

Analysis Comparing Breast Conserving Surgery Excision Volumes and Positive Margin Rates in Patients Undergoing Neoadjuvant versus Adjuvant Systemic Therapy



Janette Gomez D.O¹, Diane Thompson, MS¹, Kristin Krupa M.D², Kelly Krupa M.D², Angela Keleher M.D¹, Thomas Julian M.D¹

¹Division Breast Surgical Oncology, Department of Surgery, Allegheny Health Network, Pittsburgh, PA, USA
²Department of Surgery, Allegheny Health Network, Pittsburgh, PA, USA

Introduction

The effective use of neoadjuvant chemotherapy (NAC) in breast cancer treatment allows patients who previously required mastectomy to safely undergo breast conserving surgery (BCS). An ongoing interest to further de-escalate surgical intervention exists, however few studies examine the effects of NAC on BCS excision volumes, positive margin rates and whether there is a correlation between the two.

Objectives

Contribute to the growing field of research seeking to minimize surgery of the breast after NAC by examining BCS excision volumes and positive margin rates between patient undergoing NAC versus adjuvant systemic therapy

Methods

- An IRB-approved retrospective review of 349 tumors in 339 patients who underwent BCS for IBC at our institution was completed from January 2015 until March 2017.
- Tumor and specimen dimensions as well as margin status were collected from surgical pathology report.
- Tumor and specimen volumes were calculated. This was used to determine calculated resection ratio (SV/TV) for each tumor.
- Logistic regression analysis was performed to determine the effects of calculated tumor volume (cm³) and chemotherapy groups on the likelihood of positive margins.

Results

- 9% of patients underwent NAC and 91% adjuvant systemic therapy
- No statistically significant difference in therapies for tumor size, calculated tumor volume, specimen volume or SV/TV ratio (Table 1)
- No statistically significant association between chemotherapy groups and positive margins
- 16% of the lumpectomies in the NAC group demonstrated positive margins compared with 18% in the adjuvant systemic group
- Multivariable logistic regression model showed when NAC and calculated tumor volume were considered together, this significantly predicted a positive margin
- Calculated tumor volume was a statistically significant predictor (p = .001) however NAC alone was not
- The model was better at predicting for lumpectomies without positive margins than predicting for positive margins
- Odds ratio for calculated tumor volume indicates that increased calculated tumor volume was associated with increased odds of having positive margins

Variable	Neoadjuvant Chemotherapy	Adjuvant Systemic Therapy	p-value
	n = 31	n = 318	
Tumor Size (cm)			
Median (IQR)	1.5 (1.9)	1.1 (1.0)	.251
Tumor Volume (cm³)			
Median (IQR)	3.4 (13.7)	1.3 (4.6)	.251
Specimen Volume (cm³)			
Median (IQR)	55.0 (54.2)	58.6 (63.8)	.923
SV/TV Ratio			
Median (IQR)	22.2 (220.8)	43.5 (149.0)	.301

Conclusions

- Despite presumably larger pre-operative tumor size in the NAC group, BCS excision volumes and positive margin rates were not significantly different between the two groups, with NAC offering the advantage of a more aesthetic outcome post procedure.
- To confirm our findings, further studies are needed using an appropriately powered sample size.
- Also needed for evaluation are patient survival rates and breast cancer recurrence rates.

Disclosures & Acknowledgements

The authors have no financial disclosures or conflicts of interest to declare in regards to this project.

Janette Gomez, DO
Janette.Gomez@ahn.org