

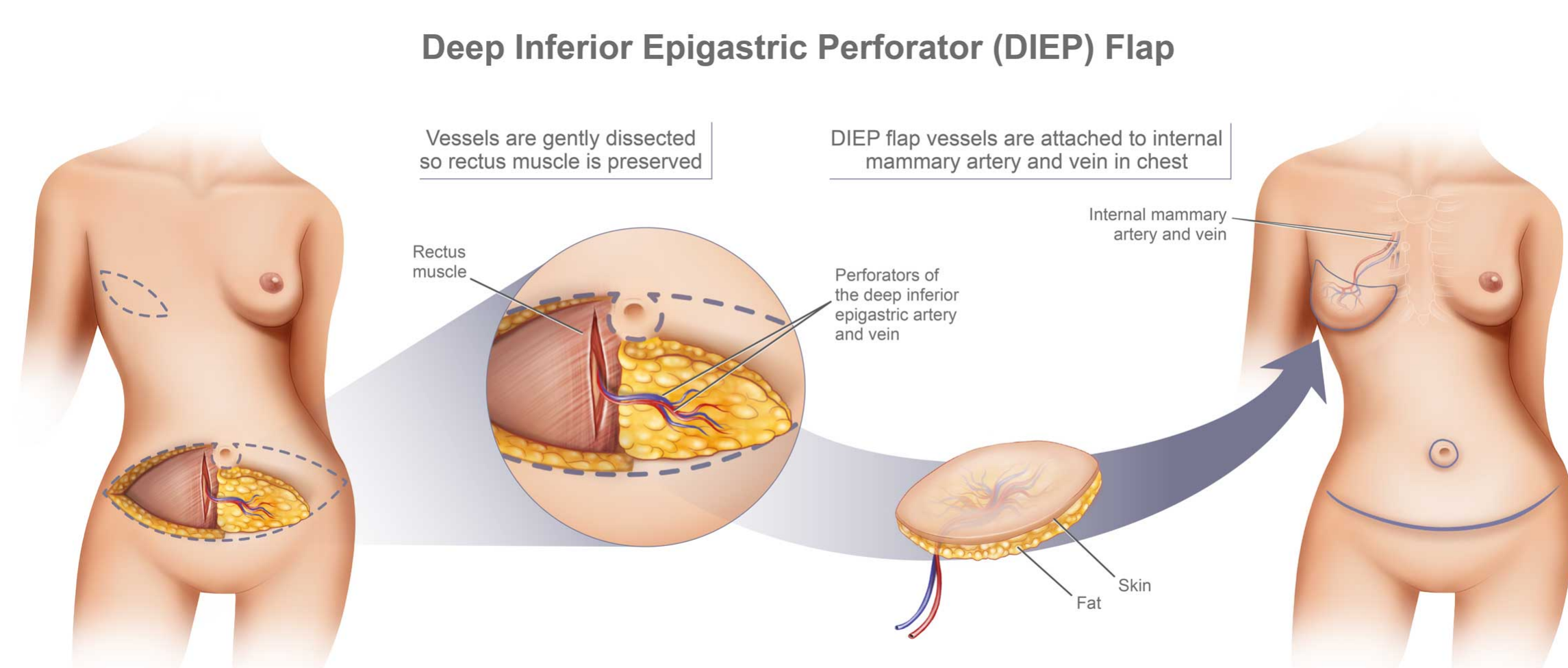
Equivalent Incidence of Fat Necrosis in Stacked Versus Single Free Flap Breast Reconstruction

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Introduction

- In breast reconstruction, autologous tissue transfer from the abdomen provides aesthetically pleasing breasts with a natural appearing shape and texture
- Two flaps can be used and “stacked” per breast in women who lack sufficient autologous tissue
- Fat necrosis is a common complication that can cause physical and psychological distress and contour deformities
- Goal: determine if rates of fat necrosis differ in single vs stacked flap reconstruction
- Hypothesize that rates will be lower in stacked flaps due to smaller volume of tissue perfused per anastomosis



<https://centerforbreastreconstruction.com/diep-flap-surgery-and-reconstruction-procedure/>

Methods

- Retrospective chart review of all free flap-based breast reconstruction from July 2014 – January 2019
- data collected from patient charts, operative notes, and pathology documents
 - Patient demographics, comorbidities, flap characteristics, and complications
- The primary outcome analyzed was the rate of operable fat necrosis in cases using single free flap reconstruction compared to those using stacked free flap reconstruction
- Associations between single and stacked flaps and other complications were also analyzed

Table 2. Reconstruction Data

Total Reconstructions	333
Total Flaps	460
Immediate Reconstruction	206 (61.8)
Single Flap Reconstruction	239 (71.8)
Multiple Flap Reconstruction	94 (28.3)
Total Fat Necrosis	64 (19.3)

Patient Demographics

Table 1. Patient Demographics

Patients	212
Age	52 (24-72)
BMI	28.9 (16-46)
Comorbidities	
HTN	61 (28.77)
HLD	36 (16.98)
DM	23 (10.85)
CAD	4 (1.89)
Tobacco	4 (1.89)

Operative Data

Table 3. Operative Data

Mean Operative Time (min)	445 (185-955)	p-value
Single Flap	226	<0.001
Multiple Flap	318	
Mean Flap Weight (g)	473.5	p-value
Single Flap	635	<0.0001
Multiple Flap	392	

Univariable Analysis

Table 4. Univariable Analysis for Fat Necrosis

Comorbidity		p-value
Age		0.108
Diabetes		0.082
HTN, HLD		***
CAD, tobacco		
Total Reconstruction Weight (900g vs 680g)		0.0186
Single vs Multiple Flap Reconstruction		0.878

Logistic Regression

Table 5. Logistic Regression for Fat Necrosis

Variable	Odds Ratio	p-value
Single vs Multiple Flaps	0.740	0.348
Obesity	2.08	0.015
Diabetes	1.944	0.180
HTN	0.777	0.481
Age	1.026	0.103

Discussion

- Patients that receive stacked flap reconstruction had smaller individual flaps compared to patients who receive single flap breast reconstruction.
- It is documented in the literature that as a flap weight increases, the risk of fat necrosis increases as well
 - Our study supports this theory and showed that the total weight of reconstruction per breast was significantly different ($p = 0.0186$) in reconstructions that developed fat necrosis compared to reconstructions that did not (900g vs 680g)
- However, there was no significant difference in the incidence of operable fat necrosis per breast between stacked (20.2%) and single flap reconstructions (19.1%)
- Limitation: lack of documentation of the location of fat necrosis; as such, fat necrosis was determined per reconstructed breast in lieu of per flap
 - If we were to infer that fat necrosis occurred in one flap per stacked flap reconstruction, then the incidence of operable fat necrosis per flap in stacked flap reconstructions would be 10.1% and would be significantly different ($p=0.0135$) when compared to single flap reconstructions

Conclusions

- No difference between the two groups when analyzing the data per breast reconstructed
- Obesity and larger flap reconstructions increased odds of developing fat necrosis
- Each stacked flap reconstruction had twice the number of flaps but had no significant difference in the incidence of fat necrosis, suggesting that the smaller the flap, the lesser the incidence of fat necrosis
- Future direction: investigate the incidence of fat necrosis per flap used for reconstruction

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