Is There a Limit? A Risk Assessment Model of Liposuction Volume on Complications In Lipoabdominoplasty

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Introduction: The combination of liposuction and abdominoplasty, termed lipoabdominoplasty, has become an increasingly common procedure. Nonetheless, lipoabdominoplasties have long been a subject of controversy due to concerns for thrombotic and fat embolic complications, and the potential for disruption of the vasculature of the abdominal wall flap.[1] Moreover, the topic of lipoaspirate volumes in combination with abdominoplasty has been a topic of intense regulatory concern with laws restricting liposuction volume to as little as 500 mL. Thus, this study aims to evaluate complication rates between abdominoplasty and lipoabdominoplasty, as well as to evaluate the effect of liposuction volumes in lipoabdominoplasty on complications.

Materials and Methods: Abdominoplasties and suction assisted lipectomies of the trunk were identified in the Tracking Operations and Outcomes for Plastic Surgeons (TOPS) database. Multivariate regression models were used to determine the effect of lipoabdominoplasty on complications compared to abdoinoplasty alone, as well as to determine the effect of liposuction volume on complications in lipoabdominoplasty.

Results: 11,191 patients met inclusion criteria with 9,638 (86.12%) patients undergoing lipoabdominoplasty and 1,553 (13.88%) patients undergoing abdominoplasty; and corresponding overall complication rates of 10.46% and 13.01%. The addition of liposuction to abdominoplasty procedures was independently associated with a reduced risk of both overall complications (p=0.046) and seroma (p=0.030) (Table 1).

Table 1. The Effect of Lipoabdominoplasty compared to Abdominoplasty On Complications

	Odds Ratio	95% Confidence Interval	*p*-value
Overall Complications†	0.80	0.65-0.99	0.046*
Surgical Complications†	0.80	0.64-1.00	0.054
Seroma	0.70	0.50-0.97	0.030*
Hematoma	0.76	0.40-1.47	0.415
Wound Disruption	1.02	0.73-1.42	0.909
Wound Infection	0.96	0.59-1.55	0.867
Medical Complications	1.47	0.66-3.28	0.343
Venous Thromboembolism	0.88	0.30-2.55	0.810
Unplanned Hospital Returns†	1.24	0.80-1.93	0.344

*Denotes statistical significance <0.05
Abdominoplasty alone serves as the reference group
†Patients may have more than one complication
Abdominoplasty alone group contained 1,553 patients and lipoabdominoplasty group contained 9,668

Of the 1,611 lipoabdominoplasty patients with a recorded aspirate volume, 140 (8.69%) patients experienced at least one post-operative complication. Given existing laws limiting liposuction volume to 500 or 1,000 mL in combination with abdominoplasty, each of these thresholds were evaluated with no effect on complications. Surprisingly, increasing liposuction volume was not independently associated with an increased risk of any complication (Table 2).

Table 2. The Effect of Increasing Liposuction Volume (L) on the Likelihood for Complications

	Odds Ratio	95% Confidence Interval	*p*-value
Overall Complications†	0.31	0.77-1.07	0.247
Surgical Complications†	0.90	0.76-1.07	0.237
Seroma	0.88	0.69-1.14	0.341
Hematoma	0.30	0.06-1.42	0.130
Wound Disruption	0.97	0.78-1.21	0.775
Wound Infection	0.84	0.53-1.32	0.450
Medical Complications	0.84	0.56-1.26	0.395
Unplanned Hospital Returns†	0.89	0.69-1.15	0.371

*Denotes statistical significance <0.05
†Patients may have more than one complication
Includes 1,612 patients with recorded lipoaspirate volumes

Conclusions: Lipoabdominoplasty is a safe procedure with a lower rate of complications than abdominoplasty alone. Current regulations governing liposuction volumes in lipoabdominoplasty are arbitrary and do not reflect valid thresholds for increased complications. In the hands of board certified plastic surgeons, lipoabdominoplasty is safe with no adverse effects from increasing liposuction volumes.

References:

1. Smith, L.F. and L.F. Smith, Jr., *Safely combining abdominoplasty with aggressive abdominal liposuction based on perforator vessels: technique and a review of 300 consecutive cases.* Plast Reconstr Surg, 2015. **135**(5): p. 1357-66.