

Effect Of Neoadjuvant Chemotherapy On Autologous Breast Reconstruction: A Systematic Review

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Purpose

Evaluate complications with NACT in autologous breast reconstruction

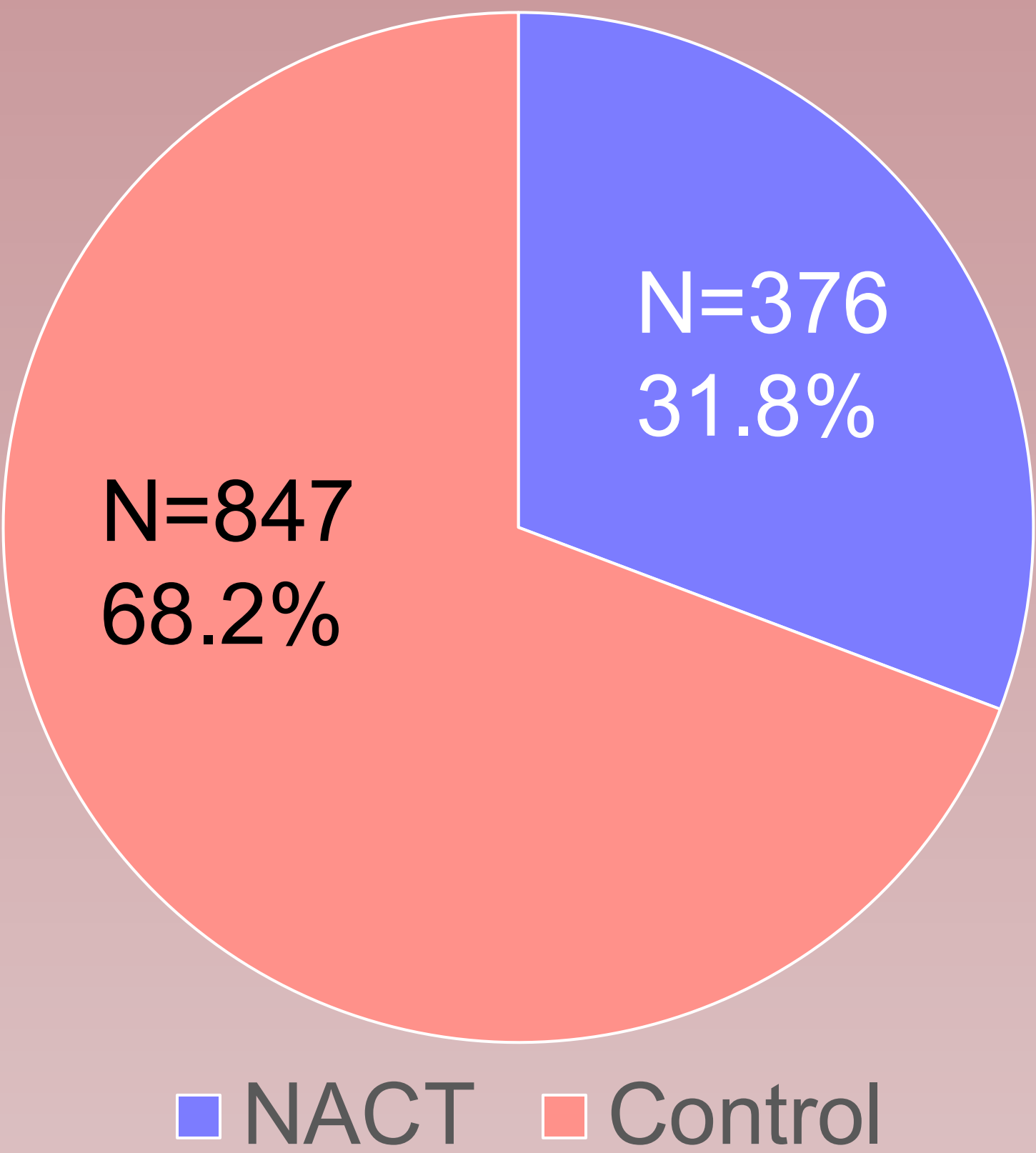
Methods

Systematic review : PubMed and Cochrane databases.

Included:

Evaluated post-operative complications of patients undergoing NACT followed by mastectomy and immediate autologous breast reconstruction

Total breasts, n=1,223



Comparison of Autologous Breast Reconstruction Complications by Type of Neoadjuvant Chemotherapy Regimen

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Background: Neoadjuvant chemotherapy before mastectomy helps reduce tumor burden and pathologic response in breast cancer. Limited evidence exists regarding how neoadjuvant chemotherapy impacts outcomes following microvascular breast reconstruction. This study examines the effects of neoadjuvant chemotherapy regimens and schedules on microvascular breast reconstruction complication rates and also assesses the effects of neoadjuvant chemotherapy on circulating immune cells related to wound healing.

Methods: Patients who underwent neoadjuvant chemotherapy and microvascular breast reconstruction at Yale New Haven Hospital between 2013 and 2018 were identified. Demographic variables, oncologic history, chemotherapy regimens, and complication profiles were collected. Chemotherapy regimens were stratified by inclusion of anthracycline and order of taxane administration. Chi-square, Fisher's exact, and *t* tests were used for univariate analysis. Multivariate binary logistic regression was used to control for covariates.

Results: One hundred patients met inclusion criteria. On multivariate analysis, the administration of taxane first in an anthracycline-containing chemotherapy sequence was associated with increased complications (OR, 3.521; *p* = 0.012), particularly fat necrosis (OR, 2.481; *p* = 0.040). In the logistic regression model evaluating the effect of the taxane-first regimen on complication rates, the area under the curve was estimated to be 0.760 (*p* < 0.0001), particularly fat necrosis 0.635 (*p* < 0.05). The dosage of chemotherapy, number of days between neoadjuvant chemotherapy completion and surgery, and number of circulating immune cells did not significantly differ among patients who experienced complications.

Conclusions: Taxane-first, anthracycline-containing neoadjuvant chemotherapy regimens were associated with increased complications, particularly fat necrosis. The increased postreconstruction complication risk must be weighed against the benefits of taxane-first regimens in improving tumor outcome. (*Plast. Reconstr. Surg.* 148: 1186, 2021.)

CLINICAL QUESTION / LEVEL OF EVIDENCE: Therapeutic, III.

PATIENT SAFETY

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THERAPEUTIC

Control	Age: 47.1 years ± 3.8	
NACT	Age: 44.8 years ± 3.0	
	NACT = 376	Control = 847
Complications, n breasts (%)		
Overall	110/376 (29.3)	145/420 (34.5)
Seroma	9/180 (5%)	17/485 (3.5%)
Hematoma	9/189 (4.8)	51/650 (7.8)
Infection	8/189 (4.2)	33/650 (5.1)
Reoperation	19/220 (8.6)	67/650 (10.3)
Partial flap loss	14/220 (6.4)	47/650 (7.2)
Total flap floss	3/220 (1.4)	12/650 (1.8)
Donor site complications	30/171 (17.5)	131/592 (22.1)

Conclusions

Complication rates are relatively similar.

When increased complications are seen, they are typically minor complications

Perforator dissection may be more challenging in NACT patients

The specific regimen and order of chemotherapy drugs may affect outcomes

Consideration of NACT as individual regimens especially with the advent of novel chemotherapeutics