

## Is Sentinel Lymph Node Biopsy Reliable in Pathologically confirmed Node-Positive Breast Cancer after Neoadjuvant Chemotherapy? A Meta-Analysis

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Chongqing Medical University.**ADMINISTRATIVE INFORMATION****Support** - Graduate Project Funding.**Review Stage at time of this submission** - Data analysis.**Conflicts of interest** - None declared.**INPLASY registration number:** INPLASY202440100**Amendments** - This protocol was registered with the International Platform of Registered Systematic Review and Meta-Analysis Protocols (INPLASY) on 25 April 2024 and was last updated on 25 April 2024.**INTRODUCTION**

**Review question / Objective** Is Sentinel Lymph Node Biopsy Reliable in Pathologically confirmed Node-Positive Breast Cancer after Neoadjuvant Chemotherapy?

**Condition being studied** Study patients were diagnosed as breast cancer with Pathologically confirmed Node-Positive, undergoing Neoadjuvant Chemotherapy, Sentinel Lymph Node Biopsy and Axillary Lymph-node dissection.

**METHODS**

**Search strategy** Using the three databases of PubMed, Web of Science and Embase, a systematic literature search was conducted in April, 2024. The language was restricted to English. Terms: (((("Breast Neoplasms"[Mesh]) OR (breast cancer[Title/Abstract])) AND (((("Neoadjuvant Therapy"[Mesh]) OR (Therapy, Neoadjuvant[Title/Abstract])) OR (Neoadjuvant Treatment[Title/Abstract])) OR (NAC[Title/Abstract])) OR

(NACT[Title/Abstract])) AND (((("Sentinel Lymph Node Biopsy"[Mesh]) OR (SLNB[Title/Abstract]) OR (SLN[Title/Abstract]) OR (Node Biopsy[Title/Abstract])) AND (((((ALND[Title/Abstract]) OR (ALN[Title/Abstract]) OR (axillary[Title/Abstract]) OR (axillary lymph-node dissection[Title/Abstract]) OR (node positive[Title/Abstract]))

**Participant or population** The inclusion criteria were as following: (1) Breast cancer patients with histopathological diagnosed Axillary metastatic lymph node. (2) All the patients received Neoadjuvant Chemotherapy (NACT). (3) Underwent Sentinel Lymph Node Biopsy (SLNB) and followed by Axillary Lymph-node dissection (ALND) after pre-operative chemotherapy. The exclusion criteria were as following: (1) Patients Underwent ALND without SLNB or SLNB alone. (2) TP, FP, TN, FN are not offered or couldn't be conducted, FNR and IR of SLNB is not available to extracted. (3) non-original studies (reviews, letters, replies). (4) Patients with distant metastasis.

**Intervention** Intervention is unnecessary for a diagnostic meta-analysis.

**Comparator** Comparator is unnecessary for a diagnostic meta-analysis.

**Study designs to be included** The literatures include prospective and retrospective clinical trials which presented the value and reliability of Sentinel Lymph Node Biopsy in Pathologically confirmed Node-Positive Breast Cancer after Neoadjuvant Chemotherapy. Inclusion criteria include: (1) Breast cancer patients with histopathological diagnosed Axillary metastatic lymph node. (2) All the patients received Neoadjuvant Chemotherapy (NACT). (3) Underwent Sentinel Lymph Node Biopsy (SLNB) and Axillary Lymph-node dissection (ALND) after pre-operative chemotherapy. And exclusion criteria include: (1) Patients Underwent ALND wi.

**Eligibility criteria** Prospective or retrospective studies evaluate SLNB for Pathologically confirmed Node-Positive Breast Cancer patients after neoadjuvant chemotherapy, underwent SLNB, followed by ALND.

**Information sources** PubMed ,Web of Science and Embase.

**Main outcome(s)** Sensitivity and specificity of Sentinel Lymph Node Biopsy.

**Additional outcome(s)** FNR, IR of Sentinel Lymph Node Biopsy.

**Data management** Endnote and Review manager.

**Quality assessment / Risk of bias analysis** The quality of included studies were evaluated with the Quality Assessment of Diagnostic Accuracy Studie-2 (QUADAS 2).

**Strategy of data synthesis** Statistical analyses were performed with Review Manager 5.4 and STATA 17.0, For all meta-analyses, the effect size and overall pooled estimates were calculated with 95% conference interval (CI). Forest plots were used to display the results of the pooled estimates and individual effect size. Heterogeneity of effect sizes were evaluated with Cochrane p value and I<sup>2</sup> statistic, when p value <0.05 or I<sup>2</sup>>50%, there was a significant heterogeneity, a random-effect model was used to merge the results. Otherwise, a fixed-effect model was used. Meta regression was performed to discuss the resource of heterogeneity, sensitivity analysis was used to assess the stability of the results. We performed funnel plots to assess publication bias. A p value

less than 0.05 was considered statistically significant.

**Subgroup analysis** (1)FNR of SLNB by single and dual mapping technique (2) FNR of SLNB by number of sentinel lymph nodes removed after neoadjuvant chemotherapy (3) IR of SLNB by single and dual mapping technique.

**Sensitivity analysis** Sensitivity analysis was performed using STATA17.0 to reflect the stability of the meta-analysis by the change in effect size of one article after deletion.

**Language restriction** English.

**Country(ies) involved** China.

**Keywords** breast cancer, Neoadjuvant Therapy, Sentinel Lymph Node Biopsy, Axillary Lymph-node dissection, node-positive.

#### **Contributions of each author**

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