Variability in Sentinel Lymph Node Biopsy Retrieval for Breast Cancer in at Aurora Health Care

Background
Auxiliary lymph node involvement has always been one of the most important factors in determining treatment and prognosis for breast cancer. Routine axillary lymph node dissection (ALND) was the standard treatment for breast cancer until the mid-1990s. Sentinel lymph node biopsy (SLNB) for breast cancer became standard procedure in the late 1990s to accurately stage the axilla, sparing many patients the need for ALND. SLNB training typically occurs during general surgery residency, with additional training garnered during breast surgery fellowship. We undertook an evaluation of the SLNB procedure comparing our dedicated breast surgeons (4) with our general surgeons who also perform breast procedures (25).

Methods
We performed a retrospective chart review at Aurora Health Care, a 15-hospital system serving Wisconsin and Northern Illinois, to evaluate patients undergoing surgical treatment for breast cancer. The audit revealed that over a six-month period from 1/1/16 to 6/30/16, 25 general surgeons and 4 dedicated breast surgeons performed 275 surgeries for Stages I-III primary operable breast cancer. There were 180 lumpectomies (LUMP) and 95 mastectomies (MAST) performed.

Results
In the 275 breast cancer operations (180 LUMP/95 MAST), 253 (92%) SLNB procedures were attempted (LUMP-163, MAST-90). A mean of 2.26 and a median of 2.0 SLN/patient were removed in the LUMP group.

In the LUMP a mean of 2.26 and a median of 2.0 SLN/patient were removed and the distribution of SLN removed are shown in Table 1.

| Table 1. Lumpectomy/Partial Mastectomy N=163 |
| # of SLNs retrieved | 0 | 1 | 2 | 3 | 4 | 5 | 6+ | ALND |
| # of Cases | 3 | 45 | 42 | 39 | 18 | 9 | 7 | 10 (8-28 LNs) |
| +SLNB | 0 | 7 | 9 | 8 | 1 | 1 | 0 | 8 |

In the MAST group a mean of 2.78 and a median of 2.0 SLN/patient were removed and the distribution of SLN removed are shown in Table 2.

| Table 2. Mastectomy N=90 |
| # of SLNs retrieved | 0 | 1 | 2 | 3 | 4 | 5 | 6+ | ALND |
| # of Cases | 3 | 23 | 29 | 12 | 7 | 5 | 11 | 13 |
| +SLNB | 0 | 2 | 3 | 3 | 0 | 0 | 1 | 7 |

The general surgeons did 141 SLNB (56%) (range: 1-18 operations/surgeon) (Mean 2.66 Lump/3.28 Mast)

The full-time breast surgeons did 112 SLNB operations (44%) (range: 22-43 operations/surgeon) (Mean 2.37/Lump 2.67/Mast)

Conclusions
Based on these findings and a review of the literature, the following recommendations were made within the hospital system:

- Dual tracer imaging should be used whenever possible;
- One SLN is insufficient for complete evaluation and more than 4 SLN does not improve staging (studies have shown that a minimum of 2 SLN are required for accurate staging and more than 4 SLN does not add to improved diagnostic accuracy);
- The goal is to remove all SLNs that are hot, blue or palpable with a goal of 2-4 SLNs per pt
- A complete ALND can be safely omitted in Stage I-III patients having LUMP with radiation when there are only 1 to 2 SLNs involved provided there is no extracapsular extension or gross tumor involvement;
- In patients older than 70 years of age with a T1-2 estrogen receptor-positive tumor, SLNB can be safely omitted; and
- SLN after neoadjuvant therapy can be done even with an initially positive LN, however, an attempt to remove the initially positive LN should be done.