

Retrospective Review of Obesity and Its Impact on Complications in Patients Undergoing Autologous Abdominal Free Flap for Breast Reconstruction

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BACKGROUND

Breast reconstruction with an autologous abdominal free flap allows a patient's own tissue to be used for reconstruction while also improving abdominal contour. However, these techniques are not without complications.¹ Some studies have shown that obesity increases recipient site and donor site complications,²⁻⁷ while others have reported similar complications between weight groups.⁸⁻¹¹ Current data reflects patient populations with an average BMI between 22 and 28^{2-9,11} except for one study including only obese patients.¹⁰ As we liberalized criteria at our institution for free flap reconstruction, we sought to identify the complications and potential associated co-morbidities that might influence the recommendations for autologous reconstruction inclusive of this higher risk population.

METHODS

We conducted an IRB-approved retrospective review of women undergoing muscle-sparing free transverse rectus abdominis muscle (msTRAM) or deep inferior epigastric perforator (DIEP) flap following mastectomy for breast cancer treatment or risk reduction from January 2013 through December 2018. The data collected on each subject included patient demographics, pertinent co-morbidities, treatment for breast cancer, and presence of complications following autologous abdominal free flap reconstruction. Total flap loss, partial flap loss, nipple loss, skin necrosis, hematoma, seroma, wound infection, delayed healing, fat necrosis, and hernia requiring return to OR were considered complications. R was used for statistical analyses. Chi-squared test or Fisher's exact test were used for bivariate comparisons of complications by obesity status.

Figure: Inclusion and Exclusion Criteria

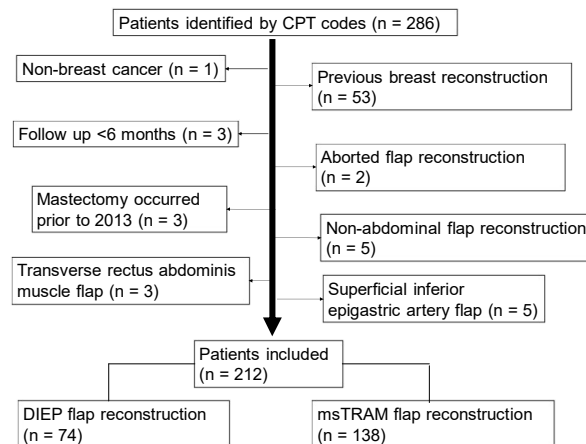


Table 1: Demographic Characteristics by Weight Category

	Normal weight (BMI 18.5-24.9 kg/m ²) n = 22	Overweight (BMI 25.0-29.9 kg/m ²) n = 82	Obese (BMI >30 kg/m ²) n = 108	p-value
Age (mean (SD))	50.09 (7.53)	50.04 (9.83)	48.77 (8.79)	0.592
Race: Non-white	1 (4.5)	8 (9.9)	4 (3.7)	0.212
BMI (mean (SD))	23.47 (1.12)	27.73 (1.42)	33.89 (3.08)	<0.001
Any smoking history	6 (27.3)	20 (24.4)	32 (29.6)	0.725
Smoking within the last year	3 (13.6)	10 (12.2)	12 (11.1)	0.936
Diagnosis of diabetes	2 (9.1)	4 (4.9)	9 (8.3)	0.607
Diagnosis of hypertension	5 (22.7)	14 (17.1)	24 (22.2)	0.652
Bilateral reconstruction	13 (59.1)	46 (56.1)	71 (65.7)	0.391
Delayed reconstruction	7 (31.8)	21 (25.6)	37 (34.3)	0.437

Table 2: Recipient Site Re-operative Complications After Autologous Abdominal Free Flap Breast Reconstruction

	Normal weight (BMI 18.5-24.9 kg/m ²) n = 22	Overweight (BMI 25.0-29.9 kg/m ²) n = 82	Obese (BMI >30 kg/m ²) n = 108	p-value
Partial flap loss	0 (0.0)	1 (1.2)	3 (2.8)	0.582
Total flap loss	0 (0.0)	2 (2.4)	12 (11.1)	0.024
Mastectomy flap skin necrosis	2 (9.1)	15 (18.3)	23 (21.3)	0.405
Hematoma	0 (0.0)	8 (9.8)	5 (4.6)	0.155
Seroma	0 (0.0)	0 (0.0)	0 (0.0)	NA
Infection	0 (0.0)	1 (2.2)	1 (1.5)	0.854
Delayed healing	0 (0.0)	3 (3.7)	6 (5.6)	0.472
Fat necrosis	4 (18.2)	10 (12.2)	24 (22.2)	0.203
Nipple loss*	1 (20.0)	8 (36.4)	6 (60.0)	0.315
Total- mean (SD)	0.41 (0.80)	0.73 (1.12)	1.02 (1.23)	0.043

*Denominator for nipple loss is patients with nipple-sparing mastectomy (5 normal weight patients, 22 overweight patients, and 10 obese patients)

RESULTS

We identified 212 patients who underwent autologous abdominal free flap for breast reconstruction (340 flaps). Average BMI was 30.4 kg/m² (range 21.1-45.7 kg/m²). 51.0% of patients were classified as obese. Total flap loss occurred in 3.8% of flaps (13 of 340 flaps). Total flap loss was statistically significantly increased in obese patients compared with normal weight and overweight patients (6.7% vs 0.0% vs. 1.6%, p = 0.035). 37 patients underwent 54 nipple-sparing mastectomies. 21 (38.8%) total nipples were lost, which was observed in 9/15 obese, 11/33 overweight, and 1/6 normal weight nipple-sparing mastectomies. Obese patients had a statistically significant increase in recipient site re-operative complications (1.02 vs. 0.41 vs. 0.73, p = 0.043) and overall re-operative complications (1.37 vs. 0.59 vs. 0.93, p = 0.014) compared with normal and overweight patients.

CONCLUSIONS

Using a cohort of patients with a greater than average BMI, we demonstrate that obesity status is associated with a higher likelihood of total flap loss and recipient site as well as overall re-operative complications. However, the overall flap loss rate remained relatively low suggesting that autologous reconstruction is a viable option in higher risk women desiring reconstruction. This data can be used to guide shared decision making regarding the best reconstruction options for patients based on their personal characteristics.

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