

Did the SSO-ASTRO Margin Guidelines Change Re-Excision Rates Among Women Diagnosed with Stage I and II Breast Cancer in an NSABP Center?



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INTRODUCTION

- In 2014, SSO-ASTRO established margin guidelines: “no ink on tumour”¹
- This has been the NSABP recommendation for decades²

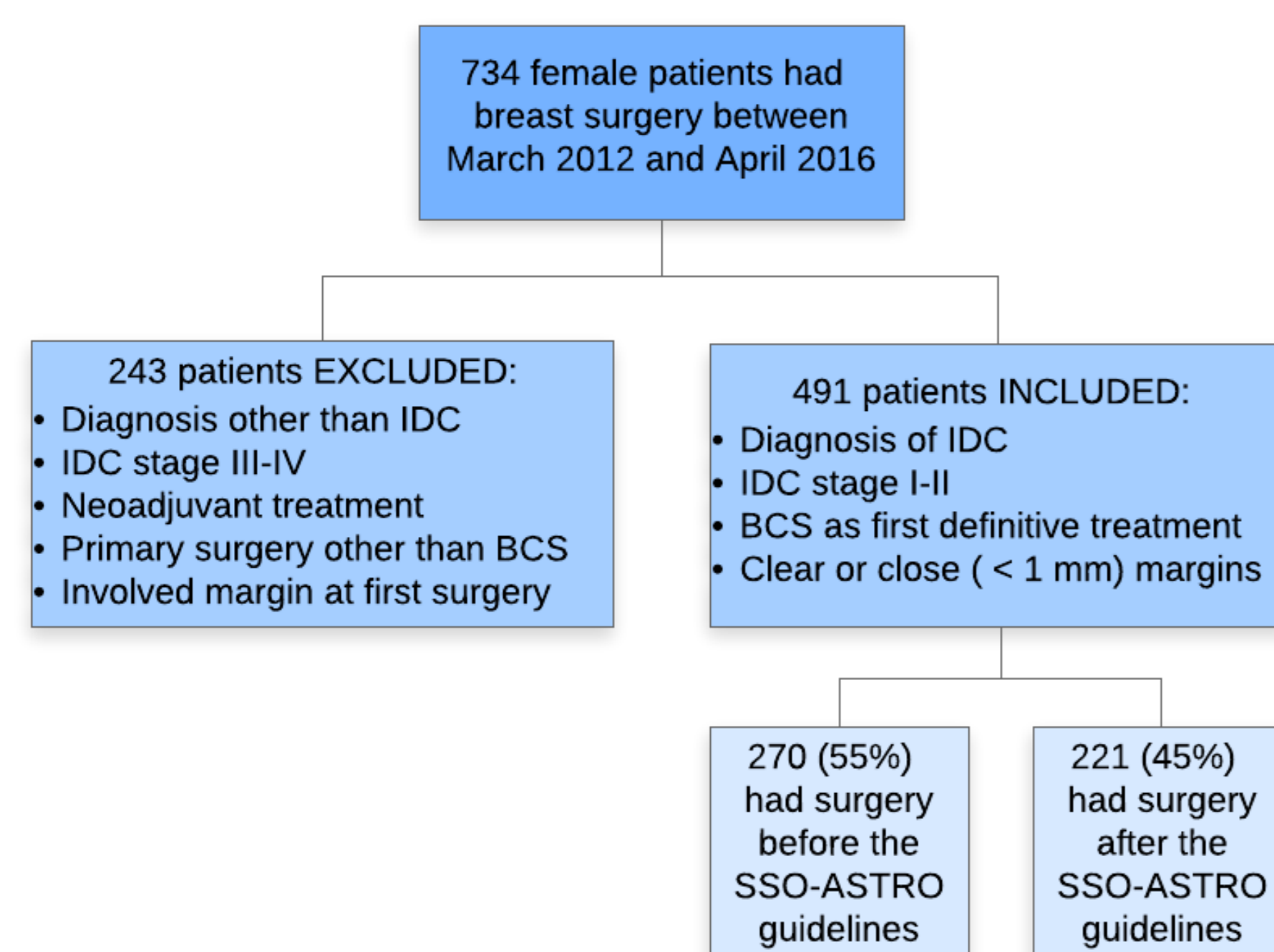
OBJECTIVE

Determine the effect of the SSO-ASTRO margin guidelines on re-excision rates in an NSABP center

METHODS

- Retrospective analysis of a breast cancer surgery database
- Stage I & II invasive ductal carcinoma (IDC)
- Breast conserving surgery (BCS) as the first definitive treatment at a single tertiary care institution
- Between March 2012 and April 2016
- Two groups: before and after guideline implementation
- Primary outcome:** revision of margins

Figure 1 – Data collection process



RESULTS

- Close margins (< 1 mm) were similar in each group (11.9% before vs. 10.4% after ($p=0.61$))
- The overall re-excision rate did not differ between groups (8.5% to 9.5%, $p=0.70$) and guideline implementation was not associated with re-excision in the cohort (OR 1.17; 95% CI (0.58-2.37), $p=0.66$)
- Younger age, presence of DCIS and close margins were independent predictors of re-excision
- In the subgroup of patients with close margins, guideline implementation was also not independently associated with re-excision (OR 0.79; 95% CI (0.22-2.74), $p=0.71$)

Table 1 – Cohort characteristics
Data presented as n(%) unless otherwise specified

Variables	Overall (n=491)	Before guidelines (n=270)	After guidelines (n=221)	P-value
Mean age (SD), years	62.3 (12.4)	61.8 (13.0)	63.0 (11.5)	0.32
Pre-op mammogram				
Calcifications	191(40.6)	96 (37.7)	95(44.0)	0.16
Mass	273 (58.0)	148 (58.0)	125 (57.9)	0.97
Asymmetry	109 (23.1)	51 (20.0)	58 (26.9)	0.08
Distortion	88 (18.7)	46 (18.0)	42 (19.4)	0.70
Pre-op ultrasound	n=479	n=260	n=219	
Mass	418 (87.3)	230 (88.5)	188 (85.8)	0.39
Distortion	32 (6.7)	14 (5.4)	18 (8.3)	0.21
Preop. MRI	243 (50.4)	139 (53.3)	104 (47.1)	0.18
Needle localization	365 (74.5)	205 (76.2)	160 (72.4)	0.336
Lymph node procedure				
None	93 (18.9)	63 (23.3)	30 (13.6)	<0.00*
SLNB	368 (75.0)	182 (67.4)	186 (84.2)	
ALND	30 (6.1)	25 (9.3)	5 (2.3)	

Table 2 – Pathological characteristics and surgical outcomes
Data presented as n(%) unless otherwise specified

Variables	Overall (n=491)	Before guidelines (n=270)	After guidelines (n=221)	p-value
Tumor stage				
I	351 (71.5)	200 (74.1)	151 (68.3)	0.16
II	140 (28.5)	70 (25.9)	70 (31.7)	
Mean tumor size (SD), cm	1.45 (0.88)	1.39 (0.91)	1.52 (0.83)	0.10
Tumor grade				
1/3	134 (27.5)	86 (32.1)	48 (21.9)	0.02*
2/3	254 (52.2)	137 (51.1)	117 (53.4)	
3/3	99 (20.33)	45 (16.8)	54 (24.7)	
ER +	447 (91.0)	243 (90.0)	204 (92.3)	0.37
PR +	410 (83.5)	227 (84.1)	183 (82.8)	0.71
Her2 +	213 (43.5)	130 (48.3)	83 (37.6)	0.02*
Molecular subtype				
Luminal A	417 (84.9)	226 (83.7)	191 (86.4)	0.44
Luminal B	35 (7.1)	18 (6.7)	17 (7.7)	
Her2 enriched	8 (1.6)	6 (2.2)	2 (0.9)	
Triple negative	31 (6.3)	20 (7.4)	11 (5.0)	
Presence of DCIS	385 (78.4)	206 (76.3)	179 (81.0)	0.21
Mean number of LN (SD)				
Total	2.9 (3.4)	3.2 (4.0)	2.5 (2.5)	0.02*
Positive	0.2 (0.6)	0.2 (0.5)	0.2 (0.6)	0.89
Intra-op gross margin				
Clear	341 (72.9)	185 (73.1)	156 (72.6)	0.503
Close (< 1 mm)	123 (26.3)	67 (26.5)	56 (26.1)	
Involved	4 (0.9)	1 (0.4)	3 (1.4)	
Intra-op gross revised margin	n=219	n=116	n=103	
Clear	207 (94.5)	114 (98.3)	93 (90.3)	0.01*
Close (< 1 mm)	11 (5.0)	1 (0.9)	10 (9.7)	
Involved	1 (0.5)	1 (0.9)	0	
Final IDC margins				
Positive (< 1 mm)	55 (11.2)	32 (11.9)	23 (10.4)	0.61
Negative	436 (88.8)	238 (88.2)	198 (89.6)	
Final DCIS margins				
Clear	274 (72.1)	151 (74.4)	123 (69.5)	0.11
Close (< 2 mm)	103 (27.1)	49 (24.1)	54 (30.5)	
Involved	3 (0.8)	3 (1.5)	0	
Re-excision				
Partial mastectomy	44 (9.0)	23 (8.5)	21 (9.5)	0.70
Total mastectomy	33 (6.7)	21 (7.8)	12 (5.4)	
Total mastectomy	11 (2.2)	2 (0.7)	9 (4.1)	

Table 3 – Multivariate regression analysis for re-excision

Variables	Overall (n=491)		Close margins (n=55)	
	OR (95%CI)	p-value	OR (95%CI)	p-value
Guidelines implementation	1.17 (0.58-2.37)	0.66	0.79 (0.22-2.74)	0.71
Age, per additional year	0.96 (0.93-0.99)	0.01*	0.96 (0.92-1.00)	0.08
Molecular subtypes				
Luminal A	Ref.	Ref.	-	-
Luminal B	3.38 (1.30-8.77)	0.01*	-	-
Her-2 enriched	6.4 (1.13-36.2)	0.04*	-	-
Triple negative	0.91 (0.11-7.27)	0.93	-	-
Presence of DCIS	14.31 (1.85-110.72)	0.01*	9.71 (1.11-85.10)	0.04*
Close margins (<1mm) on final pathology	10.66 (4.87-23.33)	<0.00*	-	-

DISCUSSION

- Publication of SSO-ASTRO guidelines **did not** change re-excision rate in a NSABP center.
- Independent predictors of re-excision were:
 - Younger age
 - Presence of DCIS
 - Close margins (<1 mm)
- Possible explanations:**
 - At an NSABP center, margins of “no ink on tumor” were likely adopted following the NSABP-06 recommendations
 - Physicians still use individual patient assessments to advise for re-excision in younger patients, those with margins <1 mm and those with DCIS
- Clinical implications:** Centers that have adopted “no ink on tumor” prior to the SSO-ASTRO guidelines will likely not be affected by their recommendations
- Study strengths:** Large sample size allowing for accuracy and statistical power
- Study limitations:** Relatively short study period and retrospective design. A larger RCT evaluating the long-term effects of the adoption of these guidelines will better our understanding of their impact on re-excision rates.

CONCLUSION

- In an NSABP center, the SSO-ASTRO margin guidelines did not significantly impact re-excision rates.
- This may be attributed to the institution’s early adoption of the NSABP-06 recommendations on breast margins.

REFERENCES

- Moran MS, *et al.* ASTRO consensus guideline on margins for breast-conserving surgery with whole-breast irradiation in stages I and II invasive breast cancer. *IJROBP*. 2014.
- Fisher B, *et al.* Five-year results of a randomized clinical trial comparing total mastectomy and segmental mastectomy with or without radiation in the treatment of breast cancer. *NEJM*. 1985.