

PURPOSE

Clinical trials suggested that sentinel lymph node (SLN) biopsy (SLNB) alone provided non-inferior survival than further axillary lymph node dissection (ALND) among breast cancer patients with negative SLNs. However, the long-term outcomes of these two surgical approaches in breast cancer patients with pathologically negative lymph nodes (pN0) remain uncertain.

PATIENTS and METHODS

We performed a population-based study using the Surveillance, Epidemiology, and End Results (SEER) 18-registry database. We included patients who received a diagnosis between 2000 and 2015 of pathological stage T1-2N0M0 breast cancer and adopted a breast-conserving surgery (BCS) or mastectomy. Patients were considered to have undergone an SLNB alone if they had ≤ 5 examined lymph nodes (ELNs), and ALND if they had ≥ 10 ELNs, while others were excluded given an equivocate lymph node surgery approach. Outcomes included overall survival (OS) and breast cancer-specific survival (BCSS). Propensity-score analyses by weighting and matching and multivariable Cox regression were performed to minimize treatment selection bias.

RESULTS

We included 309430 patients, 253501 (81.9%) underwent SLNB and 55929 (18.1%) underwent ALND (Figure 1).

To minimize selection bias, we performed inverse probability of treatment weighting (IPTW) that was based on propensity score approach to balance measured confounders between SLNB and ALND groups.

In the IPTW cohort, the median follow-up time was 122 months for SLNB group and 119 months for ALND group, respectively. ALND was associated with significantly lower OS (hazard ratio [HR], 1.13; 95% confidence interval [CI], 1.10-1.16; 10-year OS, 78.2%; 95% CI, 77.8%-78.6%) and lower BCSS (HR, 1.16; 95% CI, 1.10-1.22; 10-year BCSS, 93.4%; 95% CI, 93.1%-93.6%) compared with SLNB alone (10-year OS, 80.4%; 95% CI, 80.2%-80.6%; 10-year BCSS, 94.2%; 95% CI, 94.1%-94.3%) (Figure 2A and 2B).

Similarly, propensity score matching also demonstrated a significant reduction in OS (log-rank $P < 0.001$; HR, 1.10; 95% CI, 1.08-1.13; Figure 3C) and BCSS (log-rank $P < 0.001$; HR, 1.13; 95% CI, 1.09-1.18; Figure 3D) for the ALND group compared with the SLNB group (Figure 2C and 2D).

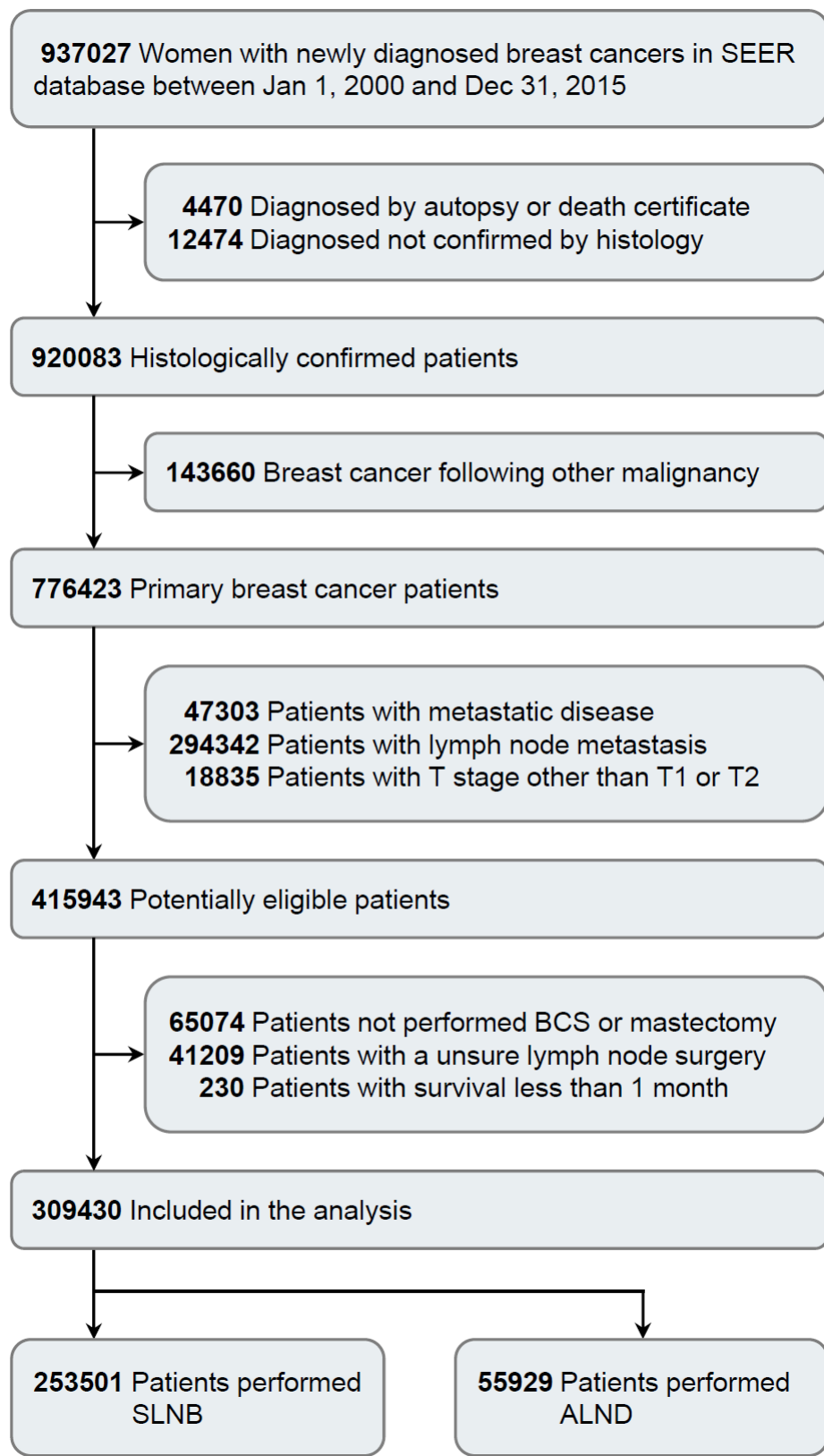


Figure 1. Patient selection.

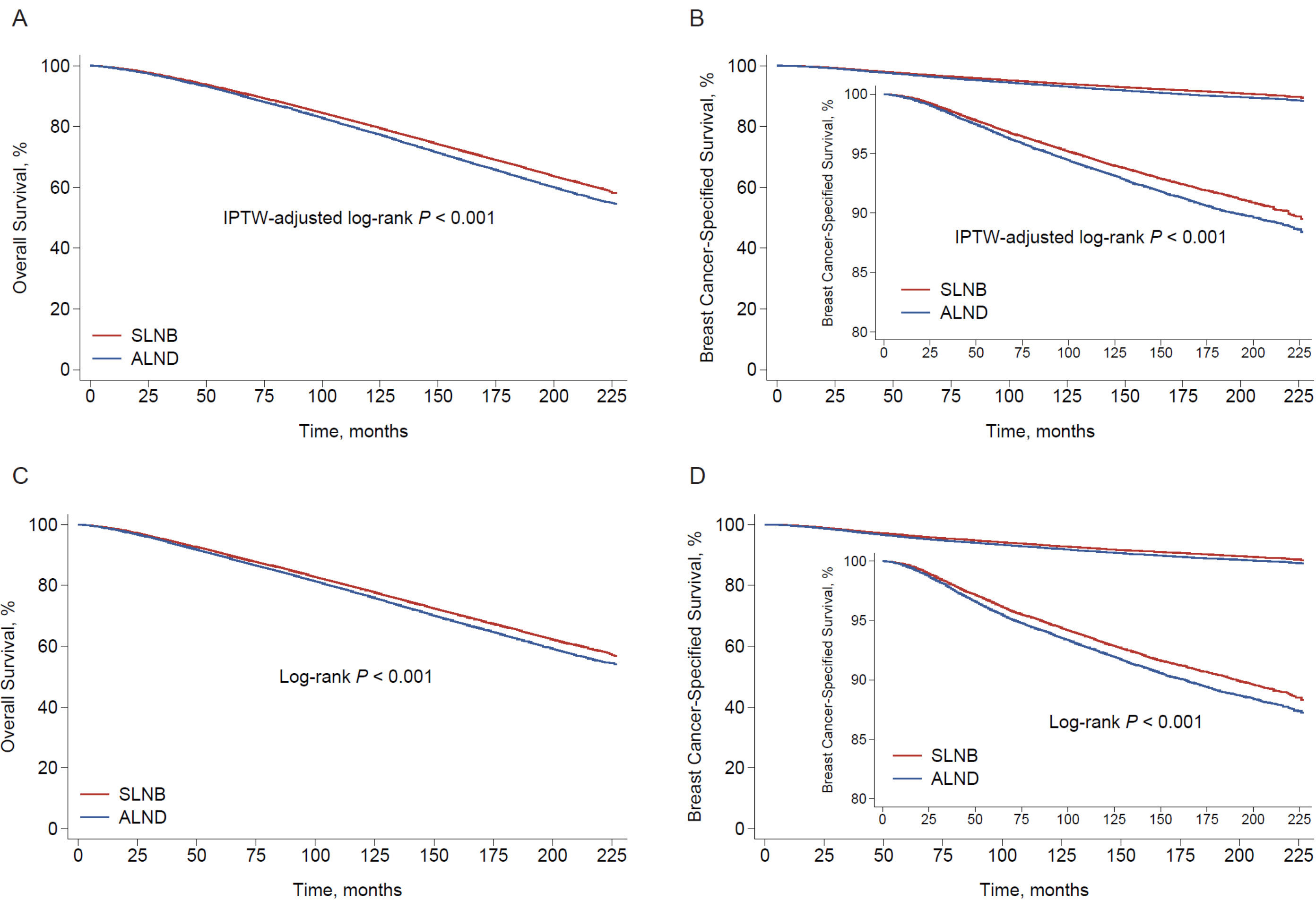


Figure 2. Kaplan-Meier survival analyses according to type of axillary lymph node surgery. Inverse probability of treatment-weighted survival curves for (A) overall survival (OS) and (B) breast cancer-specific survival (BCSS). Propensity score-matched survival curves for (C) OS and (D) BCSS.

CONCLUSION

SLNB was associated with a significantly lower risk of death than ALND in pN0 breast cancer patients in real-world setting. Our study provides powerful evidence of survival benefit, supporting SLNB alone is a better choice for patients with no metastatic lymph nodes identified during breast cancer surgery. Further studies are needed to verify our findings and determine the intrinsic mechanisms.