From Neighborhood to Operating Room: Evaluating Impact of Area Deprivation on Autologous Tissue Breast Reconstruction Outcomes

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Background

- Breast reconstruction is a key part of breast cancer care, but disparities in access persist across racial, geographic, and socioeconomic groups.
- Social determinants of health, such as area deprivation, are known to affect medical and surgical outcomes.
- Area Deprivation Index (ADI) is a validated tool for assessing neighborhood-level socioeconomic disadvantage.
    - State ranking: 1-10 (1 = least disadvantaged)
    - National percentile: 1-100 (1 = least disadvantaged).

Purpose: Assess influence of ADI on post-operative outcomes following autologous breast reconstruction.

Methods

Design: Retrospective Review.

Population: Patients undergoing autologous breast reconstruction post-mastectomy for cancer or elevated risk.

Data collection: Baseline demographics in addition to clinical outcomes including surgical site infection, hematoma, seroma, operative revisions.

Area deprivation classification: Patient zip-code used to determine State-level ADI ranking using ADI tool; categorized into ”Low ADI” (1-5) and “High ADI” (6-10).

Analysis: Logistic regression models adjusted for comorbidities.

Results

Table 1. Baseline Demographics

	High ADI [a]	Low ADI [a]	p-Value
N	129	131	
Age (mean (SD))	51.22 (11.33)	51.35 (9.96)	0.924
BMI (mean (SD))	30.16 (5.66)	29.49 (6.27)	0.366
Comorbidities			
Type 2 Diabetes	14 (10.9)	9 (6.9)	0.362
Hypertension	36 (27.9)	32 (24.4)	0.619
CAD [b]	2 (1.6)	5 (3.8)	0.456
Vascular Disease	6 (4.7)	5 (3.8)	0.979
Autoimmune Disease	8 (6.2)	5 (3.8)	0.56
CHF [b]	2 (1.6)	5 (3.8)	0.456

*p < 0.05, statistically significant.; adjusted for comorbidities.
[B] ADI: Area Deprivation Index; high ADI = more disadvantaged.
[b] CAD: Coronary Artery Disease; CHF: Congestive Heart Failure.

Table 2. Logistic Regression Analysis of Surgical Complications

Outcome	Odds Ratio	P-Value *
Donor Site Seroma	1.36	0.64
Hematoma	0.34	0.07
Donor Site Infection	1.71	0.20
Donor Site Wound	0.84	0.53
Recipient Site Infection	0.56	0.13
Recipient Site Wound	0.91	0.74
Operative Revisions	1.50	0.11

* p < 0.05, statistically significant.; adjusted for comorbidities

There was no significant difference in baseline demographics. Logistic regression analysis showed no statistically significant associations between surgical complications and ADI ($p > 0.05$). Donor site seroma, infection, and operative revisions were associated with higher odds in the context of greater area deprivation, whereas hematoma, donor site wounds, and recipient site complications were associated with lower odds.

Discussion

- No significant difference in baseline demographics between ADI groups or surgical complications.
- Lack of statistical significance in impact of area deprivation on surgical outcomes may reflect institutional protocols aimed at standardizing care to achieve comparable outcomes despite varying socioeconomic status.
- Patterns seen in regression analysis highlights the need for ongoing attention to social determinants in surgical care planning.

Conclusions

- No statistically significant association between ADI and postoperative complications.
- Emphasizes the role of targeted institutional efforts to reduce disparities.
- Future research should continue exploring strategies to mitigate the impact of social determinants of surgical outcomes.

Reference

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