De-escalation of sentinel node biopsy beyond the Choosing Wisely guidelines

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Introduction

The Choosing Wisely (CW) campaign issued by the Society of Surgical Oncology recommends omitting sentinel lymph node biopsy (SLNB) in women over age 70 with early stage hormone receptor (HR) positive, HER2 negative breast cancer. The publication of the SOUND and INSEMA trials recently expanded indications for considering the omission of SLNB in younger women.

Hypothesis: The rate of omission of SLNB has increased over time in setting of the publication of the SOUND and INSEMA trials.

Primary objective: To define predictors of omitting SLNB and to determine the incidence of patients beyond the CW population having omission of SLNB.

Methods

We utilized the National Cancer Database (NCDB) to query between 2018-2021 for patients with cT1 or cT2 invasive breast cancer treated with breast surgery without use of neoadjuvant therapy. We recorded age, ethnicity, race, Charlson-Deyo Score, tumor histology, grade, biomarkers, total number of clinical and pathologic positive nodes, surgical procedure types, urban/rural setting, and academic/community settings for analysis.

Statistical analysis: Univariate analysis with the Pearson's Chi-squared test and multivariable analysis with logistic regression were performed to identify factors associated with omission of SLNB. Univariate analysis was also performed to identify variables associated with rates of breast conserving surgery (BCS) versus mastectomy

Exclusion Criteria: Patients with pathologic stage 0 disease, metastatic disease (clinical or pathologic), unknown stage or hormone status, incomplete lymph node data, who underwent modified radical or bilateral prophylactic mastectomy, and histology types other than invasive ductal, lobular, or mixed ductal-lobular carcinoma were excluded.

Results

Overall, 433,737 patients met study inclusion criteria with 313,201 (72%) treated with BCS while 120,536 (28%) were treated with mastectomy. In our cohort, 133,169 (31%) were over age 70 and 368,228 (86%) were HR+/HER2-. Only 4219 patients (1%) had omission of SLNB, of which 3599 (88%) were HR+/HER2-, 247 (6.0%) were HER2+, and 238 (5.8%) were triple negative.

Omission of axillary surgery did not increase with time and ranged between 15.6-43.1% between 2018-2021 (Table 2A and Figure 1A). Omission of SLNB did not increase over time with rates ranging from 0.06%-1.6% of the overall study population by year (Table 2B and Figure 1B). On multivariable analysis, predictors of omitting SLNB were age ≥70 (OR 1.51, CI 0.86-0.97), non-zero Charlson-Deyo Score (p<0.001), HR+/HER2- (OR 1.09, CI 1.06-1.13), year of diagnosis 2021 (OR 1.56, HR 1.52-1.6), non-lobular histology (p<0.001), academic setting (p<0.001), and metropolitan setting (p<0.001). White race was associated with omitting SLNB but was only marginally significant on univariate analysis (p=0.047). Type of surgery as BCS was associated with omission of SLNB (p<0.001) on univariate analysis only. Most patients who had omission of SLNB had cT1 disease (n=3409 or 83% of patients having no nodal procedure, p<0.001). Of patients having no SLNB, 98% were cN0, 2% were cN1, 0.2% were cN2 and <0.1% were cN3.

Table 1. Patient Characteristics and Surgical Management (N = 433,737)

Characteristic	n (%)
Surgery type	
Breast-conserving surgery (BCS)	313,201 (72%)
Mastectomy	120,536 (28%)
Age ≥70 years	133,169 (31%)
Subtype	
HR+/HER2−	368,228 (86%)
HER2+	31,802 (7.4%)
Triple-negative	27,131 (6.4%)
Charlson-Deyo score >0	80,747 (19%)
Academic treatment center	122,789 (28%)
Metropolitan residence	361,256 (85%)
Omission of SLNB	4,219 (1.0%)
Clinical stage (no SLNB)	
cT1	3,409 (83%)
cN0	4,124 (98%)

Table 2A. Rates of Axillary Surgery Performed and Omitted between 2018-2021

	ALND/SLNB N= 428,774 (%)	ALND/SLNB Omission N = 4,219 (%)
2018	108792 (25.4)	1818 (43.1)
2019	112713 (26.3)	810 (19.2)
2020	98511 (23)	659 (15.6)
2021	108758 (25.4)	932 (22.1)

Table 2B. Rates of Axillary Surgery Omitted by population year (2018-2021)

	Overall Cases N	ALND/SLNB Omission N (%)
2018	111043	1818 (1.6)
2019	113649	810 (0.7)
2020	99273	659 (0.7)
2021	109772	932 (0.8)

Figure 2: Multivariate Predictors of SLNB Omission

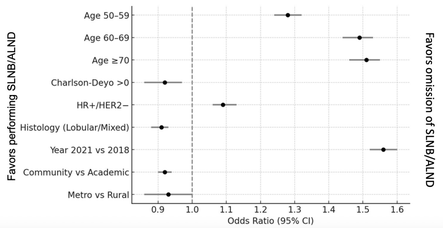


Figure 1A. Rates of Axillary Surgery Performed and Omitted between 2018-2021

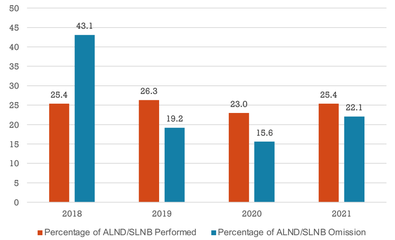
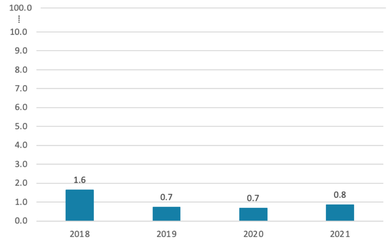


Figure 1B. Rates of Axillary Surgery Performed and Omitted by population year (2018-2021)



Discussion

In this large NCDB cohort of 433,737 patients with early-stage invasive breast cancer (2018–2021), sentinel lymph node biopsy (SLNB) omission remained uncommon despite the 2016 Society of Surgical Oncology Choosing Wisely recommendation to consider omission in women ≥70 years with HR+/HER2– disease. Only 1% of patients had SLNB omitted, and this rate did not increase over time—even though 31% of patients met the age criterion and 86% had HR+/HER2– tumors.

Predictors of SLNB Omission

Multivariable analysis revealed several significant predictors. Women age >70 were associated with higher odds of SLNB omission (OR 1.51), as expected with the Choosing Wisely target group. HR+/HER2– subtype (OR 1.09) and higher Charlson–Deyo score were linked to omission, consistent with lower-risk biology and greater comorbidity burden influencing surgical decision-making. Treatment at academic and metropolitan centers also correlated with omission.

Conclusions

Rates of the omission of SLNB did not increase over time from 2018-2021 despite the publication of the Choosing Wisely recommendations in 2016 to consider omitting SLNB in patients over age 70 with HR positive, HER2 negative early-stage breast cancer. Only 1% of breast cancer patients had omission of SLNB despite 31% of the cohort being over age 70. Age >70, non-zero Charlson-Deyo Score, HR+/HER2- status, year of diagnosis 2021, non-lobular histology, academic and metropolitan setting were associated with omission of SLNB. These data provide estimates that may be used in the future to compare the impact of the SOUND and INSEMA trial on rates of omission of SLNB based on prospective randomized controlled trials that expand criteria for omission of SLNB beyond the Choosing Wisely guidelines.

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