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COMPARING POST-OPERATIVE OUTCOMES BETWEEN THE INVERTED-T AND HORIZONTAL LIPECTOMY TECHNIQUES

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Background

The abdominal lipectomy patient frequently experiences post-operative complications, but a direct comparison of the type of excision pattern and level of undermining in the obese, non-cosmetic patient and their complication rate, has not been studied. Post-operative complications and their risks are an important aspect of pre-operative planning by the plastic surgeon, and choosing the appropriate procedure for the surgical candidate is a crucial component of values-based patient-centered care.

Problem Statement

To compare complication rates of horizontal and inverted-T abdominal lipectomy patients stratified by BMI, as well as identify other risk factors to improve surgical decision making.

Methods

This was an IRB approved retrospective chart review. We identified patients who underwent an abdominal lipectomy at our institution from January 2015-July 2020. Those with concurrent hernia repair were excluded. Patients were classified into three groups:

- Horizontal lipectomy without umbilical translocation
- Horizontal lipectomy with translocation
- Inverted-T lipectomy with translocation

Demographics, operative details, and post-operative complications were collected for 1 year postoperatively. Bivariate analyses were conducted to determine factors associated with type of procedure and complications. Crude and stratum-specific (based on BMI) odds ratios (ORs) for complications were calculated for the inverted-T as compared to the horizontal group. BMI was classified based on CDC defined cutoffs.

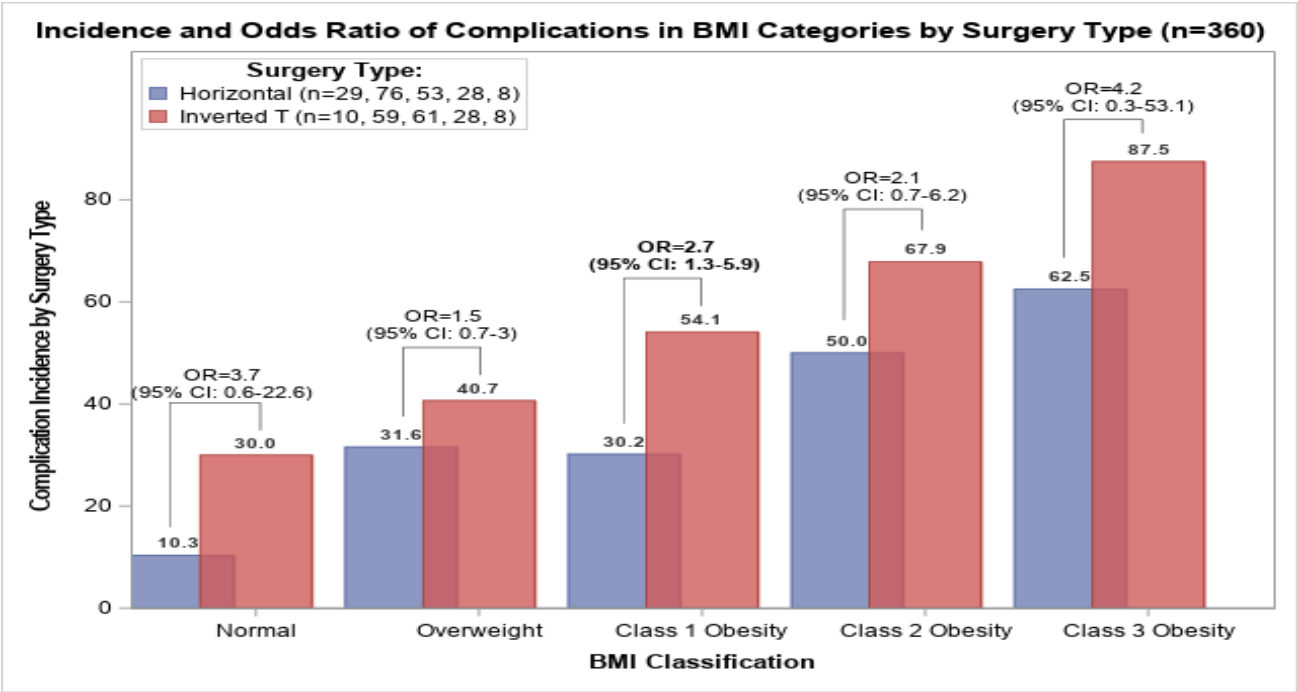
Results

362 patients (group 1=17, group 2=179, group 3=166) met inclusion criteria. Average age was 46.3, standard deviation (SD) of 12.2. Population was predominantly female (86.7%) and white (73.8%). 40.9% of patients experienced at least one complication. Age, gender, race, BMI, ASA, prior massive weight loss, prior bariatric surgery, LOS, procedure duration, payment source, and complication rate were associated with procedure. Specifically, wound disruption rates were highest in group 3 (39.8%) compared to group 2 (15.6%) and group 1 (23.5%) (p<0.0001). The odds of experiencing a complication were greater in the inverted-T group overall and within each stratum of BMI. However, only the crude OR (2.3 95%CI:1.5-3.6) and class 1 obesity OR (2.7 95%CI: 1.3-5.9) were statistically significant (p=0.0001 and 0.0110, respectively).

Other factors associated with complications included BMI, tobacco use, diabetes, ASA, prior massive weight loss, and LOS. The median BMI was higher in the complication compared to the non-complication group (31.6 vs 29, respectively, p<0.0001). When dividing the cohort based on BMI class (normal weight, overweight, class I, class II, and class III obesity), the incidence of wound disruption increased as did BMI (2.6%, 22.2%, 27.2%, 48.2%, and 56.3%, respectively, p<0.0001). Hospital re-admission rate was also higher in the class III obesity group (31.3%) compared to all others (p=0.0238).

Table 1. Demographics and Baseline Clinical Characteristics by Complications for LVHN (n=362)			
	No Complications (n=214)	Complications (n=148)	P-value
Age mean±SD	45.46±12.63	47.54±11.50	0.1107 ^a
Gender n(%)			0.2873 ^b
Male	25(11.68)	23(15.54)	
Female	189(88.32)	125(84.46)	
Race n(%)			0.7873 ^b
White	155(72.43)	112(75.68)	
Black	15(7.01)	9(6.08)	
Asian/Pacific Islander	-	-	
Other	44(20.56)	27(18.24)	
Height median(IQR)	1.63(1.58-1.70)	1.65(1.58-1.70)	0.2398 ^c
Weight median (IQR)	77.85(68.50-	86.65(75.25-	<0.0001 ^a
BMI median(IQR)	28.95(26.10-	31.60(28.35-	<0.0001 ^a
BMI Cat n(%)			<0.0001 ^b
Underweight	2(0.93)	0	
Normal	33(15.42)	6(4.05)	
Overweight	87(40.65)	48(32.43)	
Class 1 obesity	65(30.37)	49(33.11)	
Class 2 obesity	23(10.75)	33(22.30)	
Class 3 obesity	4(1.87)	12(8.11)	
BMI Cat Collapsed n(%)			<0.0001 ^d
Underweight	2(0.93)	0	
Normal	33(15.42)	6(4.05)	
Overweight	87(40.65)	48(32.43)	
Obese	92(42.99)	94(63.51)	
BMI Cat Binary n(%)			0.0001 ^b
Non-obese	122(57.01)	54(36.49)	
Obese	92(42.99)	94(63.51)	
Tobacco n(%)			0.0176 ^b
Non-user	143(66.82)	77(52.03)	
Former user	54(25.23)	55(37.16)	
Current user	17(7.94)	16(10.81)	
Diabetes n(%)	30(14.02)	34(22.97)	0.0281 ^b
ASA			<0.0001 ^d
Normal	7(3.27)	0	
Mild systemic	141(65.89)	71(47.97)	
Severe	66(30.84)	76(51.35)	
Constant life threat	0	1(0.68)	
Moribund	-	-	
Prior mass wt loss n(%)	140(65.42)	117(79.05)	0.0050 ^b
Prior bariatric surg n(%)	144(67.29)	113(76.35)	0.0618 ^b

Table 2. Outcomes/Complications by Surgery Type (n=362)					
	Entire Sample (n=362)	Horizontal w/o Translocation (n=17)	Horizontal w/ translocation (n=179)	Inverted T w/ Translocation (n=166)	P-value
Any comps n(%)	148(40.88)	6(35.29)	56(31.28)	86(51.81)	0.0005 ^a
Resource Utilization n(%)					
ER	60(16.57)	2(11.76)	29(16.20)	29(17.47)	0.8193 ^a
Hosp Adm	37(10.22)	1(5.88)	23(12.85)	13(7.83)	0.2555 ^a
OR Return	39(10.77)	2(11.76)	17(9.50)	20(12.05)	0.7403 ^a
Seroma n(%)	28(7.74)	1(5.88)	10(5.59)	17(10.24)	0.2509 ^a
Hematoma n(%)	27(7.46)	2(11.76)	14(7.82)	11(6.63)	0.7199 ^a
Wound Disruption n(%)	15(4.14)	0	5(2.79)	10(6.02)	0.2193 ^a
Superficial	98(27.07)	4(23.53)	28(15.64)	66(39.76)	<0.0001 ^a
Deep/Fascia	88(24.31)	4(23.53)	25(13.97)	59(35.54)	<0.0001 ^a
Superficial SSI n(%)	12(3.31)	0	4(2.23)	8(4.82)	0.3002 ^a
Deep SSI n(%)	47(12.98)	1(5.88)	18(10.06)	28(16.87)	0.1146 ^a
Flap Loss n(%)	11(3.04)	1(5.88)	5(2.79)	5(3.01)	0.7774 ^a
Partial	-	-	-	-	-
Total	-	-	-	-	-
Blood Transfusion (y/n) n(%)	10(2.76)	0	4(2.23)	6(3.61)	0.7114 ^b
Blood Transfusion amount n(%), (n=10)					1.0000 ^b
<4 Units	8(80)	0	3(75)	5(83.33)	
≥4 Units	2(20)	0	1(25)	1(16.67)	
Thromboembolic event n(%)	5(1.38)	0	1(0.56)	4(2.41)	0.3716 ^c
DVT	4(1.10)	0	1(0.56)	3(1.81)	0.4683 ^a
PE	3(0.83)	0	1(0.56)	2(1.20)	0.6627 ^a



Discussion

When comparing surgical technique, post-operative complications were observed more frequently in the Inverted-T lipectomy cohort, likely due to the increased undermining and devascularization of the abdominal tissue flaps and high tension T-point closure. When stratifying by BMI class, only Class I obesity had a statistically significant OR of developing a complication in the Inverted-T group compared to the Horizontal group. This was likely due to the small sample size when stratifying the data to this level.

Our findings also reiterate the importance of health optimization and prior to surgery for patients undergoing abdominal lipectomy, as smoking status and diabetes seem to correlate with a higher incidence of superficial wound dehiscence. Further multivariate analyses will be done to elucidate the incidence of post-operative complications in obese patients who also present with other risk factors.

Conclusions

Patients who present for abdominal lipectomy with a higher degree of obesity (BMI >30) experience more post-operative complications regardless of excision type. I. Careful thought should be given to these higher risk patient when deciding between surgical approaches, as complications were observed more frequently in inverted-T lipectomy cohort overall. Our work emphasizes the importance of patient history and appropriate counseling when deciding on operative approach with the patient.