# Comparing Arm Morbidity Following Sentinel Lymph Node Biopsy and Axillary Lymph Node Dissection in Thai Patients with Early Breast Cancer

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***Background:*** *Axillary lymph node dissection (ALND) for staging of the axilla in breast cancer patients may cause considerable morbidities. Recently, sentinel lymph node biopsy (SLNB) has been shown to accurately define the patients who do not need ALND. There are multiple possible factors in addition to the extent of axillary surgery that contribute to these morbidities.*
***Objective:*** *To evaluate arm morbidities in early breast cancer patients who underwent SLNB in comparison with those with ALND and to identify clinicopathological parameters associated with the development of arm morbidities.*
***Material and Method:*** *Postoperative morbidities and quality of life were compared in 112 breast cancer patients after ALND and 85 patients following SLNB at the Division of Head-Neck and Breast Surgery, Siriraj Hospital from October 1997 to January 2006. Correlations between clinicopathological parameters and arm morbidities were determined by Chi-square statistics and regression analysis.*
***Results:*** *Patients' characteristics were comparable between the two groups. Following ALND, the patients showed significant increase in arm swelling (9.8%) compared with SLNB (1.2%), as well as a significantly higher rate of numbness. No difference between the two groups was found regarding arm movement, strength, or daily activities. Multivariate analysis showed that ALND is the independent factor that significantly increased arm morbidity.*
***Conclusion:*** *The authors reported for the first time of post-treatment arm morbidities in Thai breast cancer patients. The SLNB had been shown to spare the patients' morbidities resulting from ALND. Therefore, the SLNB should be adopted as an alternative to routine ALND in Thai patients with clinically lymph node negative breast cancer.*

***Keywords:*** *Breast cancer, Sentinel node biopsy, Axillary dissection, Morbidity*

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Axillary lymph node dissection (ALND) is performed in patients with breast cancer for axillary staging and local control of the axilla. However, its impact on survival has been diminished among the patients receiving adjuvant therapy[1,2]. ALND has been associated with considerable acute and late morbidities. Short-term complications such as wound infection, seroma, pain, numbness and limited arm movement infrequently lead to permanent disability[3]. Lymphedema is a trouble some problem that can develop following ALND[4,5]. The incidence of clinically evident lymphedema that substantially interferes patients' quality of life may be as high as 15%[6].

Sentinel lymph node biopsy (SLNB) enables accurate pathologic assessment and accurately defines the patients who most likely to be beneficial from ALNDs (those with documented nodal metastasis) and spares the patients who unlikely to be beneficial from ALNDs (those with negative SLNs) from the morbidity of ALND[7]. SLNB electively removes the first group of lymph nodes which receives lymphatic drainage from the tumor and should therefore be associated with nearly zero morbidity. However, earlier study by Holmes et al, the originators of the SLNB technique, reported only minimal morbidity associated with the prophylactic ALND for malignant melanoma[8]. The false negative rate of SLNB varied among different studies from 1.9 to 18.3% (reviewed by Layeequr Rahman et al[9]).

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Routine performance of ALND as part of the surgical therapy for early breast cancer has come under particular scrutiny in recent years due to the relatively high morbidity rate. As the number of published studies of SLNB technique for breast cancer increased, the perceived complication rate of ALND has increased dramatically[10-12]. In addition, the opponents of SLNB suggest that the morbidity of ALND in experienced hands is minimal, and multiple factors in addition to the extent of axillary surgery contribute to this morbidity. The objective of the present study was to assess arm morbidity after SLNB in comparison with level I and II ALND among patients with lymphnode negative, early breast carcinoma.

## Material and Method

### *Study design*

Female breast cancer patients were retrospectively recruited from the Division of Head Neck and Breast Surgery, Department of Surgery, Faculty of Medicine, Siriraj Hospital (Bangkok, Thailand) from October 1997 to January 2006. The patients with clinical T0 to T2 (not larger than 4 cm in diameter) and without palpable ipsilateral axillary node underwent total mastectomy or breast conserving surgery for treatment of primary tumor and ALND or SLNB for axillary staging. The patients were eligible for the study if they met the following criteria including tumor size of 4 cm or less on preoperative measurement, unilateral disease and a minimum of 1 year out from all primary therapy; i.e., surgery, radiation, and/or chemotherapy. Patients were excluded if they had contralateral arm disease or previous pathology of shoulder joint, end-stage renal disease, prior chemotherapy or radiation therapy for their breast cancers, wore a compressive garment on the day of arm measurement, breast reconstruction (immediate or delay) after mastectomy, and axillary or chest wall radiation after mastectomy. Postoperative surveillance protocols included clinical evaluation by the surgeon every 3 months during the first 2 years after surgery, with more extended intervals beyond that but never exceed 6 months. Only the patients who were evaluated for the first annual examination or beyond were included in this analysis. All patients received adjuvant systemic therapy (chemotherapy, endocrinetherapy, or both, as a joint decision by the patient and attending physician). Whole-breast irradiation (50 Grays, in fractions of 2.0 Grays/day, 5 days/week) delivered via tangential fields with a coplanar border was given to all patients with partial mastectomy.

### *Surgery*

SLNs were identified using isosulfan blue dye or radiopharmaceutical, or both. ALND was defined as the removal of all anatomic level I and II nodes onthe affected side, with at least 10 identified nodes per axillary specimen. All operations were performed by experienced breast surgeons who had documented experience with at least 20 SLNBs. After the SLNB was completed, either a breast-conserving procedure or a mastectomy was performed to remove the primary tumor. All SLNBs and ALNDs followed a uniform surgical protocol, whether performed with breast conserving surgery or with mastectomy. All ALND wounds were drained using a closed suction system. Drains were kept in place for 4 to 5 days. At which time, serous drainage was invariably <50 milliliters per 24 hours. All patients were instructed for arm care and lymphedema precautions. All patients were given range-of-motion exercises after drain removal and an absence of seroma formation.

### *Arm morbidity measurement*

Arm morbidities were recorded on the day of follow-up. Objective measurements, including arm circumferences and range of motion (flexion, extension, abduction) of shoulder joint, were assessed as active ranging at the shoulder joint, which was scored as equal toor decreased relative to the non-operated side[13]. Shoulder joint stiffness was defined as $\geq$5 degree of joint restriction when compared to the non-operated side. Subjective evaluation of arm edema, numbness/paresthesia and quality of life disturbance (disturbance of routine activities) from the patients using a standardized interview protocol to elicit specific complaints was also conducted.

Arm edema was assessed by measuring circumferences at the hand (at the 1$^{st}$ and 5$^{th}$ head of metacarpal), wrist (using the distal edge of the styloid process of the ulna and radius) and then every 10 cm along the arm, in a total of 5 levels. The measurements were made with the arm straightened in a recumbent position. Care was taken not to pinch the skin when measuring the circumference at different sites. All patients were carefully assessed for axillary recurrence throughout the follow-up examinations. To account for natural asymmetry of the arms as a result of right or left handedness, arm circumference measurements were made in a control group of 50 female volunteers. The mean difference in circumference measurements between the dominant arm and another arm in this control group was calculated for sum of each

measurement point (the sum of the difference in circumferences = 2 cm), and this was subtracted from the circumference measurement of each patient's dominant arm. The sum of these circumferences was calculated and the difference between the treated and untreated sides was assessed. The differences between the treated and untreated sides were classified as followed; 5-8 cm: mild lymphedema, 8-20 cm: moderate lymphedema, and >20 cm: severe lymphedema.

***Clinicopathological variables***

Patients' characteristics were recorded, including age at time of surgery, menopausal status, body mass index (BMI), side of dominant arm, pain and paresthesia as outlined by the patients after surgery and on follow-up day, range of motion, and lymphedema. Pathological parameters, type of surgery, adjuvant systemic treatment and radiotherapy were also recorded.

***Statistical analysis***

All continuous variables were reported as mean $\pm$ standard deviation. Paired t-test was used to compare differences between operated and non-operated arm circumferences. Univariate analysis was performed using Chi-square for categorical variables and Pearson's linear correlation for continuous variables. Multivariate analysis was performed by backward stepwise logistic regression to examine the combined effects of clinical predictors on surgical complications. Because the number of removed nodes depended on axillary procedure (patients who underwent SLND would have fewer removed nodes than those underwent ALND), this data was included only in subgroup analysis. Continuous data was analyzed using one-way analysis of variance or unpaired t-test (age, BMI, tumor size, duration after surgery and duration after complete radiotherapy) or nonparametric-Mann-Whitney U test (subjective complaints of armedema, shoulder pain or numbness and disturbance of daily activities). All analyses were performed with SPSS statistical software version 16.0. The *p*-value of $<0.05$ was considered to indicate statistically significant difference.

## Results

***Patients' characteristics***

One hundred and ninety-seven patients were recruited. Of which, 112 patients underwent ALND and 85 patients underwent SLNB. Characteristics of patients were summarized in Table 1. All patients had pathologically node-negative. Postoperative follow-up time was 47.34$\pm$24.41 months for the SLNB group and 49.72$\pm$23.86 months for the ALND group. Majority of ALND group received total mastectomy for primary tumor (82.1%), while 41.2% of SLNB group received partial mastectomy. ALND group also had larger tumor size than SLNB group (2.21 cm versus 1.77 cm, $p = 0.003$).

***Arm morbidities***

Assessment of lymphedema by both circumferential measurements and self-assessment lymphedema score showed that lymphedema more frequently occurred in ALND group than SLNB group. Analyses of summation of the circumferential measurements of the wrist, forearm and upper arm indicated that the patients in ALND group had significant arm swelling after 1 year of complete treatment (9.8% versus 1.2%; $p = 0.027$). All degree of lymphedema was reported more often by the patients in ALND group than by the patients in SLNB group. Lymphedema score was also significantly higher in the ALND group than the SLNB group (1.36$\pm$2.22 versus 0.09$\pm$0.50; $p<0.001$). All range of motion (flexion, extension or abduction) on the operated side was not different between the ALND and SLNB group.

Subjective complaints of arm or shoulder pain and numbness was reported by 31.8% of the patients in SLNB group and by 59.9% of the patients in ALND group. Sensory deficit assessed by self-assessment score was significantly higher in the ALND group than in the SLNB group (2.16$\pm$2.4 versus 0.98$\pm$1.71; $p<0.001$). Quality of life disturbance score was also reported more scales in the ALND group than in the SLNB group but there was no statistically significant difference (0.95$\pm$2.11 versus 0.52$\pm$1.51; $p = 0.052$).

## Discussion

The current study reported increased lymphedema, shoulder pain and numbness in the patients who underwent ALND when compared to the patients who underwent SLNB. Although major postoperative disability from ALND is rare[14,15], minor degree of long-term disability (e.g., lymphedema, neuranesthesia, pain, and breast edema) is relatively common[16-18]. The impact of lymphedema on the quality of life of breast cancer survivors is extensive, encompassing functional status and occupational roles, psychosocial and financial aspects, as well as lifestyle changes. Complications of ALND that reflect the experiences from the era of the radical or Patey's

**Table 1.** Demographic data of the patients (follow-up after completing treatment ≥12 months, pathological N0)

| Characteristics | SLNB, n = 85 (%) | ALND, n = 112 (%) | *p*-value |
|---|---|---|---|
| Mean age, years (±SD) | 53.92 (±11.33) | 56.68 (±12.06) | 0.104 |
| Menopausal status, No. (%) | | | |
| Premenopause | 20 (23.5) | 23 (21.3) | 0.711 |
| Postmenopause | 65 (76.5) | 85 (78.7) | |
| Mean BMI, kg/m$^2$ (±SD) | 23.38 (±3.30) | 23.85 (±3.80) | 0.364 |
| Dominant arm | | | |
| No | 41 (48.2) | 64 (57.1) | 0.215 |
| Yes | 44 (51.8) | 48 (42.9) | |
| Tumor size, cm (±SD) | 1.77 (±1.13) | 2.21 (±0.93) | 0.003 |
| Tumor pathology | | | |
| DCIS | 20 (23.5) | 9 (8) | 0.008 |
| Invasive ductal carcinoma | 58 (65.2) | 88 (78.5) | |
| Others | 7 (8.3) | 15 (13.5) | |
| Invasive vs. in situ | | | |
| DCIS | 20 (23.5) | 9 (8) | 0.004 |
| Invasive ductal carcinoma | 58 (65.2) | 88 (78.5) | |
| Lymphatic invasion | | | |
| Absence | 81 (95.3) | 104 (93.7) | 0.629 |
| Presence | 4 (4.7) | 7 (6.3) | |
| Vascular invasion | | | |
| Absence | 77 (90.6) | 97 (87.4%) | 0.482 |
| Presence | 8 (9.4) | 14 (12.6%) | |
| Perineural invasion | | | |
| Absence | 78 (91.8) | 97 (87.4) | 0.326 |
| Presence | 7 (8.2) | 14 (12.6) | |
| Number of dissected nodes, No. (±SD) | 4.29 (±3.13) | 20.10 (±8.04) | ≤0.001 |
| Estrogen receptor | | | |
| Negative | 28 (32.9) | 40 (36.4) | 0.619 |
| Positive | 57 (67.1) | 70 (63.6) | |
| Progesterone receptor | | | |
| Negative | 36 (42.4) | 49 (44.5) | 0.759 |
| Positive | 49 (57.6) | 61 (55.5) | |
| HER2 | | | |
| Negative | 83 (97.6) | 109 (99.1) | 0.417 |
| Positive | 2 (2.4%) | 1 (0.9) | |
| Type of surgery | | | |
| Wide excision | 35 (41.2) | 20 (17.9) | 0.001 |
| Mastectomy | 50 (58.8) | 92 (82.1) | |
| Adjuvant chemotherapy | | | |
| No | 64 (75.3) | 74 (66.1) | 0.162 |
| Yes | 21 (24.7) | 38 (33.9) | |
| Radiotherapy | | | |
| No | 57 (67.1) | 87 (77.7) | 0.096 |
| Yes | 28 (32.9) | 25 (22.3) | |
| Hormonal therapy | | | |
| No | 22 (25.9) | 35 (31.3) | 0.411 |
| Yes | 63 (71.4) | 77 (68.8) | |

mastectomy, with or without postoperative radiation therapy, often present rates of arm edema that exceed 50%[19,20]. Clearly, that experience may exaggerate the potential complications of ALND.

Comparison of incidence and degree of lymphedema following breast cancer treatment in

**Table 2.** Arm morbidity at 2 years after completing treatment of breast cancer

| Morbidities | SLNB, n = 85 (%) | ALND, n = 112 (%) | *p*-value |
|---|---|---|---|
| Arm edema (circumferential measurements) | | | |
| No | 84 (98.8) | 101 (90.2) | 0.027 |
| Mild | 1 (1.2) | 9 (8.0) | |
| Moderate | 0 | 2 (1.8) | |
| Self-assessment lymphedema, score (±SD) | 0.09 (±0.50) | 1.36 (±2.22) | ≤0.001 |
| Self-assessment lymphedema | | | |
| No | 58 (68.2) | 45 (40.2) | 0.001 |
| Mild | 22 (25.9) | 44 (39.3) | |
| Moderate | 4 (4.7) | 16 (14.3) | |
| Severe | 1 (1.2) | 7 (6.3) | |
| Numbness of shoulder/arm (self-assessment), score (±SD) | 0.98 (±1.71) | 2.16 (±2.4) | ≤0.001 |
| Numbness of shoulder/arm (self-assessment) | | | |
| No | 58 (68.2) | 45 (40.2) | 0.001 |
| Mild | 22 (25.9) | 44 (39.3) | |
| Moderate | 4 (4.7) | 16 (14.3) | |
| Severe | 1 (1.2) | 7 (6.3) | |
| Quality of life disturbance (self-assessment), score (±SD) | 0.52 (±1.51) | 0.95 (±2.11) | 0.052 |
| Quality of life disturbance (self-assessment) | | | |
| No | 76 (89.4) | 88 (78.6) | 0.195 |
| Mild | 5 (5.9) | 14 (12.5) | |
| Moderate | 3 (3.5) | 5 (4.5) | |
| Severe | 1 (1.2) | 5 (4.5) | |
| Limited movements of shoulder joint | | | |
| Flexion | | | |
| No | 81 (95.3) | 111 (99.1) | 0.092 |
| Yes | 4 (4.7) | 1 (0.9) | |
| Extension | | | |
| No | 81 (95.3) | 105 (93.8) | 0.640 |
| Yes | 4 (4.7) | 7 (6.3) | |
| Abduction | | | |
| No | 59 (69.4) | 83 (74.1) | 0.467 |
| Yes | 26 (30.6) | 29 (25.9) | |
| Postoperative complications | | | |
| No | 63 (74.1) | 74 (66.1) | 0.145 |
| Seroma | 21 (24.7) | 26 (23.2) | |
| Bleeding/hematoma | 0 | 5 (4.5) | |
| Superficial skin flap necrosis | 1 (1.2) | 2 (1.8) | |
| Skin flap infection | 0 | 2 (1.8) | |
| Lymphangitis | 0 | 3 (2.7) | |
| Postoperative complications (overall) | | | |
| No | 63 (74.1) | 74 (66.1) | 0.224 |
| Yes | 21 (25.9) | 26 (33.9) | |

different studies could be difficult due to difference in methods of measurement. Objective measurements are based on changes in volume or tissue appearance. Volume difference could be assessed by water displacement, circumferential measurement and optoelectric volumetry[21,22]. Circumferential measurement may not be equivalent to water displacement because volumes from circumferential measurement were slightly larger than water displacement volumes[23,24]. However, serial circumferential measurement provide detail of edematous site, reproducible, and convenient to be performed in clinic. Despite various measurement methods, the incidence of lymphedema after ALND in our cohort was consistent with previously reported data, ranging from 8.4 to 21.4%[25].

**Table 3.** Demographic data of the patients according to arm edema status

| Characteristics | No arm edema, n = 185 (%) | Arm edema, n = 12 (%) | *p*-value |
|---|---|---|---|
| Mean age, years (±SD) | 55.28 (±11.87) | 58.67 (±10.56) | 0.336 |
| Menopausal status | | | |
| Premenopause | 140 (77.3) | 10 (83.3) | 0.629 |
| Postmenopause | 41 (22.7) | 2 (16.7) | |
| Mean BMI, kg/m$^2$ (±SD) | 23.56 (±3.56) | 25.15 (±4.15) | 0.139 |
| Dominant arm | | | |
| No | 99 (53.5) | 6 (50.0) | 0.813 |
| Yes | 86 (46.5) | 6 (50.0) | |
| Tumor size, cm (±SD) | 2.02 (±1.08) | 2.02 (±0.99) | 0.999 |
| Lymphatic invasion | | | |
| Absence | 176 (95.1) | 9 (81.8) | 0.062 |
| Presence | 9 (4.9) | 2 (18.2) | |
| Vascular invasion | | | |
| Absence | 165 (89.2) | 9 (81.8) | 0.452 |
| Presence | 20 (10.8) | 2 (18.2) | |
| Perineural invasion | | | |
| Absence | 166 (89.7) | 9 (81.8) | 0.410 |
| Presence | 19 (10.3) | 2 (18.2) | |
| Node dissection, No. (±SD) | 11.17 (±9.81) | 15.6 (±9.99) | 0.002 |
| Estrogen receptor | | | |
| Negative | 62 (33.7) | 6 (54.5) | 0.159 |
| Positive | 122 (66.3) | 5 (45.5) | |
| Progesterone receptor | | | |
| Negative | 80 (43.5) | 5 (45.5) | 0.898 |
| Positive | 104 (56.5) | 6 (54.5) | |
| HER2 | | | |
| Negative | 181 (98.4) | 12 (100.0) | 0.656 |
| Positive | 3 (1.6) | 0 (0.0) | |
| Type of surgery | | | |
| Wide excision | 53 (28.6) | 2 (16.7) | 0.370 |
| Mastectomy | 132 (71.4) | 10 (83.3) | |
| Duration after surgery, months (±SD) | 38.05 (±21.98) | 36.33 (±31.81) | 0.799 |
| Adjuvant chemotherapy | | | |
| No | 131 (70.8) | 7 (58.3) | 0.360 |
| Yes | 54 (29.2) | 5 (41.7) | |
| Radiotherapy | | | |
| No | 136 (73.5) | 8 (66.7) | 0.604 |
| Yes | 49 (26.5) | 4 (33.3) | |
| Duration after last radiotherapy, months (±SD) | 29.72 (±21.21) | 26.75 (±16.26) | 0.635 |
| Duration of follow-up after complete treatment, months (±SD) | 35.97 (±22.26) | 33.67 (±31.78) | 0.736 |
| Hormonal treatment, No. (%) | | | |
| No | 51 (27.6) | 6 (50) | 0.097 |
| Yes | 134 (72.4) | 6 (50) | |

Paresthesia of shoulder and arm was frequently found in ALND group than SLNB group due to no intent to preserve intercostobrachial nerve in the current study. Paresthesia is a minor complication that does not affect postoperative pain and quality of life at immediate postoperative period or at 2-year follow-up period[26,27].

It is clear that SLNB results in less arm morbidity after surgery compared with ALND[12,28]. Regardless of axillary nodal status, the incidence of post-operative arm morbidity in the patients who underwent ALND was still higher than SLNB group[29].

**Table 4.** Demographic data of the patients according to sensory deficit of arm/shoulder status

| Characteristic | No sensory deficit, n = 103 (%) | Sensory deficit, n = 94 (%) | *p*-value |
|---|---|---|---|
| Mean age, years (±SD) | 56.02 (±11.98) | 54.90 (±11.64) | 0.507 |
| Menopausal status | | | |
| Premenopause | 78 (77.2) | 72 (78.3) | 0.863 |
| Postmenopause | 23 (22.8) | 20 (21.7) | |
| Mean BMI, kg/m$^2$ (±SD) | 23.88 (±3.92) | 23.41 (±3.24) | 0.363 |
| Dominant arm | | | |
| No | 53 (51.5) | 52 (55.3) | 0.587 |
| Yes | 50 (48.5) | 42 (44.7) | |
| Tumor size, cm (±SD) | 2.01 (±1.08) | 2.02 (±0.99) | 0.946 |
| Lymphatic invasion | | | |
| Absence | 97 (95.1) | 88 (93.6) | 0.653 |
| Presence | 5 (4.9) | 6 (6.4) | |
| Vascular invasion | | | |
| Absence | 93 (91.2) | 81 (86.2) | 0.267 |
| Presence | 9 (8.8) | 13 (13.8) | |
| Perineural invasion | | | |
| Absence | 94 (92.2) | 81 (86.2) | 0.176 |
| Presence | 8 (7.8) | 13 (13.8) | |
| Number of dissected nodes, No. (±SD) | 11.17 (±9.81) | 15.6 (±9.99) | 0.002 |
| Estrogen receptor | | | |
| Negative | 31 (30.4) | 37 (39.8) | 0.169 |
| Positive | 71 (69.6) | 56 (60.2) | |
| Progesterone receptor | | | |
| Negative | 39 (38.2) | 46 (49.5) | 0.114 |
| Positive | 63 (61.8) | 47 (50.5) | |
| HER2 receptor | | | |
| Negative | 99 (97.1) | 93 (100.0) | 0.096 |
| Positive | 3 (2.9) | 0 (0.0) | |
| Type of surgery | | | |
| Wide excision | 32 (31.1) | 23 (24.5) | 0.302 |
| Mastectomy | 71 (68.9) | 71 (75.5) | |
| Duration after surgery, months (±SD) | 36.08 (±20.89) | 42.55 (±24.80) | 0.050 |
| Adjuvant chemotherapy | | | |
| No | 71 (68.9) | 67 (71.3) | 0.720 |
| Yes | 32 (31.1) | 27 (28.7) | |
| Radiotherapy | | | |
| No | 75 (72.8) | 69 (73.4) | 0.926 |
| Yes | 28 (27.2) | 25 (26.6) | |
| Duration after last radiotherapy, months (±SD) | 28.11 (±19.83) | 31.17 (±22.14) | 0.307 |
| Duration of follow-up after complete treatment, months (±SD) | 34.16 (±24.97) | 40.21 (±25.23) | 0.093 |
| Hormonal treatment | | | |
| No | 29 (28.2) | 28 (29.8) | 0.801 |
| Yes | 74 (71.8) | 66 (70.2) | |

Number of axillary node removed was once considered as prognostic factor for survival. In 1992, Danish Breast Cancer Group reported that ALND to achieve at least 10 nodes resulted in significantly better recurrence-free survival and overall survival[30]. In 2003, data from 72,102 breast cancer patients showed that the number of nodes removed was prognostic factor for 10-year survival in the patients with 1-3 positive nodes[31]. In recent randomized clinical trial of SLNB alone and ALND in the patients with T1-T2 invasive breast cancer and

1-2 metastatic nodes who underwent breast conserving surgery, SLNB alone resulted in no inferior survival when compared with ALND[32]. Pathological examination of SLNB by frozen section increased cost of treatment. However, SLNB reduced the cost of hospital stay. Cost-utility analysis in Thai breast cancer patients showed that SLNB cost less than ALND, yet resulted in higher quality of life[33].

**Conclusion**

In the presence of adjuvant treatment, the importance of ALND in the local control may decrease in selected patients and the role of ALND in axillary staging can be replaced by SLNB. Sparing ALND for selected patients could result in substantial decrease in arm morbidity. The authors reported for the first time the experience of SLNB in a single institute. The presented data demonstrated lower morbidity and better quality of life among SLNB group when compared to ALND group. These findings supported SLNB as standard procedure for Thai patients with early breast cancer.

**What is already known on this topic?**

ALND leads to significant arm morbidities, especially arm swelling. Avoidance of unnecessary ALND might reducethe morbidities.

**What this study adds?**

SLNB reduces arm morbidities and should be replaced ALND in breast cancer patients with clinically negative axillary node.

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**Potential conflicts of interest**

None.

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## คุณภาพชีวิตและภาวะแทรกซ้อนหลังการผ่าตัดต่อมน้ำเหลืองเซนติเนลและการผ่าตัดเลาะต่อมน้ำเหลืองที่รักแร้ในผู้ป่วยมะเร็งเต้านมระยะเริ่มต้น

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**ภูมิหลัง:** การผ่าตัดเลาะต่อมน้ำเหลืองที่รักแร้เพื่อประเมินระยะของมะเร็งเต้านมอาจทำให้เกิดภาวะแทรกซ้อนทั้งในระยะสั้นและระยะยาว ในปัจจุบันการผ่าตัดต่อมน้ำเหลืองเซนติเนลสามารถวินิจฉัยได้ว่าผู้ป่วยรายใดไม่มีความจำเป็นต้องได้รับการผ่าตัดเลาะต่อมน้ำเหลืองรักแร้ นอกจากนี้ยังมีปัจจัยอื่นๆ ที่สัมพันธ์กับภาวะแทรกซ้อน หรือส่งผลกระทบต่อคุณภาพชีวิตของผู้ป่วยมะเร็งเต้านม

**วัตถุประสงค์:** เพื่อประเมินภาวะแทรกซ้อนและคุณภาพชวิตของผู้ป่วยมะเร็งเต้านมหลังได้รับการผ่าตัดต่อมน้ำเหลืองเซนติเนล เทียบกับการผ่าตัดเลาะต่อมน้ำเหลืองรักแร้และระบุปัจจัยทางพยาธิวิทยาคลินิกที่เกี่ยวข้อง

**วัสดุและวิธีการ:** ผู้ป่วยที่ได้รับการผ่าตัดต่อมน้ำเหลืองเซนติเนลหรือผ่าตัดเลาะต่อมน้ำเหลืองรักแร้ได้รับการตรวจ ติดตามหลังผ่าตัดและประเมินคุณภาพชีวิต เปรียบเทียบความแตกต่างโดยใช้สถิติ Chi-square และ multivariate analysis

**ผลการศึกษา:** ในกลุ่มผู้ป่วยที่ได้รับการผ่าตัดเลาะต่อมน้ำเหลืองรักแร้มีอัตราการเกิดแขนบวมมากกว่ากลุ่มที่ผ่าตัด ต่อมน้ำเหลืองเซนติเนล (9.8% เทียบกับ 1.2% ตามลำดับ) และมีความรู้สึกชามากกว่า ไม่มีความแตกต่าง อย่างมีนัยสำคัญในด้านการเคลื่อนไหว ความแข็งแรงของแขนหรือการใช้ชีวิตประจำวัน การผ่าตัดเลาะต่อมน้ำเหลือง รักแร้เป็นปัจจัยสำคัญในการเกิดภาวะแทรกซ้อนของแขน

**สรุป:** การศึกษานี้รายงานผลกระทบของการผ่าตัดที่รักแร้ในผู้ป่วยมะเร็งเต้านม การผ่าตัดต่อมน้ำเหลืองเซนติเนล สามารถลดอัตราการเกิดภาวะแทรกซ้อนของแขนได้เมื่อเปรียบเทียบกับการผ่าตัดเลาะต่อมน้ำเหลืองรักแร้