Outcome of Latissimus Dorsi Flap Chest Wall Reconstruction In Rajavithi Hospital

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Background: *Latissimus Dorsi flap (LD flap) has been used since the eighteenth century to cover large chest wall defects after total mastectomy and is thought to be superior to split thickness skin graft in terms of both cosmetic results and functionality. The outcomes and complications resulting from the use of LD flap reconstruction for large breast cancer are not well documented in Thailand.*

Objective: *To describe a technique using the Latissimus Dorsi musculocutaneous flap for breast reconstruction. The outcomes, complications and length of stay after operation were also reported.*

Material and Method: *Between 2009 and 2014, fifty-five patients with large breast cancer with skin involvement were selected. Of these, forty-four cases had modified radical mastectomy (MRM) alone, and eleven cases underwent total mastectomy with immediate LD flap chest wall reconstruction. The age of the patients ranged from 33 to 81 years. The flap-related complications and donor site morbidity were evaluated. This retrospective study was reviewed and approved by the ethics committee, Rajavithi Hospital.*

Results: *The eleven patients with LD flap for breast reconstruction had a mean age of 53.82±14.50 years (range 33 to 81). All tumors were T4 lesions, and the mean tumor size was 15 cm. Average body mass index (BMI) was 23.83±4.18 kg/m^2, hematocrit (Hct) was 34.90±4.06% and albumin (Alb) was 3.68±1.03 mg/dl. Three patients had diabetes mellitus and two had hypertension. Six of these LD flap patients had the following postoperative complications: wound infections (36.36%); wound dehiscence (27.27%); seroma (18.18%); and partial flap loss (27.27%). No patient had total flap loss. Mean drainage durations of chest and axillary were 7.73 day and 8.09 days respectively, and mean length of hospital stay (LOS) was 20.00±16.72 days. The median tumor size in the LD flap group was significantly bigger than that of the MRM group (15 vs. 3.6 cm, p<0.001). There were no significant differences between MRM and LD flap in terms of gender, age, marital status, BMI, Hct, Albor underlying diseases.*

Conclusion: *LD flap is a safe option for autologous breast reconstruction, although donor-site complications are often observed. A larger series to investigate the results and adverse effects of this procedure is needed.*

Keywords: *Latissimus Dorsi myocutaneous flap, LD Flap, Breast reconstruction*

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Breast cancer is a worldwide public health issue, with nearly 1.7 million cases of newly diagnosed breast cancer reported in 2012[1]. In the United States, 224,147 women and 2,125 men were newly diagnosed with breast cancer in the year 2012. Another report states that 41,150 women and 405 men in the United States died from breast cancer in the same year[2]. The number of newly diagnosed cases of breast cancer in Denmark was also high in 2012, at about 4,500 cases[3]. In China, breast cancer is the most common cancer in women, and 169,000 females are diagnosed with it every year[4]. In the year 2008, the prevalence of breast cancer in Thailand was more than 22 cases per 100,000 women[2], making it the most common cancer in Thai women. In all breast cancer cases, a small number present with large tumor or extensive skin involvement which prevents the performance of primary skin closure after standard total mastectomy. This locally advanced breast cancer is usually treated initially with neo-adjuvant chemotherapy in order to down size the tumor and thereby help surgeon to remove the tumor and finally close the wound primarily. In certain circumstance, such as when patient performance status does not permit chemotherapy or when there is local wound infection and sepsis or bleeding from the tumor, the surgeon has no option but to remove the tumor,

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resulting in the presence of a large wound defect. The available treatments considered to be useful for covering large wound defects in this situation are skin graft, pedicled myocutaneous flap, and free flap.

Breast reconstruction has emerged as a technique for re-creating apparently normal aesthetic breast symmetry. The option of undergoing breast reconstruction following mastectomy is becoming increasingly popular and has proven psychological benefits for women. Many techniques for breast construction have been previously described such as skin-sparing mastectomy (SSM), silicone implants, transverse rectus abdominis myocutaneous (TRAM) flap, and latissimus dorsi myocutaneous (LDM) flap. The method used varies depending on the individual surgeon's preference, taking into account factors such as patient request, lifestyle and technical details[5,6]. LDM was first described by the Italian surgeon Tanzini in the late 1800s[7] as a novel approach to repair after breast amputation. Schneider et al[8] described experiences with latissimus dorsi flap following mastectomy and radiation in 1977, and in 1978, the technique of a skin island over the muscle flap was promoted by Bostwick et al who described the technique of LDM accompanied by an implant[9,10]. However, when LDM was used, capsular contracture rates varied in line with the findings of other reports in the literature (21% to 75%)[5,11-14]. Moreover, having been subsequently further developed, TRAM and LDM have been noted as viable alternative choices because they provide wonderful aesthetic results in specialized centers; however, their technical performance and clinical outcomes in larger sites are still difficult to evaluate due to donor-site morbidity and flap loss[5]. Some studies which have evaluated the use of LDM for breast reconstruction have reported excellent results. In a retrospective study by Sternberg et al (2006)[5] of one hundred consecutive latissimus dorsi flap patients with tissue-expander reconstruction (50 immediate, 50 delayed), mean follow-up was 34.5 months (range, 1 to 175), and aesthetically excellent reconstructions were achieved. There were some complications: 1 patient had partial flap loss, 2 patients needed inframammary fold revision, and 6 patients had capsular contracture. Donor-site seroma occurred in 34 patients, and 6 patients required operative revision. In a study of breast cancer surgery in Turkey[15], LDM was used in 33 cases. Three patients had major complications (9%) including infection, partial flap ischemia, and liponecrotic pseudocysts, nine patients (27%) asked for nipple-areola reconstruction, and eight patients had operative revision. Seroma was still the most commonly encountered problem at the donor site. The author concluded that LD flap provides adequate soft tissue with a reliable blood supply for the enhancement of missing tissue after mastectomy, and that it is a safe method for breast reconstruction and an excellent alternative flap for patients at high risk of abdominal flap complications.

LD flap for chest wall reconstruction with complete intra-hospital admission was first used in Rajavithi Hospital in 2009. In 2014, no available reviews of the outcomes for LD flap had as yet been reported. The aim of this study was to describe the technique of LD flap for breast construction at Rajavithi Hospital. Its outcomes and complications after total mastectomy over the past 5 years were also assessed.

Material and Method

Patients

The present study was reviewed and approved by the research ethics committee of Rajavithi Hospital. This was a cross-sectional study of 55 cases of patients who underwent breast surgery in the Department of Surgery, Rajavithi Hospital, between 2009 and 2014. Eleven patients had huge invasive breast cancer tumor demanding full LD flap reconstruction after total mastectomy while the other 44 breast cancer patients underwent standard modified radical mastectomy alone. Exclusion criteria were patients who had died or could not provide any information for the study. The outcomes and immediate complications of postoperative total mastectomy with LD flap chest wall reconstruction were recorded. We also compared characteristics and clinical outcomes of thestandard modified radical mastectomy group with those of the LD flap group.

Procedure

After the breast is removed, care must be taken to avoid injury to the thoraco-dorsal vessels and nerve during axillary dissection because the vessels are the sole pedicle for the LD flap survival after it has been moved from its anatomical place. The patients were repositioned to lie on their side with arm opened wide (Fig. 1). The area of the flap was then selected depending on the size, angle and distance from the defect to be covered, and had to be large enough for the wound resulting from mastectomy. Then the selected area was incised and muscle was dissected out from thepoint of insertion (spine, ribs and inferior border of the scapula). The muscles were cut to float

out of the scapula, keeping the pedicle of the flap intact, to the axilla (Fig. 2). The flap is then composed of skin, fat and muscle together with thoraco-dorsal blood vessels that run from the armpit. The remaining flap was then passed under the skin tunnel between the donor site and the anterior chest wound to the front, replacing the wound defect, after which suturing of the donor site was completed. To prevent accumulation of lymphatic fluid or hematoma under the wound (seroma collection), the drainage of serum, lymphatic fluid (redivac drain) on the wound was applied at the back before returning the patient to the supine position. The flap was sutured to the wound edge to cover the wound, making sure that the tension on the most distal part of the flap was not too high. Two vacuum drains were placed at the axilla and under the flap in order to prevent seroma and fluid collection (Fig. 3). Postoperative care focused on maintaining blood supply to the flap in order to prevent the occurrence of ischemic conditions which could lead to loss of part or all of the flap (total or partial flap necrosis or wound edge ischemia). The dressing retained a window opening, enabling the surgeon to observe the skin color of the flap which indicates postoperative blood supply to the flap. The most potentially disastrous complication of LD flap surgery is the risk of ischemic complications which can lead to total flap loss; however, this is not very common, since the blood supply from thoraco-dorsal vessels is quite reliable. Patients can return to normal activities within a short period of time, normally in no longer than 4-6 weeks. The flap-covered chest wall can be irradiated (post-operative adjuvant radiotherapy) in order to prevent recurrence. LD flap reconstruction can tolerate the use of radiation much better than the use of skin graft substitutes (split thickness skin graft). Patients undergoing this LD flap enjoy better quality of life after surgery than those who have breast removal alone or use skin graft replacement instead of flap coverage.

Fig. 1 Patient suffering from retracted ulcerated skin cancer of her right entire breast.

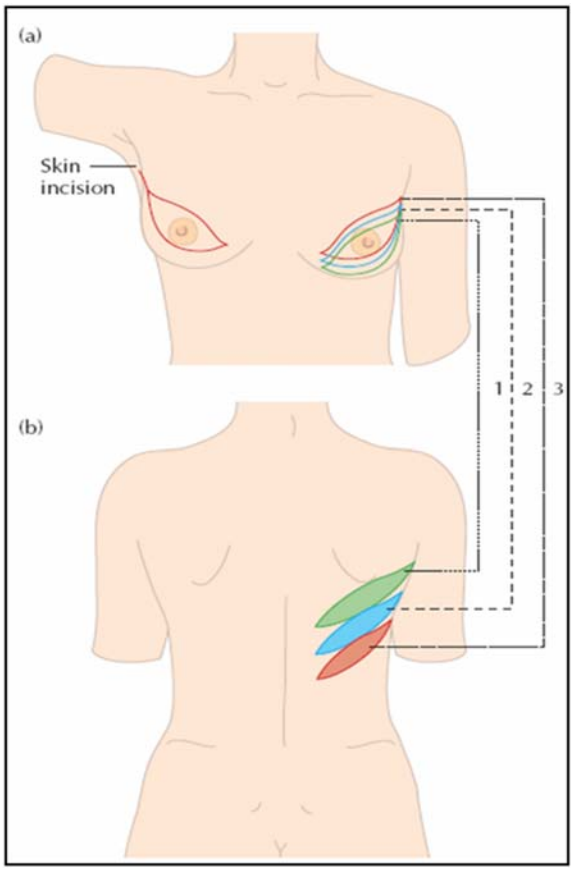

Fig. 2 Diagram shows how various areas of the latissimusdorsi muscle in the back can be designed to replace the removed breast mound in the front.

Statistical analysis

Analysis was performed using the SPSS version 17.0 (Chicago, IL, USA). Baseline characteristics

Fig. 3 LD flap was passed under the skin tunnel to cover the mastectomy defect area in the front (right) and finally is sutured to the wound edge completely (left).

were analyzed using descriptive statistics including number, percentage, mean, median and standard deviation. Chi-square test/Fisher's exact test were employed to test the difference in qualitative variables, Student t-test was used for quantitative variables, and statistical significance was set at $p<0.05$.

Results

In the period between 2009 and 2014, 55 patients were reviewed who had underwent breast cancer surgery and had complete charts. The majority (44) of these patients had modified radical mastectomy (MRM), and the other 11 received total mastectomy with LD flap chest wall reconstruction. In the LD flap group, all were female, most were single, and their mean age was 53.82±14.50 years. All tumors were T4 lesions, and the mean tumor size was 15 cm. In the MRM group, all but one of the patients were female, and their mean age was 58.95±18.50 years. Mass tumor size and serum albumin were two significantly different factors between two groups. The median mass tumor size of patients in the LD flap group was significantly higher than that of those in the MRM group ($p<0.001$) and serum albumin of LD flap group was significantly lower than MRM group ($p<0.05$). The average duration for chest drainage was shorter in the LD flap group than in the MRM group (7.73±2.93 vs. 9.07±4.45 days). In contrast, the average duration of axilla drain in the LD flap group was higher than in the MRM group (8.09±2.81 vs. 6.66±3.56 days); however, no statistically significant differences in drain duration were found in the two groups. Average length of stay (LOS) of the LD flap group was greater than that of the MRM group (20.00±16.72 vs. 14.4±7.34 days), but the difference was not statistically significant. There were no statistically significant differences between the MRM and LD groups in terms of gender, age, marital status, BMI, Hct or underlying diseases. Demographic data of the two groups are shown in Table 1.

All characteristics of the eleven LD flap patients, together with outcomes, are shown in Table 2. The majority of the LD flap patients were aged above 50 years (63.6%), and most (54.5%) had lower BMI (<23 kg/m^2). Mass tumor sizes varied, ranging from 2 to 36 cm, and mass tumor size of 15 cm was the most commonly observed (in two patients). Most of the patients (72.7%) had LOS ≤18 days, but two had LOS for 37 days, while one patient had the maximum LOS of 58 days.

There were some immediate postoperative complications in all LD flap patients. Four patients suffered infections, three patients had wound

Table 1. Demographic data of patients in the LD flap and MRM groups

Characteristics	LD flap (n = 11)	MRM (n = 44)	*p*-value
Gender			1.000
Male	0	1 (2.3)	
Female	11 (100.00)	43 (97.70)	
Age year (mean ± SD)	53.82±14.50	58.95±18.50	0.397
Marital status			0.082
Single, n (%)	6 (54.50)	10 (22.70)	
Married, n (%)	5 (45.50)	27 (61.40)	
Divorced, n (%)	0	7 (15.90)	
BMI			
Kg/m^2 (mean ± SD)	23.83±4.18	26.11±5.89	0.234
Hct (%)	34.90±4.06	36.76±3.45	0.130
Alb (g/dL)	3.68±1.03	4.33±0.31	0.006
Tumor size cm (min-max)	15.00 (2 to 36)	3.60 (1 to 12)	<0.001*
Drain duration_chest			
Day (mean ± SD)	7.73±2.93	9.07±4.45	0.349
Drain duration_axillary			
Day (mean ± SD)	8.09±2.81	6.66±3.56	0.222
Length of stay			
Day (mean ± SD)	20.00±16.72	14.40±7.34	0.096

Values are presented as n (%), mean ± SD, median (min-max), * = significant at $p<0.05$
LOS = Length of Hospital Stay

Table 2. All LD flap patients' data and outcomes

No.	Age	BMI	Mass size (cm)	Hct	Alb	Drain at chest (days)	Drain at axilla (days)	Length of hospital stay (days)
1	45	24.03	15	34.8	4.6	9	7	37
2	51	19.23	17	30	2.1	6	8	11
3	56	22.67	20	35.1	2.3	10	11	37
4	55	19.15	36	39.5	2.7	9	9	18
5	48	30.10	7	32.9	4.6	5	7	11
6	57	29.14	5	34.9	4.1	13	13	58
7	51	22.06	15	36.5	4.4	4	4	6
8	33	22.64	2	29.3	2.6	4	4	6
9	77	27.56	5.5	42.5	4.9	11	11	16
10	81	18.22	11	30.8	4.0	7	7	10
11	38	27.43	12	37.7	4.2	8	8	10

dehiscence as well as partial flap loss, and two cases had seroma. There was no incidence of total flap loss or death after surgery.

Discussion

The ultimate goals of breast reconstruction are to re-create a breast with natural tissue and reduce operative morbidity. However, the availability of breast reconstruction is restricted to a limited number of patients due to cost constraints and lack of availability of technical skills. Many factors are taken into consideration in evaluating breast reconstruction results, and all research authors have described their own personal ideas and experiences. The surgeon's evaluation takes into consideration the types, timing, shape, position, and volume of the breast reconstruction[16,17]. Currently, women seeking bilateral breast reconstruction experience minimal complications and achieve wonderful aesthetic results, but few studies to date have reported the use of LD flap breast reconstruction, particularly in Thailand.

The findings of this study demonstrated a successful outcome for latissimus dorsi for breast reconstruction in patients with a low or normal body mass index. This is similar to the results of a study by Pacella et al[18] which found successful results of LD flap in small (A to C cup) breast sizes. In addition, Lee and Chang[19] indicated that the LD flap method is a viable option for women with small or medium-sized breasts who anticipate pregnancy in the future. It is especially advisable for Asian people, since the breast size of the patients is normally small.

In the present study, tumor size was significantly different in the LD flap and MRM groups, with patients with LD flap having bigger tumor size. Average tumor size of all breasts was up to 15 cm in maximum dimension. The size of the tumor in relation to the volume of the breast is a factor which influences surgeons' decisions. To match the opposite breast, volume displacement or replacement is vital and must be considered[20]. For a small to moderate breast size, as found in most Asian women, the volume replacement procedure is recommended for reconstruction. This can be performed by local tissue rearrangement or flap surgery depending on the tumor size and location[21].

Length of stay is related to the time to removal of the surgical drains from the breast[22]. Normally, the drains are removed according to the surgeon's instructions which most commonly is when the output is less than 30-50 ml/day or on the seventh post-operative day[22]. In the present study, the average drainage durations in both chest and axilla for LD flap patients were almost identical at about eight days after the operation; however, some cases had longer duration, either of chest or axilla, due to infection, and longer drain duration results in the longer LOS.

Most LD flap patients were discharged 18 days after their operations or sooner. Only three patients had longer length of stay (37 and 58 days), and this was due to infection and other complications. The main complications after breast reconstruction with LD flap were infection, dehiscence, seroma and partial flap loss. In the current study, four cases were infected: three of these also had wound dehiscence and partial loss, while the fourth had no other complications. This study demonstrated that symmetric and pliable

reconstructions are possible without danger of flap loss or mortality, but seroma remains a problem. The overall rate of seroma formation (18.2%) is consistent with, but some what lower than, previously published reports worldwide[5]. The result of seroma varies in different studies. Wound dehiscence occurred, but it was less common than that found in a study of the use of pedicled latissimus dorsi flap with a silicone implant, which found that the majority of patients had satisfactory reconstruction, with minimal postoperative complications (13% of superficial wound problems)[23]. Potential complications after surgery should be borne in mind, and further investigation in the form of prospective studies should be performed in the future. In this study, a relatively small group of LD flap patients were included; nevertheless, the results supply clinically valuable data supporting the use of LD flap with tissue expansion as an alternative choice for breast reconstruction in selected patient populations.

In conclusion, LD flap achieved excellent results and is a technically straight forward option for breast reconstruction. There was a reliable blood supply to soft tissue, and there was no incidence of donor-site morbidity. To the best of our knowledge, this is the first literature report in this hospital, where fat or muscle transfer is used for immediate latissimusdorsi flap volume augmentation for breast reconstruction in most patients. It should be considered more frequently as a primary choice for breast reconstruction.

What is already known on this topic?

Several modern techniques for breast reconstruction have been well documented, and different studies have described the experiences of individual surgeons, with varying results. This study describes the technique of the latissimus dorsi musculocutaneous flap, one of the choices available for breast reconstruction.

What this study adds?

This study reviewed reconstruction of the breast using the LD flap procedure and showed the outcomes of its use, together with complications and length of stay after operation. These results are important clinical data for usein choosing breast reconstruction techniques.

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Potential conflicts of interest

None.

References

1. Ferlay J, Soerjomataram I, Ervik M, Dikshit R, Eser S, Mathers C, et al. GLOBOCAN 2012 v1.0, Cancer incidence and mortality worldwide: IARC CancerBase No. 11 [Internet]. Lyon, France: International Agency for Research on Cancer; 2013 [cited 2016 Jun 27]. Available from: http://globocan.iarc.fr
2. U.S. Cancer Statistics Working Group. United States cancer statistics: 1999-2012 Incidence and mortality. Breast cancer statistics [Internet]. 2015 [cited 2016 Jun 25]. Available from: https://www.cdc.gov/cancer/breast/statistics/
3. Statens Serum Institut. Tal og analyse. Cancer registret 2012 [Internet]. 2012 [cited 2014 Nov 4]: 2-51. Available from: http://www.ssi.dk/Aktuelt/Nyheder/2013/~/media/Indhold/DK – dansk/Sundhedsdataogit/NSF/Registre/Cancerregisteret/Cancerregisteret 2012.ashx
4. Bao PP, Zhao ZG, Gao YT, Zheng Y, Zhang B, Cai H, et al. Association of type 2 diabetes genetic variants with breast cancer survival among Chinese women. PLoS One 2015; 10: e0117419.
5. Sternberg EG, Perdikis G, McLaughlin SA, Terkonda SP, Waldorf JC. Latissimus dorsi flap remains an excellent choice for breast reconstruction. Ann Plast Surg 2006; 56: 31-5.
6. Kaya B, Serel S. Breast reconstruction. Exp Oncol 2013; 35: 280-6.
7. Tanzini I. Sopra il mio nuovo processo di amputazione della mammella. Gaz Med Ital 1906; 57: 141.
8. Schneider WJ, Hill HL Jr, Brown RG. Latissimus dorsi myocutaneous flap for breast reconstruction. Br J Plast Surg 1977; 30: 277-81.
9. Bostwick J 3rd, Nahai F, Wallace JG, Vasconez LO. Sixty latissimus dorsi flaps. Plast Reconstr Surg 1979; 63: 31-41.
10. Bostwick J 3rd, Scheflan M. The latissimus dorsi

musculocutaneous flap: a one-stage breast reconstruction. Clin Plast Surg 1980; 7: 71-8.
11. McCraw JB, Maxwell GP. Early and late capsular "deformation" as a cause of unsatisfactory results in the latissimus dorsi breast reconstruction. Clin Plast Surg 1988; 15: 717-26.
12. De Mey A, Lejour M, Declety A, Meythiaz AM. Late results and current indications of latissimus dorsi breast reconstructions. Br J Plast Surg 1991; 44: 1-4.
13. Kroll SS, Schusterman MA, Reece GP, Miller MJ, Smith B. Breast reconstruction with myocutaneous flaps in previously irradiated patients. Plast Reconstr Surg 1994; 93: 460-9.
14. Moore TS, Farrell LD. Latissimus dorsi myocutaneous flap for breast reconstruction: long-term results. Plast Reconstr Surg 1992; 89: 666-72.
15. Agaoglu G, Erol OO. Delayed breast reconstruction with latissimus dorsi flap. Aesthetic Plast Surg 2009; 33: 413-20.
16. Pusic AL, Klassen AF, Scott AM, Klok JA, Cordeiro PG, Cano SJ. Development of a new patient-reported outcome measure for breast surgery: the BREAST-Q. Plast Reconstr Surg 2009; 124: 345-53.
17. Santanelli di Pompeo F, Laporta R, Sorotos M, Pagnoni M, Falesiedi F, Longo B. Latissimus dorsi flap for total autologous immediate breast reconstruction without implants. Plast Reconstr Surg 2014; 134: 871e-9e.
18. Pacella SJ, Vogel JE, Locke MB, Codner MA. Aesthetic and technical refinements in latissimus dorsi implant breast reconstruction: a 15-year experience. Aesthet Surg J 2011; 31: 190-9.
19. Lee JW, Chang TW. Extended latissimus dorsi musculocutaneous flap for breast reconstruction: experience in Oriental patients. Br J Plast Surg 1999; 52: 365-72.
20. Yang CE, Roh TS, Yun IS, Kim YS, Lew DH. Immediate partial breast reconstruction with endoscopic latissimus dorsi muscle flap harvest. Arch Plast Surg 2014; 41: 513-9.
21. Park HS, Lee JS, Lee JS, Park S, Kim SI, Park BW. The feasibility of endoscopy-assisted breast conservation surgery for patients with early breast cancer. J Breast Cancer 2011; 14: 52-7.
22. Hojvig JB, Bonde CT. Breast reconstruction using a latissimus dorsi flap after mastectomy. Dan Med J 2015; 62: A5155.
23. Venus MR, Prinsloo DJ. Immediate breast reconstruction with latissimus dorsi flap and implant: audit of outcomes and patient satisfaction survey. J Plast Reconstr Aesthet Surg 2010; 63: 101-5.

ผลลัพธ์จากการผ่าตัด Latisimus dorsi flap chest wall reconstruction ในผู้ป่วยมะเร็งเต้านมในโรงพยาบาลราชวิถี

สันติ โลกเจริญลาภ, ปัญญวัตร ชมาฤกษ์

ภูมิหลัง: การผ่าตัดเสริมสร้างเต้านมโดยใช้กล้ามเนื้อบริเวณหลัง (latissimus dorsi flap) มีรายงานไม่มากนักเพื่อใช้สำหรับปิดแผลขนาดใหญ่หลังการผ่าตัดในผู้ป่วยมะเร็งเต้านม แต่ยังไม่มีรายงานเกี่ยวกับผลลัพธ์ และภาวะแทรกซ้อนอย่างจริงจังในประเทศไทย

วัตถุประสงค์: เพื่อพรรณนาถึงวิธีการผ่าตัดเสริมสร้างเต้านมโดยใช้กล้ามเนื้อบริเวณหลัง (latissimus dorsi musculocutaneous flap) พร้อมรายงานผลลัพธ์และภาวะแทรกซ้อน รวมทั้งระยะเวลานอนในโรงพยาบาล

วัสดุและวิธีการ: เก็บรวบรวมข้อมูล 5 ปีย้อนหลัง (พ.ศ 2552 ถึง 2557) รวบรวมข้อมูลผู้ป่วยมะเร็งเต้านม ที่รับการผ่าตัด จำนวน 55 ราย โดย 44 ราย ได้รับการรักษาโดยวิธี modified radical mastectomy (MRM) และ 11 รายได้รับวิธีการฟื้นฟูเต้านมโดยใช้กล้ามเนื้อบริเวณหลัง มีการประเมินภาวะแทรกซ้อนและความผิดปกติต่างๆ

ผลการศึกษา: การศึกษานี้ผ่านการพิจารณาจากคณะกรรมการจริยธรรมการวิจัยโรงพยาบาลราชวิถีใน 11 ราย ที่ได้รับการเสริมสร้างเต้านมโดยใช้กล้ามเนื้อบริเวณหลังอายุเฉลี่ย 53.82±14.50 ปี (พิสัย 33 ถึง 81 ปี) ก้อนมะเร็งเป็นชนิด T4 และขนาดก้อนมะเร็งโดยเฉลี่ย 15 ซม. ค่าเฉลี่ย BMI 23.83±4.18 kg/m^2, Hct และ Alb คือ 34.90±4.06% และ 3.68±1.03 mg/dl ผู้ป่วย 3 รายมีโรคประจำตัวคือเบาหวานและอีก 2 ราย เป็นความดันโลหิตสูง ผู้ป่วย 6 ราย มีภาวะแทรกซ้อน แผลติดเชื้อ 36.36%, แผลแยก 27.27% น้ำเหลืองคั่ง 18.18% และ partial flap loss 27.27% แต่ไม่พบ total flap loss เวลาเฉลี่ยของ axiallry และ chest คือ 7.73 วัน และ 8.09 วัน ระยะเวลาเฉลี่ยการนอนโรงพยาบาลคือ 20±16.72 วัน ก้อนเนื้อในผู้ป่วยที่ได้รับการผ่าตัดด้วย LD flap มีขนาดใหญ่กว่าการผ่าตัด MRM อย่างมีนัยสำคัญทางสถิติ เมื่อเปรียบเทียบคุณลักษณะระหว่างกลุ่ม LD flap และกลุ่ม MRM พบว่าไม่มีความแตกต่างในด้านเพศ อายุ สถานภาพสมรส BMI, Hct, Alb และโรคประจำตัว

สรุป: LD flap เป็นวิธีผ่าตัดที่ปลอดภัยในการผ่าตัดเสริมสร้างเต้านม อย่างไรก็ตามยังพบว่ามีภาวะแทรกซ้อนที่สำคัญ การศึกษาต่อไปควรเพิ่มขนาดตัวอย่างและวิเคราะห์ผลลัพธ์หรือผลข้างเคียงที่อาจจะเกิดขึ้นในขนาดกลุ่มตัวอย่างที่มากขึ้น