

The Decline of Axillary Lymph Node Dissection Rates: Implication on Operative Times and Outcomes

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Background

Management of the axilla in invasive breast cancer (IBC) has shifted away from axillary lymph node dissection (ALND) and towards less invasive procedures, such as sentinel lymph node biopsy. A previous study¹ utilizing the ACS-NSQIP database showed an overall national downward trend in ALND procedures being performed from 2007-2014. We hypothesized that there continues to be a downward trend in percentage of ALNDs performed for IBC and that this decline may correlate with an increase in operative time and morbidity.

Methods

Patients with IBC were identified in the ACS-NSQIP database (2007 to 2017)

Included ICD-9 & ICD-10 codes:

- Malignant neoplasm of female breast
- Malignant neoplasm of male breast

Included CPT codes were identified:

- Partial mastectomy with axillary lymphadenectomy (19302)
- Modified radical mastectomy (19307)
- Superficial axillary lymphadenectomy (38740)
- Complete axillary lymphadenectomy (38745)

Outcomes:

- Percentage of patients with IBC undergoing ALND per year
- Average operative time for each procedure each year (Operative times of 0 minutes were excluded)
- 30 day mortality, superficial and deep incisional surgical site infection, wound dehiscence, transfusion requirements and length of stay (calculated by days from operation to discharge) for each procedure by year

Cochran-Armitage trend test and linear regressions were used to determine presence of a significant increase or decrease in the included variables over the study period.

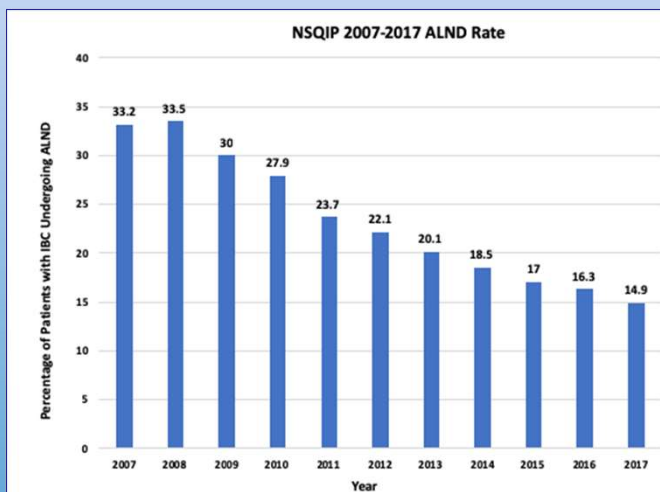
Patient Surgical Outcomes

	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	p-value
ALND	3578 (33.2%)	4196 (33.48%)	4585 (30.04%)	4200 (27.87%)	3631 (23.66%)	3967 (22.12%)	4191 (20.11%)	3946 (18.51%)	3020 (17.02%)	4226 (16.33%)	4087 (14.9%)	<0.001
SSI	67 (1.87%)	91 (2.17%)	99 (2.16%)	89 (2.12%)	89 (2.45%)	87 (2.19%)	81 (1.93%)	99 (2.51%)	64 (2.12%)	95 (2.25%)	90 (2.2%)	0.4
Infection	20 (0.56%)	29 (0.69%)	36 (0.79%)	29 (0.69%)	30 (0.83%)	27 (0.68%)	31 (0.74%)	15 (0.38%)	24 (0.79%)	35 (0.83%)	23 (0.56%)	0.848
Wound Dehiscence	9 (0.25%)	18 (0.43%)	23 (0.5%)	11 (0.26%)	10 (0.28%)	18 (0.45%)	21 (0.5%)	17 (0.43%)	12 (0.4%)	25 (0.59%)	14 (0.34%)	0.225
Death	3 (0.08%)	5 (0.12%)	3 (0.07%)	9 (0.21%)	6 (0.17%)	4 (0.1%)	5 (0.12%)	1 (0.03%)	1 (0.03%)	1 (0.02%)	4 (0.1%)	0.117
RTOR	306 (8.55%)	278 (6.63%)	314 (6.85%)	231 (5.5%)	165 (4.54%)	174 (4.39%)	191 (4.56%)	124 (3.14%)	116 (3.84%)	158 (3.74%)	131 (3.21%)	<0.001
Transfusion	5 (0.14%)	6 (0.14%)	4 (0.09%)	55 (1.31%)	70 (1.93%)	71 (1.79%)	68 (1.62%)	54 (1.37%)	39 (1.29%)	58 (1.37%)	42 (1.03%)	<0.001

ALND- Axillary Node Dissection, SSI- Surgical Site Infection, RTOR- Return To Operating Room

Results

The percentage of patients with IBC undergoing ALND significantly decreased over the study period ($p<0.001$). No significant trend in rates of superficial or deep surgical site infection, wound dehiscence, or 30 day mortality. With a significant decrease in reoperation rates ($p<0.001$), significant increase in perioperative transfusions ($p<0.001$) and no significant change in average operative time for any included procedure over the 10 year period.



Average Operative Time in minutes

CPT Code	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	p-value
19302	98.5	98.21	95.88	107.91	100.1	93.03	98.1	102.89	102	98.53	100.3	0.389
19307	145.32	149.5	152.96	158.8	159.7	159.07	155.8	157.13	158	149.1	148.8	0.522
38740	97.22	91.12	74.45	66.62	82.91	100.26	144.4	107.79	80.5	92.12	102.7	0.177
38745	100.99	96.08	99.86	108.94	100.1	99.64	101.9	99.66	93.9	112.3	99.34	0.606

Conclusions

Our study demonstrates that the decline in ALNDs performed for IBC does not correlate with an increase in surgical morbidity or mortality within the NSQIP population, which contradicts our hypothesis.

There has not been a clear change in operative times over the last 10 years, suggesting that surgeons are still performing these procedures efficiently. There has been an increase in perioperative transfusions, but the significance of this finding remains unclear, as information related to cancer stage and axillary involvement is not available in the NSQIP database.

As fewer patients undergo ALND, the patients selected for these procedures likely have higher stage cancer with more axillary metastases, which could possibly contribute to outcomes. However, future research will be needed to assess this hypothesis.

References

1. Nocera NF, et al. NSQIP Analysis of Axillary Lymph Node Dissection Rates for Breast Cancer: Implications for Resident and Fellow Participation. Journal of Surgical Education. 2018;75(5):1281-1286.
2. Giuliano AE. Axillary Dissection vs No Axillary Dissection in Women With Invasive Breast Cancer and Sentinel Node Metastasis: A Randomized Clinical Trial. JAMA. 2011;305(6):569.
3. Joyce DP, et al. Management of the axilla: Has Z0011 had an impact? Ir J Med Sci. 2016;185(1):145-149.
4. Wright GP, et al. Measuring the impact of the American College of Surgeons Oncology Group Z0011 trial on breast cancer surgery in a community health system. The American Journal of Surgery. 2015;209(2):240-245.

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