

# Predictors of re-excision and positive margins after lumpectomy

Cecilia Rossi BS, Tammy Ju MD, Andrew Sparks MS, Anita McSwain MD MPH, Christine Teal MD  
The George Washington University Hospital, Washington, DC

## Introduction

- Re-excision surgery to obtain negative margins is a persistent challenge following partial mastectomy.
- Re-excision is associated with increased rates of local tumor recurrence, poor cosmetic outcomes, delayed adjuvant therapy, and more frequent wound complications.
- The purpose of our study is to determine preoperative risk factors associated with re-excision for patients after partial mastectomy.

## Methods

- A retrospective review was performed from July 2015 - April 2019 at a single institution breast care center identifying adult patients who underwent partial mastectomy for a new diagnosis of invasive breast cancer (IDC) or ductal carcinoma in situ (DCIS).
- Patients with a history of neoadjuvant chemotherapy, radiation therapy, or previous breast surgery were excluded.
- Univariate analysis was used to identify patient and tumor variables associated with re-excision as the primary outcome.
- Multivariable logistic regression analysis was performed to identify independent factors associated with re-excision.

**Table 1: Univariate analysis of variables associated with higher re-excision rates**

Variable	No Re-Excision (n=184)	Re-Excision (n=116)	P
Postop Dx			
DCIS only	31 (16.9)	34 (29.3)	<0.01
IDC only	27 (14.7)	4 (3.5)	
IDC + DCIS	86 (46.7)	62 (53.5)	
ILC	13 (7.1)	10 (8.6)	
IMC	2 (1.1)	-	
None	16 (8.7)	-	
Other	9 (4.9)	6 (5.2)	
HER2 positive	9 (4.9)	13 (11.2)	<0.05
Tumor size by Pathology	1.4 ± 1.0 1.1 (0.7, 1.7)	1.7 ± 1.2 1.3 (0.9, 2.2)	<0.05
Tumor Grade			
I	57 (31.0)	22 (19.0)	<0.05
II	78 (42.4)	63 (54.3)	
III	43 (23.4)	30 (25.9)	
Unknown/NA	6 (3.3)	1 (0.9)	

Reported as # (%), mean ± standard deviation, and/or median (interquartile range).

**Table 2: Multivariate analysis**

Variable	Adjusted OR (95% CI)	P
Postop dx of DCIS only	8.53 (2.44-29.88)	<0.01
Postop dx of IDC + DCIS	4.91 (1.6-15.10)	<0.01

## Results

- 300 patients met inclusion criteria. 264 (88%) underwent radioactive seed localization of their tumors, 32 (10.7%) had palpable lesions, and 4 (1.3%) underwent wire localization.
- Of the 300 patients, 116 required re-excision for positive margins (38.7%).
- On univariate analysis, the presence of DCIS, HER2 positivity, larger tumor size, and higher tumor grade were significantly associated with higher rates of re-excision ( $p < 0.05$ ). (Table 1)
- On multivariable analysis, patients who had a final pathology consistent with DCIS had an 8.5 times higher odds of re-excision (95% CI: 2.4–29.9;  $p < 0.01$ ) and those with IDC and DCIS on final pathology had a 4.9 times higher odds of re-excision (95% CI: 1.6–15.1;  $p < 0.01$ ) compared to those with only IDC. (Table 2)

## Conclusions

- Patients with DCIS with or without IDC on final pathology are more likely to require re-excision for positive margins following partial mastectomy.
- Other patient characteristics, such as smoking, obesity, dense breasts and tumor characteristics, such as grade, stage, size, and tumor markers, were not significantly associated with an increased risk for re-excision.
- These findings suggest that for patients with DCIS and DCIS with IDC, additional shave margins should be considered at the time of initial surgery to prevent the need for further re-excision.