognition and aggressive management.[7] Partial umbilical necrosis and epidermolysis are infrequent, with rates below 1% in large series.[4]

Figure 1: Localized infection after abdominoplasty.

Figure 2: Chronic seroma formation.

Figure 3: Partial necrosis of the umbilicus.

Risk factors for complications include elevated BMI, smoking, diabetes, and prior massive weight loss.[8,9] Higher BMI is consistently associated with increased rates of both minor and major complications, including seroma and wound disruption.[8,9] Smoking and obesity can double the risk of complications, and patients over 60 years of age have a markedly increased risk.[5,9]

Figure 4: Local infection of the abdominal scar site following abdominoplasty, requiring multiple lavages and additional drainage. (1 week postoperatively).

Figure 5: Partial necrosis of the lower abdominal flap.

Figure 6: Total extended necrosis of the lower and lateral abdominal flap.

Importantly, meta-analyses and large database studies indicate that lipoabdominoplasty does not increase the overall risk of complications compared to traditional abdominoplasty, and may in fact reduce the incidence of seroma and hematoma.[1,2] The volume of lipoaspirate does not appear to independently increase complication rates when performed by experienced surgeons.[2]

MANAGEMENT OF COMPLICATIONS

Effective management of complications following lipoabdominoplasty requires a complication-specific approach, integrating both preventive and therapeutic strategies supported by the medical literature.

For seroma, the most common complication, early recognition and intervention are critical. Aspiration under sterile conditions is the first-line treatment for clinically significant seromas, and repeated aspirations may be necessary. In cases of persistent or large seromas, placement of closed-suction drains or, less commonly, surgical exploration may be warranted. Preventive strategies such as preservation of Scarpa's fascia have demonstrated a significant reduction in seroma rates, as well as decreased risk of infection and hematoma.[10] The use of progressive tension sutures and sub-Scarpal fat preservation, while widely practiced, has not shown a significant difference in seroma rates compared to drains alone in meta-analyses.[11]

Wound infection and dehiscence should be managed with prompt wound assessment, culture-directed antibiotic therapy, and local wound care. In severe cases, surgical debridement may be required. Early intervention is particularly crucial in rare but severe infections such as necrotizing fasciitis, where aggressive surgical debridement, broad-spectrum antibiotics, and advanced wound management techniques (e. g., vacuum-assisted closure, local antibiotic delivery) are essential for favorable outcomes.[7]

Hematoma management involves evacuation, either by aspiration or surgical intervention, depending on the size and clinical impact. Preventive measures include meticulous intraoperative hemostasis and, in selected cases, the use of advanced energy devices such as LigaSure Impact™, which has been associated with reduced rates of wound infection and overall complications in high-risk populations.[12]

Fat necrosis and minor skin necrosis are typically managed conservatively with local wound care, but surgical excision may be necessary for larger or persistent areas. Wound dehiscence and delayed healing require optimization of local wound environment and, if indicated, surgical revision.[13]

General principles (Table 1) for minimizing and managing complications include strict adherence to aseptic technique, careful patient selection and optimization of comorbidities, and the use of refined surgical techniques that minimize dead space and preserve vascularity.[1,4,6,7] Early recognition and aggressive management of complications, including timely surgical intervention when indicated, are essential for optimal outcomes.[14,15]

Table 1: Common complications of lipoabdominoplasty and their management.

Complication	Incidence/ frequency	Main risk factors	Clinical presentation	Evidence-based management	Preventive strategies	Key references
Seroma	6-9% (most frequent)	High BMI, massive weight loss, wide undermining, absence of Scarpa's fascia preservation	Fluctuant fluid collection beneath flap	Serial sterile aspiration; persistent cases → closed-suction drainage or surgical exploration	Preserve Scarpa's fascia; use progressive tension sutures; meticulous hemostasis	Camargo et al, Ho et al and Xia et al[1,10,11]
Wound infection	3-6%	Diabetes, obesity, poor hygiene, hematoma/seroma	Erythema, pain, purulent discharge	Early wound culture; targeted antibiotics; surgical drainage or debridement if abscess	Perioperative antibiotics; aseptic technique; drain management	Camargo et al and Thomas et al[10,15]
Wound dehiscence	2-5%	Tension on closure, infection, smoking, obesity	Partial or total separation of incision	Local wound care; delayed secondary closure or surgical revision if large	Layered closure; tension-free suturing; progressive tension sutures	Beidas et al and Ribeiro et al[13,14]
Hematoma	1-3%	Coagulopathy, hypertension, poor hemostasis	Painful swelling, ecchymosis	Small → aspiration; large → surgical evacuation and hemostasis	Intraoperative hemostasis; drain placement; consider energy devices (LigaSure™)	Radunz et al and Camargo et al[10,12]
Fat necrosis/ Skin necrosis	<5%	Smoking, flap ischemia, excessive	Firm nodules, delayed	Local wound care; surgical excision if persistent	Preserve perforators; limit undermining; avoid over-thinning	Ribeiro et al and Beidas et al[13,14]

Continued.

Complication	Incidence/ frequency	Main risk factors	Clinical presentation	Evidence-based management	Preventive strategies	Key references
		liposuction, high BMI	healing, dark skin patches			
Hypertrophic scarring	Up to 30% (esp. post-bariatric)	Dark skin, tension, infection, delayed healing	Raised erythematous scar	Silicone sheeting, steroid injections, laser therapy	Proper closure technique, tension reduction, scar taping	Xia et al and Beidas et al[11,13]
Umbilical necrosis/ epidermolysis	<1%	Over-thinning of stalk, vascular compromise	Partial or full necrosis of umbilicus	Debridement; secondary reconstruction	Preserve umbilical stalk blood supply; limit cautery	Camargo et al and Ribeiro et al[10,14]
Necrotizing fasciitis	<0.1% (rare but lethal)	Diabetes, obesity, poor asepsis, hematoma	Rapidly spreading pain, systemic toxicity, necrosis	Immediate surgical debridement; broad-spectrum IV antibiotics; intensive care support	Strict asepsis; early recognition	Xu et al, Thomas et al[7,15]
Deep venous thrombosis/ PE	<1%	Obesity, smoking, long surgery, immobility	Leg pain, swelling, dyspnea (PE)	Anticoagulation; supportive care		

CONCLUSION

Lipoabdominoplasty, when performed using meticulous technique and appropriate patient selection, remains a safe and effective procedure with a complication profile comparable or even superior to traditional abdominoplasty. The majority of complications-such as seroma, wound infection, minor dehiscence, hypertrophic scarring, and fat necrosis-are minor and manageable with prompt recognition and evidence-based interventions. Serious complications, including flap or umbilical necrosis and necrotizing fasciitis, are rare but necessitate urgent, multidisciplinary management to prevent morbidity. Preventive strategies such as preservation of Scarpa's fascia, progressive tension sutures, and careful hemostasis are crucial to reduce risks. Ultimately, individualized risk assessment, optimization of comorbidities, and adherence to modern surgical principles ensure favorable aesthetic and functional outcomes in lipoabdominoplasty.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Carranza VA. Lipoabdominoplasty complications: an update. Int Surg J 2025;12:2256-60.