



Postmastectomy Immediate Implant-Based Breast Reconstruction with Scarless Latissimus Dorsi Flap—a Simple and Versatile Technique

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Abstract

In low- and middle-income countries, breast reconstruction is not widely practiced due to a lack of specialized equipment, skilled personnel, and high costs. The scarless latissimus dorsi flap is a useful technique which can harvest a major portion of the latissimus dorsi muscle using the same mastectomy incision without requiring repositioning of the patient, to cover the lower pole of prosthesis for reconstruction. The aim of this study was to assess and evaluate the cosmetic results and complications of scarless LD flap used as a lower pole cover in post-mastectomy breast reconstruction with implants. This is a pilot study of 18 breast cancer patients who underwent implant-based scarless LD flap breast reconstructions during a period of 4 years from 2017 to 2021. A questionnaire based on relevant subscales of BREAST-Q scores was completed by all the patients and used for evaluation. A total of 18 patients who underwent 20 surgeries were evaluated for the study. The median age was 44.5 years. The mean operative time was observed to be 164.50 min. The mean length of hospital stay was 3.1 days. From the Breast Q subscales, the mean cosmetic score was 31 out of 36 (range 27–36) (higher score reflecting better cosmetic outcome), and the mean physical well-being score was 17.25 out of 54 (range 12–29) (lower score reflecting better outcome). Overall complications were observed to be 20% which included minimal flap necrosis in 2 patients which was managed conservatively, and seromas in 2 patients which needed ultrasound-guided aspirations twice. There were no major complications. The scarless LD flap provides an adequate lower pole muscle coverage for implants in breast reconstruction. It has less morbidity and good cosmetic outcomes. It is time and cost-effective, requires no patient repositioning, and uses standard breast instruments.

Keywords Scarless latissimus dorsi flap · Breast reconstruction · Implant reconstruction · Mastectomy · Latissimus dorsi flap

Introduction

According to WHO-GLOBOCAN data 2020, breast cancer in India accounted for 178,361 new patients which is 13.5% of all new cancer cases and 26.3% of all new cancer cases in females, thus making it the most common cancer among Indian women [1]. The incidence of breast cancer in India is gradually increasing, as evidenced by the increase in age-standardized incidence rate by 39% between 1990 and 2016.

Mastectomy is the most commonly done surgery for breast cancer in India, and more often than not, reconstruction is neither offered by the surgeons nor requested by the patients. Although multiple studies have shown the advantages of breast reconstruction, the percentage of breasts reconstructed after mastectomy remains < 1% in India [2].

There is a scarcity of plastic surgeons who can work in conjunction with breast surgeons in most hospitals. Therefore, in this scenario, it is necessary to adapt the “one surgeon-dual role” concept, wherein a well-trained breast oncoplastic surgeon performs both the oncosurgery and reconstructive procedures. The procedure of scarless LD is one such procedure which is simple, has a fast-learning curve, is not time-consuming, and microsurgical skills are not required.

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We adapted this procedure in 2017 and have found this to be a very useful technique to offer breast reconstruction to our patients.

Aim

The aim of this study was to

- assess and evaluate the cosmetic results,
- complications of scarless latissimus dorsi flap used as a lower pole cover in post-mastectomy breast reconstruction with implants (Fig. 1).

Materials and Methods

This is a pilot study of 18 breast cancer patients who underwent implant-based scarless latissimus dorsi immediate breast reconstructions. The study was conducted between a period of 4 years from 2017 to 2021 at Ruby Hall Clinic, Pune, India.

A questionnaire was designed based on relevant subscales of BREAST-Q scores which included.

- 1) Satisfaction with breasts (higher score is better outcome)
- 2) Physical well-being chest (lower score better outcome)
- 3) Satisfaction with back and shoulder (lower score better outcome)
- 4) Satisfaction with implant (higher score better outcome)

- 5) Breast animation deformity (higher score better outcome)
- 6) Satisfaction with outcome (higher score better outcome)

The questionnaire was filled out by each patient 6–8 weeks after the surgery. It included subscales for cosmetic scores and physical well-being. The scores were calculated from different subscales, and final data was prepared based on the same.

Surgical Technique

Pre-operatively, the lateral breast line, inframammary fold, and anterior border of latissimus dorsi are marked in the standing position.

A skin-sparing mastectomy is completed. The pectoralis major is divided from the inferior and medial regions to cover the superior pole of the implant.

Axilla is addressed by sentinel node biopsy or axillary lymph node dissection.

The mastectomy incision is retraced laterally, and subcutaneous dissection is continued from the anterior margin of the latissimus dorsi towards the posterior part of the muscle (Fig. 2).

Dissection is continued till the inferior angle of the scapula is reached.

Dissection is then done in the posteromedial region till a good amount of muscle is harvested.

The caudal and medial portion of the muscle is then divided.

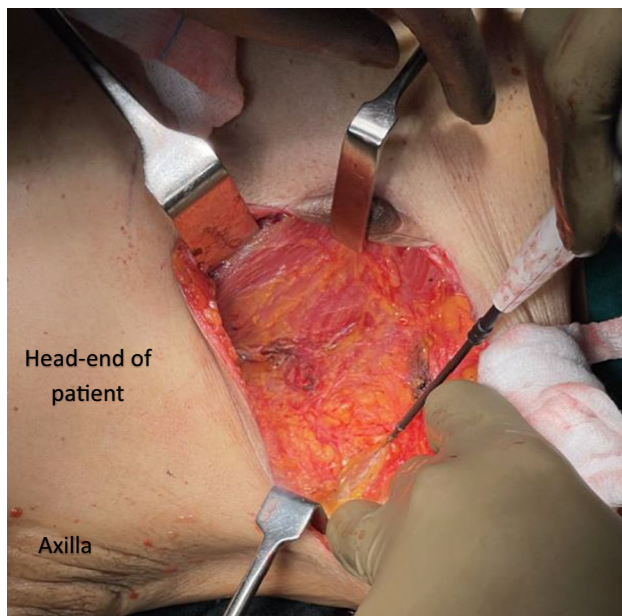


Fig. 1 Post-mastectomy defect

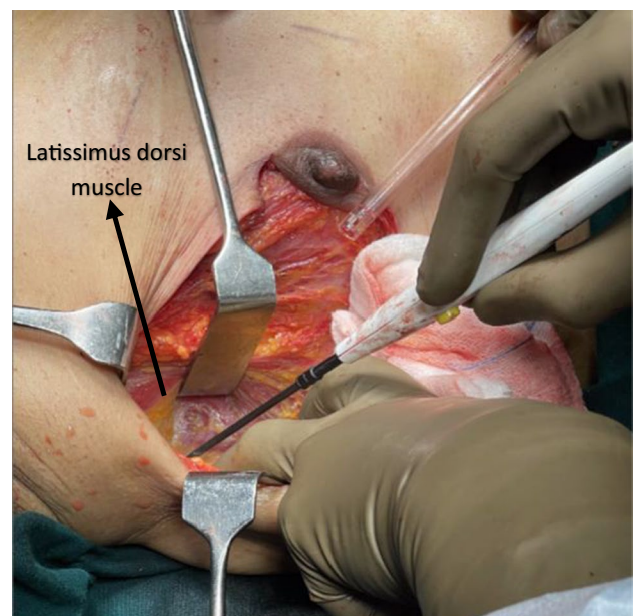


Fig. 2 Subcutaneous dissection of latissimus dorsi

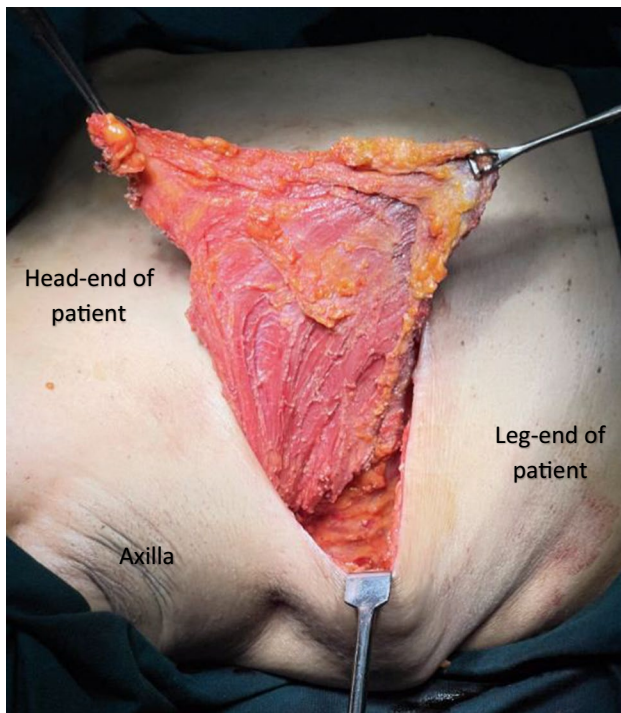


Fig. 3 Dissected latissimus dorsi muscle

Dissection is then done cranially to identify the thoraco-dorsal neurovascular bundle.

The thoracodorsal bundle is dissected and isolated, and the nerve is cut (Fig. 3).

The tendon of the lat dorsi is divided, and the muscle is detached to gain additional length.

This isolated island flap is then rotated along the neurovascular bundle towards the anterior chest wall.

It is anchored medially and inferiorly in the mastectomy defect and to cover the lower pole of the implant (Fig. 4).

An appropriate size implant is then placed in the defect between the pectoralis major superiorly and the latissimus dorsi inferiorly (Fig. 5).

The two muscles are sutured over the implant with vicryl 3–0 after placing a suction drain below the implant (Fig. 6).

This drain can be removed after 48 h.

Results

A total of 18 patients who underwent 20 surgeries (2 were bilateral) were evaluated for the study. The median age was 44.5 years. The mean operative time of mastectomy with sentinel node biopsy or axillary dissection with scarless LD reconstruction was observed to be 164.50 min (Fig. 7). The mean length of hospital stay was 3.1 days. From the Breast Q subscales, the mean cosmetic score was 31 out of 36 (range

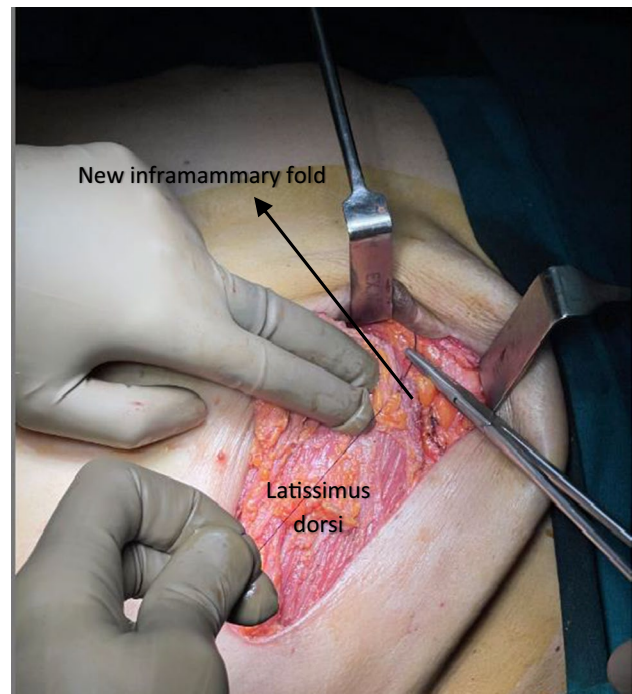


Fig. 4 Latissimus dorsi anchored inferiorly to create new IMF

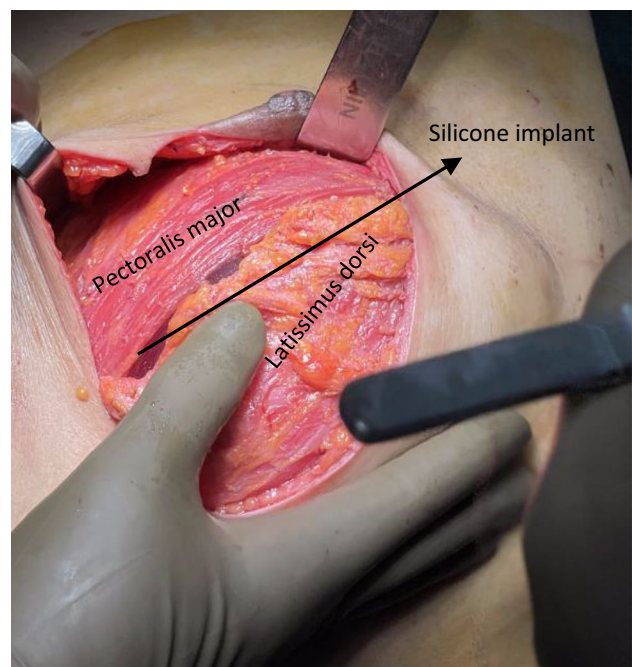


Fig. 5 Silicone implant placed between the pectoralis major superiorly and latissimus dorsi inferiorly



Fig. 6 Post-closure of defect

27–36) (higher score reflecting better cosmetic outcome), and the mean physical well-being score was 17.25 out of 54 (range 12–29) (lower score reflecting better outcome) (Table 1).

Overall complications were observed to be 20% which included minimal flap necrosis in 2 patients which was managed conservatively, and back seromas in 2 patients which needed ultrasound-guided aspirations twice.

The mean follow-up for the patients was 18 months.

No animation was observed as the nerve was cut in all patients.

Table 1 BREAST-Q scores (all 18 patients)

	Best possible score	Mean of 18 pts	Range	Interpretation
Cosmetic score	36	31	27–36	Higher score = better cosmetic outcome
Physical well-beings	12	17.25	12–29	Lower score = better outcome

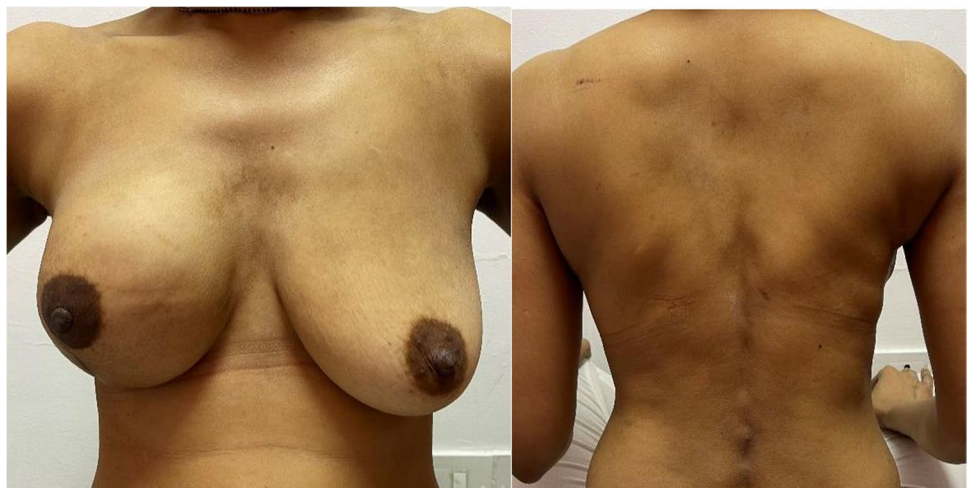
Discussion

The rate of breast reconstruction in India is dismally low. The reasons for such low breast reconstruction rates include factors such as.

- Low awareness among patients about breast reconstruction options
- Financial constraints
- Scarcity of proper OT, trained surgeons, staff, etc.
- Lengthy operative time and longer hospital stay
- Misconception about breast reconstruction being a procedure for the rich and young women

Lack of awareness of the cancer and its reconstructive options is the primary reason for the low rates of breast reconstruction in India. In a survey (by Kothari, Deepak S et al.) done with the purpose of knowing the awareness levels of reconstructive surgery in Mumbai, it was found that only 242 women out of 1000 who took part in the survey were aware of reconstructive options after the treatment of carcinoma breast. The older group had

Fig. 7 Post-operative results after 6 months



a better knowledge about the options, as compared with the younger ones. Most of them said they had never heard about reconstruction after cancer surgery [3]. Another study by Shanmugakrishnan RR et al. also showed that 51.2% of women out of a total of 10,299 were not aware that breasts could be reconstructed [4]. This lack of awareness needs to be corrected by public awareness initiatives by the health care personnel and the government.

Another very important factor for low reconstruction rates is the lack of finances. In India, majority of the population is uninsured for health. It was seen that between 2017 and 2018, only 14% of the rural population and 19% of the urban population had health insurance coverage. Of this, 13% of the rural population and 9% of the urban population were covered by government-supported health insurance schemes [5]. A major misconception among these insurance providers is that oncoplastic breast surgery is a cosmetic procedure and not part of the routine surgical management of breast cancer. Hence, a majority of health insurances do not cover reconstructive procedures.

Most of the population depends on the out-of-pocket expenses for treating their health problems, including breast cancer, breast reconstruction, and the complications if they arise. Hence, the cost factor does play a significant role in the decision to undergo breast reconstruction.

A third and very important factor for low breast reconstruction rates is the lack of resources and trained health care specialists and surgeons to offer these procedures. For breast cancer surgery, total mastectomy is the most common procedure in many centers in India. Only a few tertiary cancer care centers in metropolitan cities are equipped with adequate medical infrastructure to offer the oncoplastic breast surgery options. To increase the reach of reconstruction techniques in smaller centers, herein, we propose that this method of scarless latissimus dorsi will be of great benefit. This is a simple technique to help surgeons master a breast reconstruction procedure at the time of primary mastectomy.

This technique was developed by Australian plastic surgeon, Dr Mark Lee at St John of God Hospital in Western Australia. The scarless latissimus dorsi flap is a new approach to the traditional LD breast reconstruction method. Traditionally, latissimus dorsi flap has been done for breast reconstruction with or without the implant. But the traditional method leaves a long scar at the back with associated pain and morbidity. Dr Lee conducted his study on 20 patients with traditional latissimus dorsi breast reconstruction with 27 flaps (few were bilateral) which were compared with 20 patients with scarless latissimus dorsi reconstruction with 30 flaps (few were bilateral) [6]. The scarless latissimus dorsi breast reconstruction was equivalent to traditional latissimus breast reconstruction in terms of cosmetic results and complications. Patients' length of stay in hospital

was reduced by 1½ days in the scarless latissimus dorsi reconstruction.

The overall cosmetic outcome which included satisfaction with breasts, satisfaction with scar, satisfaction with implant, and overall satisfaction with surgery which was calculated based on BREAST-Q scales with this method of reconstruction in our study was excellent. Another parameter calculated was the physical well-being score including back or shoulder pain or deformity and breast pain, which showed low donor side morbidity with this technique. Rachita Sood et al. in a retrospective study also found that patients who underwent scarless LD flap reconstruction had overall excellent patient satisfaction and low donor site morbidity [7].

The complication rate with this technique in our study is also not very high. The most common complications we found in our study were minimal flap necrosis and seroma formation (Fig. 8). The flap necrosis was related to the thin mastectomy flaps and not reconstruction per se. Seroma formation was related to the extensive dissection at the back, but it resolved with repeated aspirations. A similar technique was also described by Dr. Elliot LF et al., where he used this technique for secondary reconstruction. Postoperative complications occurred in seven of 52 reconstructions (13%) and included three hematomas (5.8%), two occurrences of severe capsular contracture (3.8%), and two superficial skin infections (3.8%) [8].

Another study by Bittar et al. concluded that the absence of a back incision may prove to decrease patients' recovery time and donor-site discomfort in their study [9]. In our study also, the recovery time was shorter, and the donor site morbidity was less.



Fig. 8 Flap necrosis (complication)

Limitations of this study include less number of patients and shorter follow-up time. Further evaluation including comparison with other reconstruction methods will be needed to determine the role of the scarless latissimus dorsi flap in modern approaches to breast reconstruction.

Conclusion

The scarless latissimus dorsi flap provides an adequate lower pole muscle coverage for implants in breast reconstruction. It has less morbidity and good cosmetic outcomes. It is time and cost-effective, requires no patient repositioning, and uses standard breast instruments. It is a simple operative technique which can be learned by general surgeons and thus can be offered to more patients in low-middle-income countries and help give them a better quality of life.

Author Contribution 1. Author 1: substantial contributions to the conception and design, or acquisition of data, or analysis, interpretation of data, and involved in drafting the manuscript or revising it critically on important intellectual contents.

2. Author 2: substantial contributions to the conception and design, or acquisition of data, or analysis and interpretation of data.

3. Author 3: involved in drafting the manuscript or revising it critically on important intellectual contents and gives final approval of the version to be published.

Declarations

Competing Interests The authors declare no competing interests.

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