Walking the Fine Line of Axillary Management in Mastectomy Patients

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While breast-conservation surgery (BCS) represented tremendous progress for breast cancer patients in the 1990s, the twenty first century has been significant for advancements in how we manage the axilla for these same patients. Axillary lymph node dissection (ALND) was previously the standard of care for the management of node-positive disease, but carefully selected patients may now undergo sentinel lymph node biopsy (SLNB) alone^{1–3} or axillary radiation,^{4,5} with oncologically equivalent results and less morbidity. In contrast to the de-escalation of axillary surgery, the role of postmastectomy radiation therapy (PMRT) has increased.⁶ As a result, the management of the axilla and use of PMRT in node-positive patients undergoing mastectomy is complex and variable. In this issue of *Annals of Surgical Oncology*, the inconsistency in how we manage these patients is highlighted.

Gaines et al. utilized the National Cancer Data Base (NCDB) to analyze patterns of axillary management and PMRT in clinically negative but pathologically node-positive patients undergoing mastectomy between 2013 and 2014. This did not include patients who underwent neoadjuvant chemotherapy. Their goal was to examine how nodal status affected the type of axillary surgery and how extent of surgery interacted with PMRT. Based on this data (from 2013 to 2014), expected management would include SLNB followed by ALND, with the possible exception of those patients with micrometastatic disease. Of the 8089 patients identified in the study, 23.3% of the cohort had micrometastatic disease and 76.7% had macrometastatic disease. When the type of axillary procedure performed

was analyzed, 52.7% of patients underwent traditional management of the clinically node-negative axilla, and underwent an SLNB followed by an ALND. However, 30.7% of these patients underwent SLNB alone and 16.6% proceeded straight to ALND. Not surprisingly, compared with patients with macrometastatic disease, patients with micrometastatic disease were more likely to undergo SLNB alone, and ALND was more likely if more than one node was positive.

The group also analyzed the use of PMRT and how it may relate to the type of axillary surgical procedure performed. They report that, in this cohort of one to three node-positive patients, 37.3% underwent PMRT. As expected, with increasing node positivity, there is increased use of PMRT. Furthermore, the authors note several factors associated with receipt of PMRT, including the type of axillary procedure. Using multivariable, binary logistic regression analyses, they demonstrate a significant relationship between receipt of PMRT and use of SLNB alone, suggesting that as we choose to omit ALND, we may be increasing the use of PMRT.

This group previously studied the interaction between axillary surgery and PMRT.⁷ Again, using the NCDB, they demonstrated that the proportion of mastectomy patients undergoing SLNB alone and PMRT increased from 5.2% in 1998 to 23.8% in 2011. There was also an overall increase in the use of PMRT in a similar patient population, from 17.5% in 1998 to 24.1% in 2009, to 28.3% in 2011. Based on the numbers from the current analysis, these trends continue to increase.

There are a wealth of data points in this current analysis of the NCDB of node-positive mastectomy patients, with two overarching themes: a trend away from ALND, with increased use of PMRT, but significant overall variability in management. The AMAROS and OTOASOR trials demonstrated the oncological equivalence of ALND and radiation therapy, although publication of this data would

not necessarily have overlapped with the time period of data acquisition reported by Gaines et al.^{4,5} Based on this, in patients who require PMRT, the use of axillary radiation and omission of ALND seems reasonable and is supported by clinical data. Many mastectomy patients also undergo breast reconstruction, and the use of PMRT can affect the utilization, timing, and quality of breast reconstruction. While the rates of reconstruction do not appear to be affected in similar patient populations, it is an important factor that is missing in this particular analysis.⁶ If we omit ALND but replace with PMRT, what are the consequences for breast reconstruction?

Regarding variability, in 19% of patients SLNB was the only treatment for their node-positive disease, yet 22.6% of patients with micrometastatic disease underwent PMRT. Controversy remains for the use of PMRT for one to three positive lymph nodes, and this likely accounts for some of the ongoing inconsistency we see in these patients. We eagerly await the publication of the SUPREMO trial (Selective Use of Postoperative Radiation after Mastectomy), which will address the benefit, or lack of benefit, of radiation following mastectomy for one to three positive nodes.⁸ Patients in SUPREMO are mandated to undergo ALND, therefore it will not specifically address surgical axillary management but will provide answers regarding PMRT, and subsequently inform the surgical management, in this nebulous patient population.

This large, retrospective database enables us to evaluate modern practice patterns, as well as factors that appear to increase the likelihood of different types of axillary management and PMRT. As healthcare providers, we do not appear to be consistent in our patterns of treating patients with node-positive disease undergoing mastectomy. In a recent editorial, Morrow addresses this with a succinct review of options for the node-positive axilla.⁹ While there is undoubtedly variability nationally, perhaps there is consistency within each health system—again, not something we can determine from this database but something that we should strive for in our own practices.

There is hope for better data regarding best practice in these patients. The UK multicenter, non-inferiority trial POSNOC (Positive Sentinel Node: Adjuvant Therapy Alone Versus Adjuvant Therapy Plus Clearance or Axillary Radiotherapy) randomized early-stage breast cancer patients with one to two positive nodes to axillary

treatment versus no axillary treatment.¹⁰ Moreover, both mastectomy and BCS patients are included and this will be stratified.

As surgeons managing patients with breast cancer, we have seen significant advancements in patient care, with better outcomes. While we continue to provide personalized care for each patient, we must strive to be consistent, and evidence-based, in our management.

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