

# The THAI Journal of SURGERY

Official Publication of the Royal College of Surgeons of Thailand

Vol. 33

October - December 2012

No. 4

Original Article

## *Outcome Analysis of Breast Conserving Surgery with Latissimus Dorsi Flap Replacement*

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### *Abstract*

**Background/Objective:** Breast conserving surgery (BCS) is an acceptable treatment for early stage breast cancer patients. Latissimus dorsi (LD) myocutaneous flap has been performed to replace significant defect after BCS with an aim to optimize cosmetic outcome.<sup>1-3</sup> Here we reviewed the outcome of BCS with LD flap reconstruction in term of cosmetics and oncologic safety.

**Patients and Methods:** Between January 2008 and March 2010, 28 patients underwent BCS with LD flap reconstruction at the Udonthani Cancer Center. Patients' demographic data, surgical techniques and complications, cosmetic results and oncologic outcomes were analyzed.

**Results:** We evaluated final esthetic cosmetic results of patients who underwent BCS with LD flap reconstruction. The outcomes were reported as excellent, good and fair in 22 patients (78.5%), 5 patients (17.7%) and 1 patient (3.5%) respectively. The most common operative complication was seroma formation in 20 patients (71.4%). In term of oncologic outcome, one patient had local recurrence and one patient had distant metastasis. The local recurrence rate was correlated with positive surgical margin.

**Conclusion:** BCS with LD flap is an alternative surgical procedure to correct deformity with good cosmetic result and acceptable oncologic outcome.

**Keywords:** Breast conserving surgery, Latissimus Dorsi Flap, early stage breast cancer

### INTRODUCTION

Patients with early stage breast cancers treated with breast conserving surgery (BCS) combined with adjuvant radiation treatment have good prognosis

comparable to those treated with modified radical mastectomy (MRM). Many data and studies have proved that patients in two groups who were treated with BCS plus CCRT and MRM had similar oncologic

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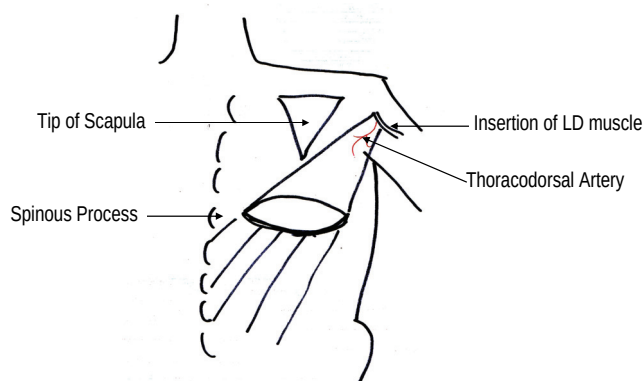
outcome. Only positive surgical margin is a poor prognostic factor that increases incidence of local recurrence.<sup>4</sup>

The benefit of LD flap replacement is used to correct deformity from BCS such as inverted scar, deviated nipple, scar contracture, and significant different of size. Therefore, this procedure might improve QOL and had acceptable complications.<sup>5</sup>

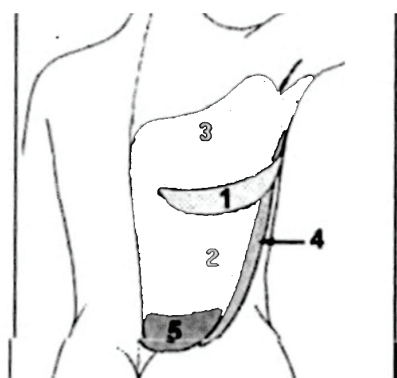
## METHODS

### Patients

Retrospective chart review was performed on patients with early stage breast cancers who underwent BCS with or without LD flap replacement at the Udonthani Cancer Center between 2008 and 2010.



**Figure 1** Anatomy of Latissimus Dorsi Muscle



- Zone 1 : the fatty zone.  
 Zone 2 : the fatty zone lying on the surface to the latissimus dorsi.  
 Zone 3 : the scapular fatty zone above the superomedial border of the latissimus dorsi.  
 Zone 4 : the anterior fatty zone.  
 Zone 5 : the supra-iliac fatty zone the fat located above the iliac crest called love handles.

**Figure 2** Zoning of surgical landmark of Latissimus Dorsi Muscle

Patients were treated with BCS according to guidelines as follows: DCIS or early stage breast cancer with single localized lesion confirmed by imaging (mammography and ultrasonography) and had no contraindication for radiation therapy. Exclusion criteria were pregnancy, multi-centric disease, bilateral lesions, refusal of radiation, and active connective tissue disease.

### Plan of treatment

Pre-operative evaluation included staging and LD flap assessment.<sup>6-8</sup> LD flap was firstly created in lateral decubitus position (as Figure 1). After LD flap preparation was completed, the patient was changed to supine position to perform BCS including quadrantectomy with surgical margin at least 10 mm. and axillary LND or sentinel node biopsy was done.<sup>9</sup> LD flap was rotated to fill the breast defect. Before

**Table 1** Demographic data of patients treated with Breast Conserving Surgery (BCS) with and without LD flaps reconstruction

|                                                                                                                  | BCS with LD flaps<br>reconstruction<br>(N=28 ) | BCS without<br>LD flaps<br>(N=22 ) |
|------------------------------------------------------------------------------------------------------------------|------------------------------------------------|------------------------------------|
| Mean age (years)                                                                                                 | 45                                             | 47                                 |
| - Premenopause                                                                                                   | 22                                             | 18                                 |
| - Postmenopause                                                                                                  | 6                                              | 4                                  |
| Pathological feature                                                                                             |                                                |                                    |
| - Invasive ductal carcinoma                                                                                      | 22                                             | 16                                 |
| - Invasive lobular carcinoma                                                                                     | 2                                              | 4                                  |
| - DCIS                                                                                                           | 2                                              | 1                                  |
| - Phylloides tumor                                                                                               | 2                                              | 1                                  |
| Staging of disease                                                                                               |                                                |                                    |
| - stage I                                                                                                        | 4                                              | 6                                  |
| - stage II                                                                                                       | 19                                             | 13                                 |
| - stage III                                                                                                      | 1                                              | 1                                  |
| Biological Feature                                                                                               |                                                |                                    |
| - Hormone Expression (at least 1 hormone receptor positive) (ER positive, PR positive/ ER negative, PR negative) | 21                                             | 18                                 |
| - Isolated HER-2 Over expression C-erb-2 positive                                                                | 2                                              | 1                                  |
| - Triple negative                                                                                                | 1                                              | 1                                  |
| Chemotherapy regimen                                                                                             |                                                |                                    |
| - CMF x 6 cycle                                                                                                  | 2                                              | 2                                  |
| - FAC x 6 cycle                                                                                                  | 10                                             | 8                                  |
| - AC x 4 cycle                                                                                                   | 4                                              | 2                                  |
| - AC4 - T4 regimen                                                                                               | 4                                              | 2                                  |
| - TAC regimen                                                                                                    | 2                                              | 4                                  |
| - TC regimen                                                                                                     | 2                                              | 1                                  |
| - Capecitabine x 6 cycle                                                                                         | -                                              | 1                                  |

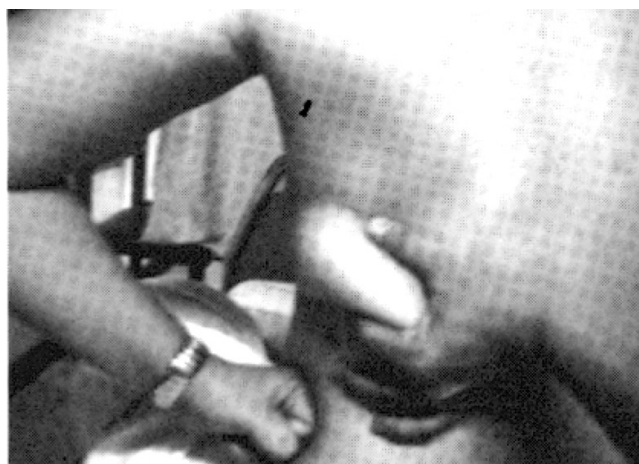
wound closure, redivac drain was placed into a space between back and axillary area. Patients were evaluated for cosmetic results and oncologic outcomes at immediate postoperative period and at follow-up visit (every 3-6 months).

Demographic data including clinical presentation, staging, pathological features with tumor markers and

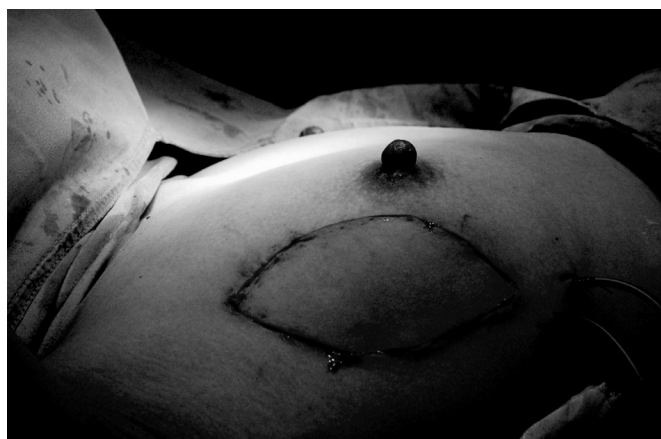
operative complications such as bleeding, seroma formation, infection and flap loss were collected and analyzed. Questionnaires regarding personal attitude toward esthetic outcomes were filled during the follow-up period. Disease outcomes including loco-regional recurrence, distant metastasis and survival were recorded.

**Table 2** Oncologic outcome of patients treated with and without LD flap reconstruction

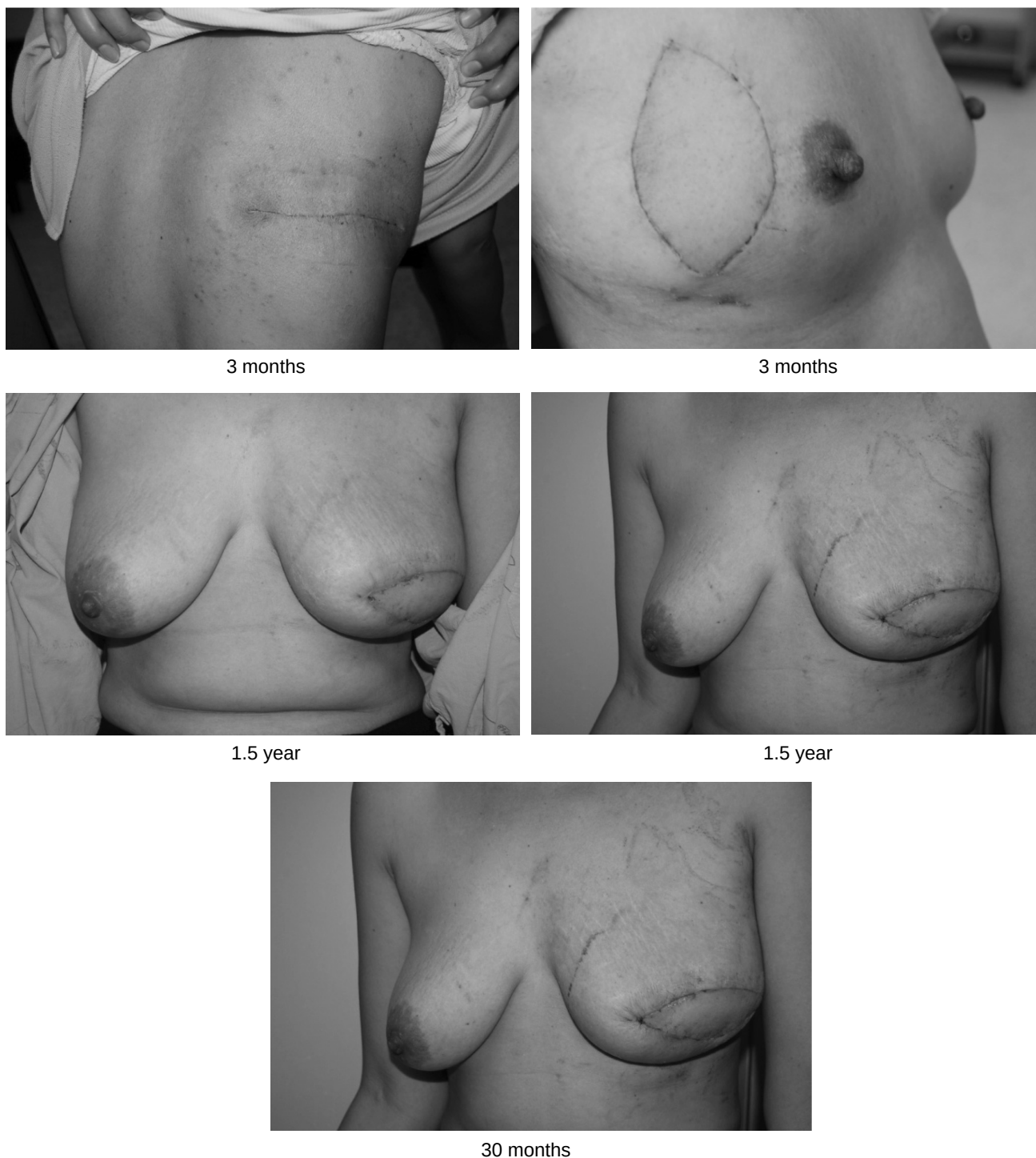
|                                         | BCS with<br>LD flap<br>Reconstruction | BCS without<br>LD flap<br>reconstruction |
|-----------------------------------------|---------------------------------------|------------------------------------------|
| Local recurrence<br>(number of patient) | 1                                     | 1                                        |
| Distant metastasis                      |                                       |                                          |
| - Lung                                  | -                                     | 1                                        |
| - Bone                                  | 1                                     | -                                        |
| - Liver                                 | -                                     | 1                                        |
| - Brain                                 | 1                                     | -                                        |
| - Median Follow up time (months)        | 30                                    | 28                                       |
| - Range time of Follow up (months)      | 5-36                                  | 9-36                                     |



**Figure 3** LD muscle function assessment  
Estimate demand volume replace breast defect.



**Figure 4** Operative procedures  
A Landmark at Operative field, tumor site  
B Latissimus Dorsi FLAP  
C After LD flap was replaced



**Figure 1** A pancreatic mass at epigastrium.

### RESULTS

Most cases are early stage breast cancer [stage I in 4 patients (14.2%), stage II in 19 patients (85.7%)]. The most common histologic type was invasive ductal carcinoma (22 patients). Other pathologies included ductal carcinoma in situ (DCIS) in two patients, invasive

lobular carcinoma in two patients and malignant phylloide tumor in two patients. Mean age of patients was 45 years. Mean operative time was 3 hours 30 mins while average admission time is 8 days. Operative complications were as follows: 20 patients had seroma formation (71.4%), 2 patients had non-severe bleeding

(7.1 %). None of patients had surgical site infection and total flap necrosis. Follow-up data showed local recurrence in one patient (2.9%) and distant metastasis in one patient (2.9%). Predictive factor associated with local recurrence was positive surgical margin. One case with positive surgical margin was successfully re-excised. All patients were treated with adjuvant chemotherapy (Table 1) and radiation therapy at surgical field following NCCN guideline for breast cancer. The median follow-up time was 30 months (5-36 months). One patient had local recurrence at surgical field. Distant metastasis (bone and brain metastasis) was found in patient with negative hormonal receptor status and overexpression of HER-2 status.

Evaluation of cosmetic result from BCS with LD flaps reconstruction using the 4-Point Scoring System of Breast Cosmesis showed excellent outcome in 22 patients (78.5%), good in 5 patients (17.7%), and fair in 1 patient (3.5%). Mild degree of flap atrophy was detected in few patients.

### DISCUSSION

LD flap reconstruction is a procedure which surgeon can practice and is feasible to correct deformity after BCS. Deformity of residual breast defect can be corrected with LD flap replacement and most patients appreciated of result. This procedure can improve QOL in term of cosmetic result. Complications are few and can be managed by supportive treatment.<sup>10,11</sup>

Oncologic outcome shows an acceptable outcome including incidence of local recurrence and distant metastasis rate that equal with groups of patients treated with BCS without replacement and MRM. Positive surgical margin is a factor affecting local recurrence. Gross surgical margin at least 1-2 cm is recommended to reduce incidence rate of positive margin.

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