

## Aesthetic Outcome of Postmastectomy Breast Reconstruction with Extended Latissimus Dorsi Myocutaneous Pedicled Flap

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## Abstract

## Original Research Article

**Introduction:** Breast reconstruction has evolved over the last century to be an integral component in the therapy after mastectomy. But the goals are now to correct the anatomic defect and to restore form and breast symmetry. The goal of the study was to evaluate the aesthetic outcome of postmastectomy breast reconstruction with extended latissimus dorsi myocutaneous pedicled flap in terms of shape, volume, inframammary fold and consistency comparing opposite breast. **Methodology:** This was a prospective interventional study of 12 months period from April 2012 to March 2013 and was done in the Plastic Surgery Department, Dhaka Medical College Hospital. Twenty (20) females having breast carcinoma (up to stage IIIA) and suitable for breast reconstruction were included in this study with 24 weeks follow up. **Results:** In this study, most number of patients were underwent immediate reconstruction 17(85%), delayed reconstruction only 03(15%). Finally, in this study, 08 (40%) patients were Very satisfied (score 10-14), 10 patients (50%) marked as Satisfied (score 6-9) and 02(10%) were Dissatisfied (score 0-5). **Conclusion:** The extended latissimus dorsi fails to give expected aesthetic outcome in both immediate and delayed reconstruction. But overall patient's satisfaction levels in all cases were high as they were happy with the reconstructed breast rather than a flat chest.

**Keywords:** Aesthetic Outcome, Postmastectomy, Breast Reconstruction, Latissimus Myocutaneous Flap.

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### INTRODUCTION

Breast reconstruction is a demanding part of the interdisciplinary treatment for breast cancer after mastectomy. Early attempts to restore the post-mastectomy defect were accomplished with the latissimus dorsi flap which has the advantages of reliable vascularity, proximity to the defect and simplicity in dissection. However, the classic latissimus dorsi flap suffers from its lack of sufficient volume, so the addition of a prosthetic implant becomes mandatory. The extended latissimus dorsi myocutaneous flap can produce a sufficient volume of tissue in many cases for breast reconstruction without an implant. Attention to flap design, mobilization, and in setting are necessary, but the end results can be most worthwhile. In mastectomy patient, this flap is no doubt a useful alternative to give an aesthetic and psychological support to the patient. The LD (Latissimus Dorsi) flap procedure uses muscle and skin from the upper back. Many patients who have had radiation and are not candidates for the free TRAM or DIEP flap procedures are good candidates for the LD flap. The flap is composed of an elliptical patch of skin that lies over the large, flat muscle of the back (latissimus dorsi muscle)

along with the muscle itself. The flap is tunneled under the skin in the armpit to the front of the chest. In some cases, there is not enough volume from the back to match the other breast and an implant is required. The ELD (Extended Latissimus Dorsi myocutaneous) flap is another version of the LD flap. In this procedure, the surgeon removes additional fat tissue from the back, decreasing the need for implants to supply the missing breast volume. It is especially useful for moderately obese patients, who usually are not good candidates for breast reconstruction with either an implant procedure or any of the other flap techniques. Two areas of fat were included with the flap; the scapular fat that overlies the trapezius muscle above the superior border of the LD, and the fat above the iliac crest. McCraw *et al.* Vasconez and Holley, Germann and Steinau [1] and Papp and McCraw[2] describe and illustrate the technical aspects of breast reconstruction with autologous latissimus dorsi musculocutaneous flap. The volume of this muscle flap is sufficient for reconstruction of small to medium-sized breasts. Delay and colleagues [3] review a 3-year, 100- patient experience with the latissimus dorsi flap in breast reconstruction. The authors describe five fat pads in the

back that can be carried with the flap for additional volume. Patient satisfaction was high and aesthetic results were judged excellent in 85% of cases and good in 97%. Seromas developed in 79% of patients in their series. Disadvantages of this technique include the slightly different skin from that of the breast, loss of about 15%-30% of volume over time, a larger scar, and the likelihood of seromas developing postoperatively. Today, with the advancements in techniques and the tremendous improvements in the aesthetic results of breast reconstruction, the latissimus dorsi muscle flap with its versatility is undergoing resurgence in popularity, as different applications are being developed. It is commonly used in immediate and delayed breast reconstruction to replace skin, to add tissue to reduce the size of the breast implant needed, and to provide more cushion and cover to establish a more natural breast contour. New approaches now allow additional fat and subcutaneous tissue to be harvested over the latissimus dorsi muscle, making purely autologous latissimus dorsi flap breast reconstruction possible for certain candidates. Partial breast reconstruction is also possible after quadrantectomy or lumpectomy by use of this flap with specific designs. Thus, the latissimus dorsi flap is now frequently used as a primary method of immediate and delayed reconstruction, as well as a supplement to other techniques [4]. Patients with carcinoma breast have several options of breast reconstruction and chest wall coverage after mastectomy. Emphasis should be given to raise the awareness level among patients as well as physicians about the options of breast reconstruction following mastectomy to improve the quality of life.

### Objectives

- To evaluate the aesthetic outcome of postmastectomy breast reconstruction with extended latissimus dorsi myocutaneous pedicled flap.
- Evaluation of aesthetic outcome in terms of shape, volume, inframammary fold, consistency comparing opposite breast
- To see the scar aesthetics of reconstructed site.
- To see the aesthetic aspect of donor site.
- To assess the level of patient's satisfaction.

## MATERIALS AND METHODS

A prospective interventional study was conducted on patients with carcinoma breast (upto stage IIIA) presenting between the time of April 2012- March 2013 in the department of Plastic Surgery, Dhaka Medical College Hospital (DMCH), and Dhaka, Bangladesh attending the outpatient department as well as the "Breast Clinic" of Plastic Surgery unit. After thorough evaluation both clinically and by laboratory investigations a total 20 patients were included in this study fulfilling the inclusion and exclusion criteria listed below.

## RESULT

In this study, age of the cases varied from 22 to 48 years. Highest numbers of the cases were within the 31 -40 years age group (65%) followed by 21-30 years (20%). Mean age was 35.75 yrs. Most number of patients were undergone immediate reconstruction 17 (85%) and delayed reconstruction was only 03 (15%). Among the study population, 03(15%) patients were taken preoperative Radiotherapy that was in delayed reconstruction group. The most common donor site problem was seroma, which occurred in two cases. All patients were treated conservatively by repeated aspiration in the clinic. None suffered from wound breakdown and edge necrosis of the back flaps. There was no hypertrophic scarring, but all patients developed mild contour deformity. In terms of shape of the reconstructed breast- 16 patients marked as acceptable. Volume of the reconstructed breast also marked as acceptable by 16 patients. 11(55%) of the population said inframammary fold was well-defined but asymmetrical, 09 said it was ill-defined. Most of them felt the flap as soft (13). Scar aesthetics at recipient site were interpreted as good by 75% patients. Donor scar were marked as acceptable by 75% (15). Mild donor site contour deformity was felt by all (Table 1).

Regarding patients satisfaction level 08 (40%) patients were Very satisfied (score 10-14), 10 patients (50%) marked as Satisfied (score 6-9) and 02 were Dissatisfied (10%) (Score 0-5) (Figure 1).



**Fig-1: Preoperative view of a patient presenting for immediate breast reconstruction with markings on the chest, Postoperative right oblique and front views respectively**

**Table-1: Evaluation of aesthetic results (n=20) (by Visual analogue Scale)**

Parameters	Scoring	n	%
Shape of reconstructed breast	Good-(2)	00	00
	Acceptable-(1)	16	80
	Fair-(0)	04	20
Volume of reconstructed breast	Good-(2)	00	00
	Acceptable-(1)	16	80
	Fair-(0)	04	20
Inframammary fold	Well-defined & Symmetrical-(2)	00	00
	Well-defined & Asymmetrical-(1)	11	55
	ill-defined-(0)	09	45
Consistency	Soft-(2)	13	65
	Firm-(1)	07	35
	Hard-(0)	00	00
Scar aesthetics at recipient site	Good-(2)	15	75
	Acceptable-(1)	05	25
	Fair-(0)	00	00
Donor site Scar	Good-(2)	05	25
	Acceptable-(1)	15	75
	Fair-(0)	00	00
Donor site Contour Deformity	Mild-(2)	20	100
	Moderate-(1)	00	00
	Severe-(0)	00	00

## DISCUSSIONS

Breast reconstruction with autogenous tissues is known to provide a much more natural, durable and long-lasting option for patients. The latissimus dorsi (LD) flap was first described in the seventies for breast reconstruction. It has since become a common practice to increase the volume of the standard LD by the addition of a breast implant to compensate for the small volume provided by the classical flap. In our study there was no age limit, all age group were included who were willing to operate. In all age group, surgery was well tolerated. No systemic and medically unfavourable events occurred in old age group regarding this operation. Advanced age (in itself) is not a contraindication [5]. But we observed aesthetic outcome was good in younger age group as ptosis is

more in elderly. The significant number 17 (85%) of patients were underwent immediate reconstruction and only three were delayed reconstructed. In delayed cases problem was in flap harvesting as there was less skin flap to make the pocket for ELD flap inset. There was more fibrosis. But in terms of satisfaction these patients were more satisfied with this procedure though the volume was not adequate. Because they felt better with the flap comparing a flat chest. We have dissected the dorsal skin flaps above the Scarpa's fascia with at least one cm thickness of the retained dorsal skin flaps. Some authors mentioned that one to two mm back flap thickness over a five cm radius is sufficient to preserve the vascularity of the flaps [6]. We agree with McGraw, Chang and their co-workers that one cm-thick dorsal skin flaps should be left behind [7]. In the current

report, none developed necrosis of the edges of the flaps in the back. In our study by pinch test we preoperatively measured that 07 cm width skin paddle was easy to close directly without much tension. On the other hand, the LD flap itself is a very reliable flap with very low incidence of partial or complete necrosis [8]. Marginal necrosis occurred in one case in this report. Necrosis usually happens when there is tension or twist on the pedicle. In so far as the vascularity is concerned, the LD flap tolerates the postoperative irradiation well. However, this certainly has a negative effect on the cosmetic outcome. Post irradiation fibrosis, soft tissue necrosis, edema and contractures can all develop and alter the shape and the consistency of various flaps after breast reconstruction [9]. As our patients were reluctant to take adjuvant radiotherapy, we fail to interpretate the postradiation outcome. The overall patient satisfaction in this study was very good. Eight patients were very satisfied and ten ranked as satisfied. Only two patients were dissatisfied. They had a suboptimal aesthetic result because of the asymmetry between both breasts due to underestimation of the contralateral breast ptosis. The patients in this report who had mild to moderate asymmetry were very reluctant to undergo simultaneous or delayed contralateral breast surgery.

It is well noted that completion of nipple/areola reconstruction improves patient aesthetic satisfaction with their breast reconstructions. A large number of patients may just be satisfied by the newly constructed breast mound and may refuse the option of nipple and areola reconstruction. Only two patients in this study were willing to undergo nipple and areola reconstruction. This certainly improved the cosmetic scoring by both patients and the surgeons. Nipple areola reconstruction was not included in this study population. Most of our patients in the childbearing age who were otherwise good candidates for a TRAM flap were very hesitant to have this choice for fear of any potential abdominal wall complication and preferred the ELD flap option. Indeed, many patients have refused the free flap choice because of the complex nature of the procedure. The disadvantages of the extended LD flap lie in its donor site morbidity. The incidence of seroma in this report reached 10% (2/20). In the current study, we routinely left the drain for nearly two weeks. Another potential problem following extended LD is the contour deficiency on one side of the back [1, 7]. Although this is slight and usually settles when the back becomes supple and lax with time, it is sometimes more obvious especially in obese patients<sup>3</sup>. In the current study, nearly all patients showed a minor residual contour deformity in the back as a result of fat harvesting at the flap's site. As we started shoulder physiotherapy immediately from 1<sup>st</sup> postoperative day, shoulder function deficit was not complained by any of our patients. Three independent judges (patient herself, one of my general surgery and one of my plastic surgery colleagues) graded the aesthetic results comparing opposite breast in terms of shape, volume

and inframammary fold and scar aesthetics. The consistency of the breast were assessed simply by palpation. Scars were assessed by Vancouver scale. Donor site defects marked by assessing scar and contour deformity. Various components of the aesthetic results of breast surgery were stratified by subscales as originally described by Garbay and other [10]. Grades received from the three judges were averaged for tabulation and analysis. The subscale averages will be totalled to give an overall score. Patient's satisfaction levels were defined as very satisfied (score 10-14), satisfied (score 6-9) and dissatisfied (0-5) by overall results.

In terms of shape of the reconstructed breast- 16 patients marked as acceptable (80%). Volume of the reconstructed breast also marked as acceptable by 16 patients (80%). 11 (55%) of the population said inframammary fold was well-defined but asymmetrical, 09 said it was ill-defined. Most of them 13(65%) felt the flap as soft, 7 said it was firm. Scar aesthetics of recipient site were interpreted as good by 15(75%). But donor site scar were acceptable to 15 patients (75%). And mild donor site contour deformity felt by all. Though it was never a cause of any concern to our patients. Overall, in our study population 08 (40%) were very satisfied, 10 (50%) were satisfied and only 02(10%) were dissatisfied though the shape and volume were not satisfactory. In aesthetic view, extended latissimus dorsi flap without implant fails to make a good shape or to give adequate bulk to the reconstructed breast in our study group. It also fails to make a symmetric inframammary fold. But no doubt it gave good platform for future reconstruction (placement of implant) and good coverage to apply postoperative radiotherapy.

#### Limitations of the present study

The analysis was all qualitative. The sample size was small and for a representative data large sample is required. The present study has a post-operative follow up period of only 6 months, which was relatively a short period. A longer period of follow up is likely to yield results on other aspects of the study. We were working only with flap reconstruction on the postmastectomy breast, there was no nipple areola complex reconstruction procedure performed which is an important aesthetic unit of a breast.

#### CONCLUSIONS AND RECOMMENDATIONS

Due to lack of knowledge, consciousness and also in religious background our breast patients are reluctant to go to doctor. End result, they come to doctor at advanced stage. And we had no option to do skin sparing mastectomy, we did simple mastectomy with axillary clearance in all cases. And as a result, extended latissimus dorsi fails to give expected aesthetic outcome. Our people are relatively of short stature; this may be a cause of relatively less bulk at their back ultimately failing to give adequate volume to

new breast. Poor results were in patients with ptotic breasts, for whom a symmetric reconstruction was extremely difficult to achieve. But overall patient's satisfaction level in all cases was high as they were happy with the reconstructed breast rather than a flat chest.

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