Risk Factors for Fat Necrosis Following Abdominally Based Autologous Breast Reconstruction

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Background

Fat necrosis is a common complication following autologous breast reconstruction, ranging from 7 to 15 %.[1]

- Fat necrosis mimics cancerous recurrence → increased patient anxiety and imaging/biopsies[2,3]
- Impacts aesthetic outcomes, increasing the need for revisional surgery

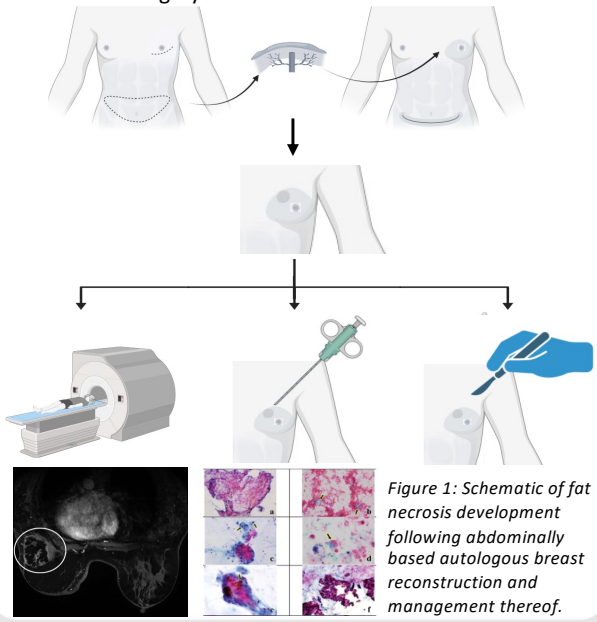


Figure 1: Schematic of fat necrosis development following abdominally based autologous breast reconstruction and management thereof.

Objective

Identify risk factors of fat necrosis to improve patient outcomes following autologous breast reconstruction.

Methods

- Retrospective review of autologous breast reconstruction with an abdominally based free flap from 2005-2024
- Patient demographics, surgical variables, and incidence/severity of fat necrosis collected
- Chi-square and independent t-test analysis to identify differences between groups
- Multivariate logistic regressions to assess predictors of fat necrosis

Results

N= 434 patients (708 breasts)

	No Fat Necrosis	Fat Necrosis	p value
Number of Breasts (%)	551 (78)	157 (22)	
Mean age (SD)	48 (10)	50 (10)	**0.03**
Mean BMI (SD)	28.8 (4.9)	30 (5.2)	**0.01**
Avg. Vein Coupler Size (mm, SD)	2.7 (.5)	2.8 (.4)	**0.01**
Bipedicled Flap Reconstruction (%)	14 (3)	15 (10)	**<.001**

Table 1: Demographics and surgical variables stratified by incidence of fat necrosis post-operatively.

Results Continued

Predictors of Any Fat Necrosis	OR (95% CI)	p value
Age	1.04 (1.01-1.06)	**0.001**
BMI	1.07 (1.03-1.11)	**0.002**
Coupler Size (mm)	1.62 (1.03-2.54)	**0.04**
Bipedicled Flap Reconstruction	6.74 (2.80-16.23)	**<.001**

Table 2: Multivariable logistic regression of predictors for any fat necrosis.

- Of those experiencing fat necrosis, 68 breasts (43%) underwent surgical management.
- No significant differences in demographics or surgical details were found between patients with fat necrosis that did versus did not warrant surgical management.

Conclusions

- Advanced age, higher BMI, the use of larger venous couplers, and bipedicled flap reconstruction were identified as **independent predictors of fat necrosis** development following autologous breast reconstruction.
- **Potential explanation**: these variables may be associated with larger flap size → increases the risk for fat necrosis.
- **Future steps**: further investigation into factors differentiating fat necrosis management (surgical correction versus conservative management).

References: **1.** Columbus. Fat Necrosis in autologous abdomen-based breast... : Plastic and reconstructive surgery. LWW. Accessed October 29, 2025. https://journals.lww.com/plasreconsurg/fulltext/2013/03000/fat_necrosis_in_autologous_abdomen_based_breast.3.aspx. ; **2.** 1. Vasei N, Shishegar A, Ghalkhani F, Darvishi M. Fat Necrosis in the breast: A systematic review of clinical - lipids in health and disease. BioMed Central. August 1, 2019. Accessed October 29, 2025. https://lipidworld.biomedcentral.com/articles/10.1186/s12944-019-1078-4. ; **3.** Hedegard W, Niell B, Specht M, Winograd J, Rafferty E. Breast Reconstruction With a Deep Inferior Epigastric Perforator Flap: Imaging Appearances of the Normal Flap and Common Complications. American Journal of Roentgenology. 2013;200(1):W75-W84. doi:10.2214/AJR.12.9270