Long-term survival following sentinel lymph node biopsy in clinically node negative breast cancer patients treated with primary surgery or neoadjuvant chemotherapy

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Introduction

•Sentinel lymph node biopsy (SLNB) has replaced axillary lymph node dissection (ALND) for axillary staging in patients with clinically node negative (cN0) breast cancer.

•Regional recurrences are very rare and much less than what would have been expected based on false negative rates associated with SLNB.

•Recurrence rates and associated risk factors may be different dependent on chemotherapy sequencing.

Study Goals

- To compare long-term survival following sentinel lymph node biopsy in clinically node negative breast cancer patients treated with primary surgery or neoadjuvant chemotherapy.

Methods

•Patients with invasive breast cancer and a clinically negative axilla treated at the MD Anderson Cancer Center from 1993 to 2014 were included. All included patients underwent SLNB only without completion ALND.

•Subgroups were created dependent on chemotherapy sequencing (surgery first vs. neoadjuvant chemotherapy).

• Local-regional (LRR) and distant recurrence rates were documented for each patient as well as recurrence-free and disease-specific survival. Survival was compared between the two groups.

• SLN status and other relevant clinical and pathologic factors were evaluated for their association with recurrence.

• Kaplan-Meier estimates of LRR-free survival and univariable and multivariable analysis of factors associated with LRR were performed.

CONSORT Diagram

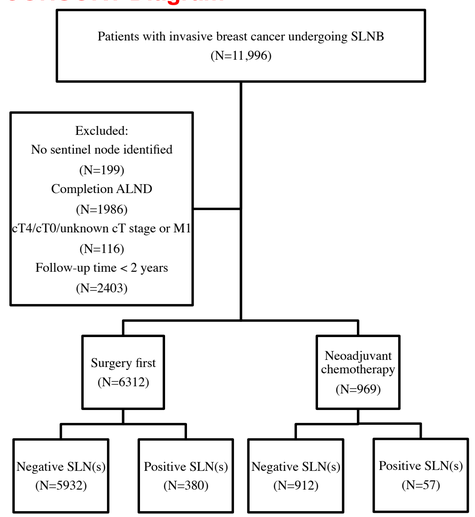


Table 1. Clinicopathologic features

Factor	Number of patients (%) N=7281	Surgery first, N (%) N=6312	Neoadjuvant chemotherapy, N (%) N=969	P value
Age, years				<0.0001*
Mean	56.9	57.8	51.2	
Median (range)	56 (21-92)	57 (21-92)	51 (26-79)	
Tumor subtype				<0.0001^
Hormone Receptor (HR) positive	4526 (73.5)	4096 (78.2)	430 (46.8)	
HR and HER2 positive	522 (8.5)	376 (7.2)	146 (15.9)	
HER2 positive	286 (4.6)	208 (4.0)	78 (8.5)	
Triple Negative	823 (13.4)	558 (10.6)	265 (28.8)	
Unknown	1124			
Pathologic tumor size, cm				<0.0001*
Mean	1.8	1.8	1.6	
Median (range)	1.3 (0-22)	1.3 (0-19)	1.1 (0-22)	
Positive SLN				0.9
Yes	437 (6.0)	380 (6.0)	57 (5.9)	
No	6844 (94.0)	5932 (94.0)	912 (94.1)	
Number of positive SLNs				
Median	0	0	0	
Mean (range)	0.07 (0-6)	0.07 (0-6)	0.07 (0-4)	

Table 2. Multivariable analysis of factors associated with LRR

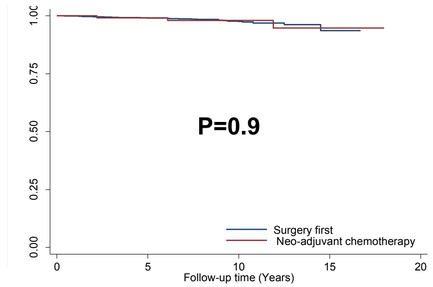
	Surgery first					Neoadjuvant Chemotherapy				
Factor	Hazard Ratio	Standard Error	P	95% Confidence Interval		Hazard Ratio	Standard Error	P	95% Confidence Interval	
Age <50 y	1.6	0.2	0.003	1.2	2.2					
Negative PR	1.6	0.3	0.01	1.1	2.3	2.1	0.7	0.04	1.02	4.2
Pathologic tumor size >2cm	1.5	0.2	0.01	1.1	2.1	2.0	0.7	0.04	1.02	4.1
ER positive without endocrine therapy	1.7	0.4	0.01	1.1	2.6					
ER negative	2.0	0.4	0.001	1.3	3.0					

Table 3. LRR-free survival rates

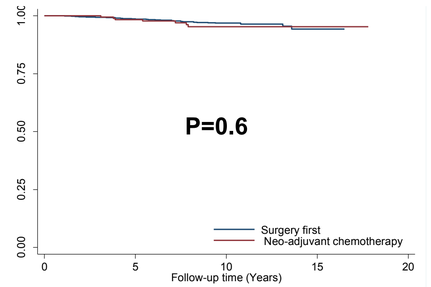
	5-year Local-regional recurrence free survival		
No. of adverse factors	Surgery first	Neoadjuvant chemotherapy	P-value
0	99.1	99.1	0.9
1	98.6	98.4	0.6
2	97.6	97.9	0.7
3	93.5	94.1	0.5
4	91.2	91.2	0.8

Graph 1. LRR-free survival rates for surgery first or neoadjuvant chemotherapy based on the number of adverse factors (A to E)

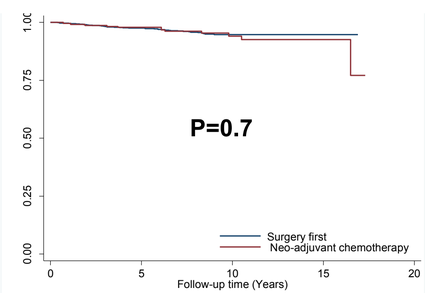
A. 0 adverse factors



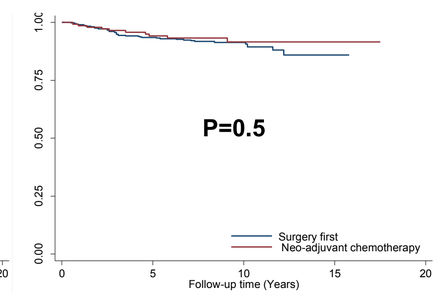
B. 1 adverse factor



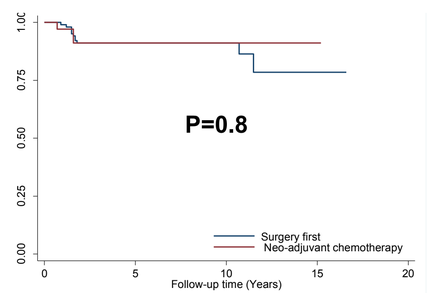
C. 2 adverse factors



D. 3 adverse factors



E. 4 adverse factors



Summary

•Overall, local-regional recurrences following SLNB in clinically node negative patients are rare.

•LRR-free survival was comparable between patients irrespective of chemotherapy sequencing.

•Even after correcting for the number of adverse factors, LRR-free survival remained similar between the two groups.

Abstract ID: 582052