International Surgery Journal
Singla S et al. Int Surg J. 2020 May;7(5):1412-1418
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20201548

Original Research Article

Post mastectomy breast reconstruction with autologous latissimus dorsi flap: a study of 30 cases

Shipra Singla*, Vikas Kakkar, Rana Ranjit Singh

Department of Surgery, Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah, Sri Amritsar, Punjab, India

Received: 18 March 2020
Revised: 03 April 2020
Accepted: 04 April 2020

***Correspondence:**
Dr. Shipra Singla,
E-mail: rishavsingla967@gmail.com

ABSTRACT

Background: There is a growing demand for breast reconstruction and among the plethora of breast reconstruction techniques, the latissimus dorsi (LD) flap is a versatile, reliable means for soft tissue coverage, providing form and function with acceptable perioperative and long-term morbidities for a variety of breast defects. The aim of this study was to find out the advantages of immediate breast reconstruction in terms of postoperative morbidity and patient satisfaction with respect to her expectations.
Methods: The study was conducted in the Department of General Surgery at Sri Guru Ram Das Institute of Medical Sciences and Research, Vallah, Sri Amritsar. Thirty female patients who had undergone immediate breast reconstruction with latissimus dorsi flap after modified radical mastectomy attending surgery department from November 2017 to September 2019 were taken. The follow up was done to find out post-operative complications and a statistical scoring was done according to rating scale of quality of life.
Results: Most common complication after breast reconstruction with LD flap was found to be seroma formation (50%) followed by wound infection and flap necrosis 25% each while flap necrosis >20% was not found in any case. For emotional feeling regarding health, social activities, overall health and quality of life; there was significant improvement after surgery.
Conclusions: It can be concluded that immediate breast reconstruction with autologous latissimus dorsi flap is the treatment of choice following mastectomy in cases of breast carcinoma, whenever possible.

Keywords: Autologous, Carcinoma, Flap necrosis, Immediate breast reconstruction, Latissimus dorsi, Mastectomy

INTRODUCTION

Breast cancer has ranked number one cancer among Indian females with age adjusted rate as high as 25.8 per 100,000 women and mortality 12.7 per 100,000 women.[1] The etiology of breast cancer is multi-factorial and still not fully known. Hereditary breast cancer is considered to be present in less than 10% of the patients. Amongst them 1/3rd have a mutation in breast cancer susceptibility gene (BRCA) 1 or 2. Other risk factors that can influence the development of breast cancer are obesity, alcohol habits, smoking, low parity, late and low childbirth, early menarche, late menopause and hormone replacement therapy. [1,2]

Today, breast cancer diagnosis is based on a triple diagnostic procedure with clinical examination of the breast, mammography or ultrasound (radiological) and core or trucut biopsy. The sensitivity of this triple procedure is very high, with less than 1% missed cases. Complimentary methods such as magnetic resonance imaging (MRI) can be used.[3]

In patients with large tumors, multicentric or inflammatory cancer, mastectomy is recommended with or without reconstruction. Patients with advanced tumor stage are offered neoadjuvant therapy before surgery.[4] The loss of a breast is a psychological and physical traumatic event and influences the quality of life and body image for many women in all ages.[5,6]

There is a growing demand for breast reconstruction and the choice between primary and delayed reconstruction has to be made. Traditionally, women with ductal cancer in situ (DCIS) and T1-3 tumors were offered immediate breast reconstruction (IBR), while those with locally advanced breast cancer (LABC) were recommended delayed procedures.[7-9]

Immediate breast reconstruction has advantages over delayed reconstruction but questions have been raised about oncological safety.[10-12]

Among the plethora of breast reconstruction techniques, the latissimus dorsi (LD) flap is a versatile, reliable means for soft tissue coverage, providing form and function with acceptable perioperative and long-term morbidities for a variety of breast defects. The advantages include the large volume of tissue is available for reconstruction, useful in thin habitus patients, in previous abdominal operations (including abdominoplasty), failed implant or transverse rectus abdominis myocutaneous (TRAM) reconstruction.[13-15]

There is no absolute contraindication for using LD muscle, provided that the vascular pedicle is intact. Ischemic complications are uncommon, due to the reliable vascular supply of the thoracodorsal artery to the LD flap. Even in patients with diabetes or tobacco use, there is minimal risk of flap necrosis.[16]

The most common complication in breast reconstruction with the LD flap is donor site seroma at the harvest site. Additional donor site morbidity includes dorsal hernia, loss of shoulder mobility, shoulder weakness, hollowness at the harvest site, and winged scapula.[17-19]

Objectives

The aim of this study is to find out the advantages of primary breast reconstruction in terms of postoperative morbidity and patient satisfaction with respect to her expectations.

METHODS

This prospective study was designed to include 30 patients admitted to Sri Guru Ram Das Hospital, Vallah, Sri Amritsar from November 2017 to September 2019, who had undergone postmastectomy immediate breast reconstruction with latissimus dorsi flap. These patients were investigated, treated and follow-up at discharge.

Inclusion criteria

The criteria to offer breast reconstruction were stage of the disease: T3 operable cases (T3N0M0) as well as stage I and II patients who did not opt for breast conservative surgery (BCS), age of the patient: breast reconstruction was suggested only to people below the age of 70 years and also after considering their active social or sexual life, mental make-up of the patient: breast reconstruction was offered only to those who had a very positive frame of mind and only to those who could be brought to that state after adequate counselling, economic status of the patient: patient from higher middle class were more satisfied than the poor class. But in our institution total treatment is free for all. So poor and middle-class people come frequently. Educational background of the patient: Breast reconstruction was offered only to those who had clearly understood the philosophy behind this, the message of adherence to the protocol of treatment and the need for constant follow-up. Demand of the patient: Irrespective of all the factors mentioned, the patient's demand would also be taken into consideration at the time of total planning of the treatment.

Exclusion criteria

The patients having severe co-morbidity like severe cardiac diseases, prolonged tuberculosis with ill health, immunodeficiency syndromes, suffering from any other malignant disease or metastasis or any disease-causing low life expectancy, smoker and age above 70 yrs. were excluded from the study. The patients with initial stage of breast cancer and fit for BCS were also excluded from our study.

Whenever a patient presented to the department directly with symptoms pertaining to breast, a thorough history and clinical examination was done and if suspected to have a malignancy the clinical stage was noted. The majority of the patients presented with a lump in the breast. These patients were sent for fine needle aspiration cytology (FNAC) study. If FNAC confirms malignancy, after a metastatic work-up, patients were taken up for definitive surgery. If FNAC was suspicious/inconclusive of malignancy, a trucut biopsy or an excision biopsy was done. If the patients with breast symptoms did not have a palpable disease a mammogram was done, depending on the symptoms along with a breast ultrasound examination to detect any mass lesion and targeted cytology/biopsy were done. The referred patients with a proven breast malignancy were clinically reviewed and their slides were reviewed by our pathologists or cytopathologists and the diagnosis was reconfirmed.

All patients underwent immediate post-mastectomy breast reconstruction with LD flap. Modified radical mastectomy (MRM) was done with clearance of axilla up to level II lymph nodes.

Postoperative care

Drains were placed in the area of the mastectomy site, axilla and in the area from where the flap was taken and were removed, depending on the drainage, between the 4th to 6th postoperative day. Sutures were removed on the 10th to 12th post-operative day and the patient was discharged within with 2-3 days if there is no post-operative complication.

Adjuvant treatment

The decision regarding adjuvant treatment, like chemotherapy, radiotherapy and hormonal manipulations, was taken based on the age, size of the tumor, nodal status, menopausal status and the final histopathology report which gives an idea about the grade of the tumor and many other prognostic indices.

Follow-up

First follow-up: The first follow-up done was OPD basis after 2 weeks of discharge. The reconstructed breast was examined properly for any deformity, aesthetic appearance in comparison to the normal breast, any local recurrence and any infections. The donor area was also examined for any necrosis, infection and deformity. All the cases were examined systematically for any distant metastasis. They were interviewed as in the proforma about their physical fitness, performance of daily activities, feelings about their health, social activities and overall health i.e. physical and mental health. And a statistical scoring was done for each individual.

Table 1: Rating scale of quality of life.[20]

		Score obtained	Max score
Physical fitness	I can do work		
	Very heavy (run, carry, heavy wt.)		5
	Heavy (walk fast, carry moderate wt.)		4
	Moderate (walk medium pace, carry wt. at ground level)		3
	Light weight (walk medium pace, carry light wt.)		2
	Very light (walk slow, wash dishes etc.)		1
Daily activities	I can do my daily activities with		
	No difficulty		5
	a little bit difficulty		4
	Some difficulty		3
	Much difficulty		2
	Cannot do		1
Feelings	I have emotional problems regarding my health		
	Not at all		5
	Slightly		4
	Moderately		3
	Quite a bit		2
	Extremely		1
Social activities	I have problems in social interaction with family, relatives etc		
	Not at all		5
	Slightly		4
	Moderately		3
	Quite a bit		2
	Extremely		1
Overall health	I have physical and mental health		
	Excellent		5
	Very good		4
	Good		3
	Fair		2
	Poor		1
Quality of life	My life quality is		
	Excellent		5
	Very good		4
	Good		3
	Fair		2
	Poor		1

Second follow-up: The second follow-up was also done as an OPD basis after 3 months of 1st follow-up. Almost same procedures were used for the second visit.

Third follow-up: The third follow-up visit was done after 6 months of 2nd visit and here also same procedure were used as in previous two visits.

RESULTS

Table 2 shows that maximum number of patients who underwent breast reconstruction were in the age group of 31-50 years.

Table 2: Age distribution of the patients.

Age group (in years)	No. of cases	%
20-30	2	6.7
31-40	12	40
41-50	13	43.3
51-60	3	10
Total	30	100
Mean age	41.40±6.91	

Table 3: Socioeconomic status of the patients.

Socio economic status	No. of cases	%
Lower middle	16	53.3
Upper middle	14	46.7
Total	30	100

Table 3 shows that none of the patients were from upper and lower class.

Table 4: FNAC findings.

FNAC findings	No. of cases	%
Infiltrating ductal carcinoma	29	96.67
Lobular carcinoma	1	3.33
Total	30	100

Table 4 shows that majority of the cases were having infilterating ductal carcinoma.

Table 5: Clinical stage of the patients.

Clinical stage	No. of cases	%
T1N0M0	3	10
T2N0M0	21	70
T2N1M0	6	20
Total	30	100

Table 5 shows that majority of the patients had T2N0M0 stage.

Table 6 shows that the most common complication after breast reconstruction with LD flap was found to be seroma formation followed by wound infection and flap necrosis <20% while flap necrosis >20% was not found in any case. There was no mortality in any case.

Table 6: Distribution of type of morbidity.

Morbidity	No. of cases	%
Wound infection	2	25
Seroma	4	50
Flap necrosis >20%	0	0
Flap necrosis <20%	2	25
Total	8	100

Table 7: Duration of post-operative hospital stay.

Hospital stay (in days)	No. of cases	%
5-10	16	53.3
11-15	10	33.3
16-20	3	10
>20	1	3.3
Total	30	100
Mean hospital stay	11.66±3.73	

Table 7 shows that maximum number of patients had post-operative hospital stay between 5 to 10 days.

Assessment of quality of life

Table 8 shows that maximum number of patients were able to do moderate work after surgery.

Table 8: Physical fitness.

Physical fitness	No. of cases	%
Light	8	26.67
Moderate	17	56.67
Heavy	5	16.67
Total	30	100

Table 9: Daily activities.

Daily activities	No. of cases	%
Little difficulty	9	30
No difficulty	21	70
Total	30	100

Table 9 shows that maximum number of patients were able to do daily activities with no difficulty after surgery.

Table 10 shows that maximum number of patients were not having any problem regarding emotional health and social interaction with family and relatives after surgery.

Table 11 shows that maximum number of patients were health very good overall health and quality of life after surgery.

Table 9: Emotional feeling regarding health and social activities.

	No. of cases	%
Emotional feeling regarding health		
Extremely	0	0
Quite a bit	1	3.33
Moderately	2	6.67
Slightly	9	30
Not at all	18	60
Total	30	100
Social activities		
Extremely	0	0
Quite a bit	1	3.33
Moderately	1	3.33
Slightly	8	26.67
Not at all	20	66.67
Total	30	100

Table 10: Overall health and quality of life.

	No. of cases	%
Overall health		
Excellent	0	0
Very good	20	66.67
Good	8	26.67
Fair	2	6.67
Poor	0	0
Total	30	100
Quality of life		
Excellent	0	0
Very good	20	66.67
Good	7	23.33
Fair	3	10
Poor	0	0
Total	30	100

DISCUSSION

The overall incidence of breast carcinoma in India according to age group has remained between 41-50 years.[21] From the distribution of the patients in our study shows that the maximum number of the patients are in the age group of 41 to 50 years which is more or less same with Indian scenario.

Although from the epidemiological study, it has been seen that, usually educated urban women are affected most with carcinoma breast. Reuben et al demonstrated that immediate reconstruction was more likely to happen in the younger white patient who were seeking medical care in an urban versus a rural hospital. These patients were also more likely to be educated, employed, and married. However, recently there has been an increase in breast reconstruction among older patients, probably related to greater awareness and changes in provider bias.[22] Patients who did not undergo immediate reconstruction were more likely to be older, with multiple comorbidities and receiving care in a nonteaching hospital.[23]

However, Panieri et al studied a smaller group and found quite the opposite, with no association between immediate reconstruction, age, occupation, education level, and marital status. Patients in this study preferred to have simpler procedures, and expressed less concern for their postoperative appearance. Breast reconstruction arose from the perceived emotional distress triggered by mastectomy, thus there have been studies attempting to elucidate exactly what impact reconstruction has on body image, sexuality, and quality of life after surgery.[24]

From the distribution of patients of our study according to educational qualification, it has been seen that, maximum number of patients with carcinoma breast were from secondary education followed by 30% with post-secondary education. Thus, these findings do not match with the epidemiological findings. Also, we have seen that most of the patients (53.3%) were from lower middle class followed by upper middle (46.7%). The reason behind it is that in our set up there is no extra burden of cost for breast reconstruction.

Agrawal et al have shown in a study of 123 patients that 87% infiltrating carcinoma 8.13% medullary carcinoma 4.88% were infiltrating lobular carcinoma.[21] In our study, as per the FNAC report 96.67% were breast cancer were infiltrating duct carcinoma (IDC) followed by lobular carcinoma (3.33%). Thus, proportion of IDC was significantly higher than other FNAC report. It is more or less same compare to other study that infiltrating duct carcinoma is more common.

It has shown that there was significant association between clinical stage and reconstruction of the patients. It has been revealed that most of the patients with T1, T2 underwent MRM with reconstruction. Forty per cent patients, diagnosed to have breast cancer, still undergo mastectomy because of multifocal pathology, non-conservable disease status as suggested by inappropriate breast or tumor size ratio, or by choice of the patient. Many of these women can be offered primary reconstruction and a good majority accepts this mode of therapy.[25]

In our study, out of 30 patients, 21 patients (90%) were with T2 (out of which 70% were without nodal involvement and 20% with nodal involvement). Rest 3 patients (10%) were with T1 (all were without nodal involvement).

In LD flap the commonest post-operative complication is seroma formation at the back-donor site and this often requires repeated aspiration before it settles. It is reported incidence ranges from 9 to 33%.[26] Significant flap necrosis is rare and nearly always associated with recognized or unrecognized injury to the vascular

pedicle.[27] In our study, most common complication after breast reconstruction with LD flap was found to be seroma formation (50%) followed by wound infection and flap necrosis 25% each while flap necrosis >20% was not found in any case. There was no mortality in any case.

According to studies, autologous breast reconstruction is associated with prolonged post-operative hospital stay.[28] However, in our study, 16 out of 30 patients had post-operative hospital stay between 5 to 10 days. The mean (mean±SD) duration of post-operative hospital stay was 11.66±3.73 days.

Harcourt et al performed a prospective study involving 103 patients undergoing mastectomy with or without reconstruction. The patients were assessed pre-operatively, and 6 and 12 months post-operatively with regards to psychological distress, quality of life, and body image. One year post-operatively, there was increased evidence of depression among all except those who had delayed reconstruction. Throughout the study, patients assessed their body image and at the end of one-year, poor body image was reported by those who had mastectomy and those who had mastectomy with immediate reconstruction, which was 36% and 29%, respectively. It was found that patients had a poorer body image at six months and one year after surgery if they were at a younger age at the start of the study and if there was evidence of depressive symptoms.[29]

However, one recent meta-analysis did conclude no difference in patient satisfaction between women treated with mastectomy and reconstruction versus mastectomy alone.[30,31] Although this is a complex subject it is well recognized that early breast cancer reconstruction significantly reduces the psychological morbidity of mastectomy.[31]

In our study it has been clearly shown in that there was no significant association regarding physical fitness and daily activities of the two groups before and after surgery. For emotional feeling regarding health, social activities, overall health and quality of life; there was significant improvement was found after surgery.

CONCLUSION

All patient who underwent primary breast reconstruction were highly satisfied according to their expectations at follow up. From the present study we can conclude that by doing immediate breast reconstruction we can at least ameliorate the feelings of incompleteness, and thereby enhance the quality of life. Immediate breast reconstruction avoids readmission, hospital stay and mobilizing resources for arranging a second operation. Therefore, we highly recommend that immediate breast reconstruction should always be done after mastectomy. Immediate breast reconstruction is the treatment of choice following mastectomy in cases of breast carcinoma, whenever possible.

ACKNOWLEDGEMENTS

We are thankful to our colleagues and hospital staff who provided expertise that greatly assisted the research.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. Newman B, Austin MA, Lee M, King MC. Inheritance of human breast cancer: evidence for autosomal dominant transmission in high-risk families. Proc Natl Acad Sci USA. 1988;85(9):3044-8.
2. Claus EB, Schildkraut JM, Thompson WD, Risch NJ. The genetic attributable risk of breast and ovarian cancer. Cancer. 1996;77(11):2318-24.
3. Vetto J, Pommier R, Schmidt W, Wachtel M, DuBois P, Jones M, et al. Use of the “triple test” for palpable breast lesions yields high diagnostic accuracy and cost savings. Am J Surg. 1995;169(5):519-22.
4. Hennessy BT, Gonzalez-Angulo AM, Hortobagyi GN, Cristofanilli M, Kau SW, Broglio K, et al. Disease-free and overall survival after pathologic complete disease remission of cytologically proven inflammatory breast carcinoma axillary lymph node metastases after primary systemic chemotherapy. Cancer. 2006;106(5):1000-6.
5. Schover LR. Sexuality and body image in younger women with breast cancer. J Natl Cancer Inst Monogr. 1994;16(16):177-82.
6. Bowman CC, Lennox PA, Clugston PA, Courtemanche DJ. Breast reconstruction in older women: should age be an exclusion criterion? Plast Reconstr Surg. 2006 l;118(1):16-22.
7. Slavin SA, Schnitt SJ, Duda RB, Houlihan MJ, Koufman CN, Morris DJ, et al. Skin-sparing mastectomy and immediate reconstruction: oncologic risks and aesthetic results in patients with early-stage breast cancer. Plast Reconstr Surg. 1998;102(1):49-62.
8. Rainsbury RM. Skin-sparing mastectomy. Br J Surg. 2006;93(3):276- 81.
9. Kroll SS, Khoo A, Singletary SE, Ames FC, Wang BG, Reece GP, et al. Local recurrence risk after skin-sparing and conventional mastectomy: a 6-year follow-up. Plast Reconstr Surg. 1999;104(2):421-5.
10. Carlson GW, Styblo TM, Lyles RH, Bostwick J, Murray DR, Staley CA, et al. Local recurrence after skin-sparing mastectomy: tumor biology or surgical conservatism? Ann Surg Oncol. 2003;10(2):108-12.
11. Fernández-Delgado J, López-Pedraza MJ, Blasco JA, Andradas- Aragones E, Sánchez-Méndez JI,

Sordo-Miralles G, et al. Satisfaction with and psychological impact of immediate and deferred breast reconstruction. Ann Oncol. 2008;19(8):1430-4.
12. Lewis RS, Kontos M. Autologous tissue immediate breast reconstruction: desired but oncologically safe? Int J Clin Pract. 2009;63(11):1642-6.
13. Teisch LF, Gerth DJ, Tashiro J, Golpanian S, Thaller SR. Latissimus dorsi flap versus pedicled transverse rectus abdominis myocutaneous breast reconstruction: outcomes. J Surg Res. 2015;199(1):274-9.
14. Lindegren A, Halle M, Docherty Skogh AC, Edsander-Nord A. Postmastectomy breast reconstruction in the irradiated breast: a comparative study of DIEP and latissimus dorsi flap outcome. Plast Reconstr Surg. 2012;130(1):10-8.
15. Fischer JP, Nelson JA, Au A. CT III T, Serletti JM, Wu LC. Complications and morbidity following breast reconstruction-a review of 16,063 cases from the 2005-2010 NSQIP datasets. J Plast Surg Hand Surg. 2014;48(2):104-14.
16. Hokin JA, Silfverskiold KL. Breast reconstruction without an implant: results and complications using an extended latissimus dorsi flap. Plast Reconstr Surg. 1987;79(1):58-66.
17. Spear SL, Clemens MW. Latissimus dorsi flap breast reconstruction. In: Neligan PC, Grotting JC, Ed. Plastic Surgery. 3rd ed. Philadelphia, PA: Saunders (Elsevier); 2012: 370-392.
18. Hammond DC. Latissimus dorsi flap breast reconstruction. Clin Plast Surg. 2007;34(1):75-82.
19. Menke H, Erkens M, Olbrisch RR. Evolving concepts in breast reconstruction with latissimus dorsi flaps: results and follow-up of 121 consecutive patients. Ann Plast Surg. 2001;47(2):107-14.
20. Paredes C, Peixoto D, Amorim D, Araujo J, Barreto P. The impact of breast reconstruction on the quality of life of patients after mastectomy at the Plastic Surgery Service of Walter Cantidio University Hospital. Revista Brasileira de Cirurgia Plastica. 2001;28(1):100-4.
21. Kapil H, Rajderkar SS. Clinico-epidemiological profile of female breast cancers and its important correlates: A hospital based study. Natl J Community Med. 2012;3(2):316-20.
22. Fernández-Frías AM, Aguilar J, Sánchez JA, Merck B, Piñero A, Calpena R. Immediate reconstruction after mastectomy for breast cancer: which factors affect its course and final outcome? J Am Coll Surg. 2009;208(1):126-33.
23. Reuben BC, Manwaring J, Neumayer LA. Recent trends and predictors in immediate breast reconstruction after mastectomy in the United States. Am J Surg. 2009;198(2):237-43.
24. Panieri E, Lazarus D, Dent DM, Hudson DA, Murray E, Werner ID. A study of the patient factors affecting reconstruction after mastectomy for breast carcinoma. Am Surg. 2003;69(2):95-7.
25. Barnett GR, Gianoutsos MP. The latissimus dorsi added fat flap for natural tissue breast reconstruction: report of 15 cases. PlastReconstr Surg. 1996;97(1):63-70.
26. 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):1-4.
27. Harcourt DM, Rumsey NJ, Ambler NR, Cawthorn SJ, Reid CD, Maddox PR, et al. The psychological effect of mastectomy with or without breast reconstruction: a prospective, multicenter study. PlastReconstr Surg. 2003;111(3):1060-8.
28. Frey JD, Salibian AA, Karp NS, Choi M. Examining length of hospital stay after microsurgical breast reconstruction: evaluation in a case-control study. Plastic and Reconstructive Surgery Global Open. 2017;5(12).
29. Sarwer DB. Psychological Aspects of Reconstructive and CosmeticPlasticSurgery: Clinical, Empirical, and Ethical Perspectives. Philadelphia: Lippincott Williams & Wilkins; 2006;12:23-4.
30. Guyomard V, Leinster S, Wilkinson M. Systematic review of studies of patients' satisfaction with breast reconstruction after mastectomy. Breast. 2007;16(6):547-67.
31. Wellisch DK, Schain WS, Noone RB, Little JW 3rd. Psychosocialcorrelates of immediate versus delayed reconstruction of the breast. PlastReconstr Surg. 1985;76(5):713-8.

Cite this article as: Singla S, Kakkar V, Singh RR. Post mastectomy breast reconstruction with autologous latissimus dorsi flap: a study of 30 cases. Int Surg J 2020;7:1412-8.