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EDITORIAL – BREAST ONCOLOGY

Axillary Lymphatic Evaluation: A Solution to a Complex Problem

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In the recent article, "Identification and Preservation of Arm Lymphatic System in Axillary Dissection for Breast Cancer to Reduce Arm Lymphedema Events: a Randomized Clinical Trial," Yuan and colleagues describe their technique for a variation on the axillary reverse mapping (ARM) technique, which they have termed iDEntification and Preservation of ARm lymphaTic system (DEPART). The authors aim to further improve on decreased lymphedema rates by identifying the complete arm lymphatic system. They identified arm nodes with indocyanine green (ICG) initially and subsequently injected them directly with additional methylene blue (MB) in order to further identify subsequent echelon nodes.[1]

In our experience with the ARM technique, our lymphedema rates for sentinel lymph node biopsy (SLNB) and axillary lymph node dissection (ALND) were $< 1\%$ and $< 7\%$, respectively.[2] We have continued our reapproximation of lymphatics when blue arm nodes must be resected and have carried that technique over to all SLNB procedures as well. The authors speculate that ARM has not been fully adopted worldwide for routine clinical use due to uncertain oncologic safety; however, it seems that recent surgical data are trending toward increasingly less axillary surgery. Our experience with the ARM technique is not only that it is oncologically safe, but also an effective means of limiting morbidity for our patients.[2] The lymphedema rates used for comparing surgery with radiation are gradually leading us to substitute radiation for treatment of the axilla; however, we have a means to improve upon those rates and perform better surgery.[3] In scenarios of truly advanced regional disease requiring both ALND and axillary radiation, we owe it to our patients to work to minimize the morbidity associated with the surgical portion of the treatment.

The slow rate of adoption may also be partially due to what is perceived as a learning curve and concern regarding the additional time required for dissection of these lymphatics in order to spare them. In our experience, we use intraoperative injection of both technetium (Tc) and isosulfan blue. These are performed expeditiously in the operating room after induction. The dissection is not necessarily always affected by arm lymphatics, as these are not always identified, especially from smaller SLNB incisions.[4] It can be argued that this is when the technique is most useful in that it allows for identification of a juxtaposed arm lymph node which may have been harmed or resected if not identified at the time of a SLNB. Although SLNB lymphedema rates are low, there are so many more SLNB procedures performed for axillary staging that the actual total number of affected patients stands to be larger than those affected after ALND, most saddening in scenarios of a truly negative axilla. Rates of lymphedema cited in the literature for SLNB vary, but the rate of 7–8% seen in some larger series illustrates the potential magnitude of the effect on our cancer patients.[5,6]

In the case of ALND, the arm lymphatics are freed from the surgical specimen and spared if not involved by Tc/breast crossover drainage. It actually becomes easier to identify these arm lymphatics even when they are not blue in their efferent upper-echelon nodes as one becomes more familiar with the location, patterns, and appearance of these lymphatics. In most cases, it is not any more time consuming than the dissection would have been routinely without it. The technique requires only the desire to expand our knowledge and experience in order to improve patient outcomes.

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The authors cite subjective discrepant judgement of ultrasonographers and surgical bias from a single-surgeon experience, which might have led to the high rate of metastasis for SLNB. This incidentally leads us to another tool we have at our disposal, i.e., using ultrasound intra-operatively to help identify lymph nodes which are deemed to have suspicious morphology or characteristics. This seems to have assisted the authors in identifying a high rate of positive SLNB in clinically negative axilla, and proves a useful adjunct even in the context of dual and triple mapping.

ARM lymphatics may need to be interrupted not only for crossover, but also for cases of high axillary disease burden in regionally advanced disease. These are cases in which not only is reapproximation an option, but also more advanced techniques such as lymphatic–venous anastomosis (lymphatic microsurgical preventing healing approach, LYMPHA) may be of benefit.[7] These techniques are options we may all learn to varying degrees and have within our armamentarium in order to be able to provide our patients the best possible surgery with the best outcomes available.

In conclusion, it is incumbent upon us to continue to strive for decreased morbidity related to our treatment of breast cancer. We have shown that we can do better surgery with improved outcomes, and we owe it to our patients to continue our work on surgical techniques. The DEPART and ARM techniques may seem arduous or overwhelming, but there are benefits to be gained and we must rise to the challenge.

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