De-escalation of Axillary Surgery in Patients with Residual Nodal Disease After Neoadjuvant Chemotherapy: A Systematic Review and Meta-Analysis

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Background

- Axillary lymph node dissection (ALND) remains the standard of care for patients with breast cancer with residual nodal disease(ypN+) after neoadjuvant chemotherapy (NAC).
- While the results of randomized controlled trials on the safety of omitting ALND are still awaited, retrospective studies suggest that de-escalation is already incorporated into clinical practice.

Study Objectives

- This systematic review and meta-analysis aimed to evaluate oncological outcomes of sentinel lymph node biopsy (SLNB) alone versus ALND in patients with residual nodal disease after NAC.

Methods

- A systematic search of PubMed, Embase, and the Cochrane Library was performed.
- Eligible studies included randomized controlled trials and observational cohort studies of patients with clinically node-positive breast cancer who received NAC and were found to have ypN+ disease at surgery.
- Studies reporting outcomes of axillary recurrence (AR), distant recurrence-free survival (DRFS), and/or overall survival (OS) were included.
- Hazard ratios (HRs) and 95% confidence intervals (CIs) comparing SLNB to ALND were extracted or estimated from Kaplan-Meier curves using validated methods. A random-effects meta-analysis was conducted.

Results

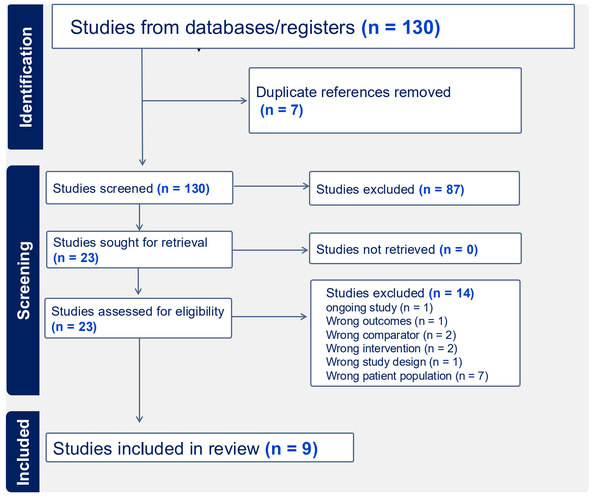


Table. Summary of included studies

Study	Population	SLNB (n)	ALND (n)	Follow-up (years)	Outcomes
Almahariq 2021	NCDB ypN1 2006–2014	304	1313	3.1	OS
Boughey 2025	I-SPY2 patients ypN+ (1–2+ nodes)	127	374	3.5	AR, DRFS
Chun 2021	ypN+(1–2+ nodes) 2008 –2013	106	218	6.1	AR, DRFS, OS
Dux 2023	ypN+, single center prospective database	35	107	2.8	AR, OS
Kozak 2020	ypN+(ls) 2005–2015	28	42	3.6	AR, DRFS, OS
Limberg 2024	NCDB ypN1mi–2 (2012–2021)	2047	4054	-	OS
Ling 2020	ypN+ single center 2006-2017	53	108	2.4	AR, DRFS, OS
Liu 2024	SEER database ypN1 2010 - 2017	961	2010	-	OS
Park 2023	ypN+ with RT 2005–2018	170	1103	6.2	AR, DRFS, OS

Results

Axillary recurrence pooled rates

SLNB: 5.9% (CI 3.5% - 9.9%)

vs

ALND: 5.2% (CI 3.6% - 7.4%)

Figure 1. Forest plot: Axillary recurrence

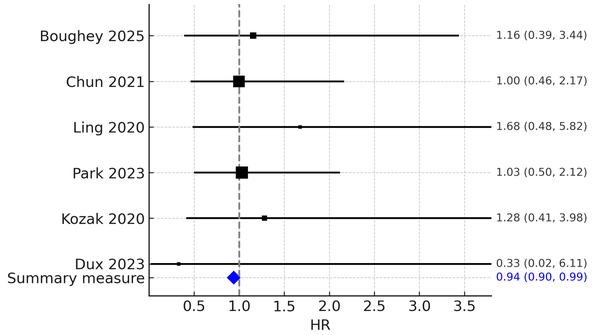
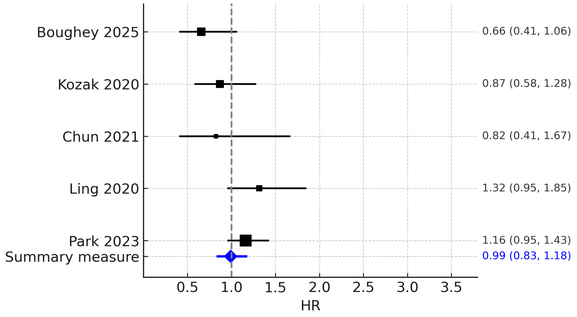
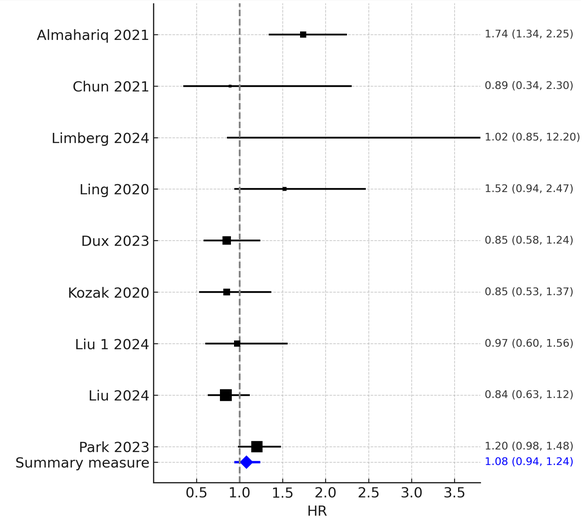


Figure 2. Forest plot: Distant disease-free survival



Results

Figure 3. Forest plot: Overall survival



Conclusions

- This meta-analysis of retrospective studies suggests that omission of ALND in ypN+ patients does not compromise axillary control and may be associated with comparable regional and distant control with similar survival.
- Due to the inherent limitations of retrospective data - including potential selection bias and unmeasured confounding - these findings should be interpreted with caution.
- Prospective randomized trials are necessary to confirm the safety of omitting ALND and to identify which patients may be appropriate candidates for axillary surgery de-escalation.

Please direct questions or comments regarding this poster to Dr. Natalia Polidorio at nataliapolidorio@gmail.com