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Oncological outcomes of selective axillary dissection using carbon as a marker

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Objective: The use of axillary marking before neoadjuvant systemic therapy (NST) is a field of controversy in patients with positive lymph nodes (LNs). Several methods were tested leading to a reduction in the false negative rate compared with the sentinel lymph node (SLN), adding precision. The aim of this study is to evaluate oncological outcomes in patients undergoing selective axillary dissection with pre-NST marking with 4% carbon. **Methodology:** A prospective study was carried out in patients with cT1–T4 and cN1–N2 breast cancer who underwent analysis of suspected LNs and concomitant marking with 4% carbon. After NST, the marked LNs were identified and resected associated with SLN biopsy. The oncological outcomes identified were overall survival (OS), specific survival (SE), distant disease-free survival (DDFS), axillary recurrence (AR), and local recurrence. **Results:** A total of 168 patients were analyzed over a median time of 49 months. Axillary dissection was omitted in 89 (50.6%) cases. Out of 168 cases, 5 (2.9%) had AR. There was a significant association between axillary dissection and AR (0 vs. 6% $p=0.012$). The DDFS was 140/168 (83.3%), SG 158/168 (94%), and SE 158/163 (96.9%). **Conclusion:** The use of carbon as a marker in selective axillary dissection is a reliable, low-cost, and easy-to-perform material. Among the oncological events, AR should not be used for post-downstaging axillary evaluation analysis, as it is a rare event and is not necessarily related to OS or DDFS.

Keywords: breast cancer; neoadjuvant treatment; sentinel lymph node biopsy.