

Study of different methods of post-mastectomy immediate breast reconstruction

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Abstract

Background: Breast is the symbol of femininity, attractiveness and motherhood. With rising incidence and awareness, breast cancer is one of the commonest cancer in Indian women. Loss or disfiguration of this breast due to benign or malignant lesions, results in loss of feminine attractiveness, an altered body perception leading to intense psychosexual problems and mental depression. Breast reconstruction, when performed during mastectomy, reduces depression and improves well-being in breast cancer survivors. The Current study is designed to analyze different methods of Post mastectomy immediate breast reconstruction, its complications and its feasibility in rural set up. **Material and Methods:** This non randomized, prospective, single center, interventional study was carried out at department of general surgery, in tertiary care hospital. It included 30 patients who underwent Post Mastectomy Immediate Reconstruction during study period. Reconstruction procedure was planned preoperatively and done. **T Results:** In the present study LD flap was used in 16 (53.3%) patients, with LD flap with Silicone Implant in 6 (20%) patients and with TRAM flap in 8 (26.7%) patients. In the present study, 4 (18.18%) patients who underwent LD flap reconstruction had marginal flap necrosis. Among the patients in whom TRAM Flap reconstruction was done, 5 (62.5 %) patients had Partial Flap Necrosis and 3 (37.5%) patients had Marginal Flap Necrosis, none had Total Flap Necrosis. 22 patients (73.3%) were satisfied with post mastectomy immediate breast Reconstruction while 8(26.7%) patients were not satisfied with the procedure because of Implant Migration which occurred in 1 patient and Partial Flap Necrosis happened in 5 patients, 2 patients had recurrence of carcinoma. All 6 (100%) patients were satisfied after nipple and areola reconstruction. **Conclusion:** Post mastectomy immediate breast reconstruction should be undertaken whenever possible. LD Flap reconstruction is simple to perform and safest technique of Breast Reconstruction. TRAM flap is cosmetically excellent but good in expert hands. **Key Words:** Post mastectomy immediate breast reconstruction, Pedicled Latissimus Dorsi (LD) Flap, Transverse Rectus Abdominis Myocutaneous (TRAM) Flap

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INTRODUCTION

Breast is the symbol of femininity, attractiveness and motherhood. With rising incidence and awareness, breast cancer is the commonest cancer in urban Indian females, and the second commonest in the rural Indian women.

Over 1,00,000 new breast cancer patients are estimated to be diagnosed annually in India. As per the ICMR-PBCR data, breast cancer is the commonest cancer among women in urban registries of Delhi, Mumbai, Ahmedabad, Calcutta, and Trivandrum where it constitutes > 30% of all cancers in females. The age standardized incidence rates (AARs) range from 6.2 to 39.5 per 100,000 Indian women¹. In general, breast cancer has been reported a decade earlier in Indian patients compared to their western counterparts. While majority of breast cancer patients in western countries are postmenopausal and in their 60's and 70's, the picture is quite different in India with premenopausal patients constituting about 50% of all patients². Loss or disfiguration of this breast due to benign or malignant lesions, results in loss of feminine attractiveness, an altered body perception leading to intense psychosexual

problems and mental depression³. As a treatment modality, William Halsted performed the first radical mastectomy in 1889 as a very aggressive way to surgically control the contained disease. The teachings of Halsted kept breast reconstruction from emerging as an option because he considered it a “violation of the local control of the disease”. During the Halstedian era, which lasted for many years, radical mastectomy was the treatment offered for carcinoma breast⁴. Others adopted the fear that reconstruction would hide a possible local recurrence or adversely modify the course of the disease. This has certainly not been the case⁵. Today the concepts have changed and it is more of breast conservative surgery. This is made possible because of early detection, better investigative facilities, increased understanding of the pattern of disease spread and better forms of adjuvant treatment options³. Both the Milan trial and the National Surgical Adjuvant Breast and Bowel Project studies successfully established that breast conservation is equivalent to radical mastectomy in terms of overall survival thus producing a drift towards less radicality³. Breast reconstruction, particularly when performed during mastectomy, reduces depression and improves well-being in breast cancer survivors⁶. Increasingly breast surgery is performed by surgeons trained in oncoplastic techniques contributing oncological and aesthetic procedures in one operation and having excellent therapeutic and economic benefits⁴. The aim of immediate breast reconstruction is restoration of the breast mound at the time of mastectomy and to create a breast, which offers softness, symmetry, sensibility, aesthetically acceptable scars, as well as texture and colour similar to the healthy side. The optimal method should offer a result that makes the patient feel as natural as possible. It should be safe, reliable, and accompanied by little donor-site morbidity. By achieving an acceptable appearance, reconstruction of the breast should improve the patient’s quality of life and offer no subsequent health risk⁴. Broadly, three techniques of reconstruction are available:

1. Tissue Expander/Implant Reconstruction.
2. Pedicled Latissimus Dorsi (LD) Flap (With or Without an Implant).
3. Transfer of abdominal fat in the form of Transverse Rectus Abdominis Myocutaneous (TRAM) Flap or a perforator flap. Alternative free flaps using buttock or thigh fat are offered in some centres⁷.

Nipple And Areola Reconstruction is the final stage of breast reconstruction. The Current study is designed to analyze different methods of Post mastectomy immediate breast reconstruction, its complications and its feasibility in rural set up.

MATERIALS AND METHODS

This non randomized, prospective, single center, interventional study was carried out at department of general surgery, in tertiary care hospital. It included 30 patients who underwent Post Mastectomy Immediate Reconstruction during study period.

Inclusion Criteria

1. Stage I and II of ca breast, not opting for Breast Conservative Treatment.
2. Stage III ca breast.
3. Likely anatomical deficiency after mastectomy: This pertains to patients who had a good sized breast, which if removed will certainly leave behind unacceptable anatomical deficiency.
4. Patients less than 60 years of age.

Exclusion Criteria

1. Stage IV disease
2. Patients Not willing for procedure
3. Immunocompromized patients

Patients were selected as above criteria and were included in study after taking an informed and written consent. All patients were admitted to surgery ward and anesthetic fitness was taken. Reconstruction procedure was planned preoperatively and done. The data of patients were collected in prescribed case report proforma.

RESULTS AND DISCUSSION

Post mastectomy immediate breast reconstruction has definite advantages over mastectomy alone by providing good cosmesis, thereby imparting psychological benefits to the woman. This study was done to emphasize importance of post mastectomy immediate breast reconstruction, to know pros and cons of immediate breast reconstruction, different methods of breast reconstruction and their complications. Total 32 patients opted for Breast Reconstruction, due to intra operative complications, breast reconstruction done for 30 patients. Among the 30 patients included the age group between 28 to 55 years, 18 patients (60%) were in the age group between 31-40 years and 10 patients (33.3%) were in age group between 41-50 years. with the mean age of 39.5 years., This is comparable to the study performed by Hartrampf *et al*⁸ where the age group of study population ranged from 17 to 70 years with mean age of 49 years.

Table 1: Age distribution

Age Group	No. of Patients	Percentage
21-30 Years	1	3.3
31-40 Years	18	60
41-50 Years	10	33.4
51-60 Years	1	3.3
Total	30	100

It was noted that among 30 patients included, 28 patients had Carcinoma Breast and 2 patients had Phylloidtumour.

Amongst them 21 patients (70%) had tumour size less than 5 cm and 7 patients (23.3%) had tumour size between 5-8 cm.

Table 2: Tumour size

Tumour Size	No. of Patients	Percentage
<5cms	21	70
5-8Cms	7	23.3
>8cm	2	6.64
Total	30	100

Among the patients who were included in the present study 19 patients (63.3%) had N₀ Axillary Lymph node status and 11 patients (36.7%) had N₁ Axillary Lymph node status.

Table 3: Lymph node status

Lymph Node Status	No. of Patients	Percentage
N ₀	19	63.3
N ₁	11	36.7
N ₂	0	0
Total	30	100

In the present study 11 patients (39.28%) had stage II A of Breast Carcinoma, 10 patients (35.72%) had stage IIB, 4 patients (14.28%) had stage IIIA disease and 3 patients (10%) had stage IIIB disease as shown in Table 4. Most of the patients who underwent post mastectomy immediate breast reconstruction were of stage II disease.

Table 4: Stage of the ca breast

Stage of Breast Carcinoma	No. of Patients	Percentage
Stage 0	0	0
Stage I	0	0
Stage IIA	11	39.28
Stage IIB	10	35.72
Stage IIIA	4	14.28
Stage IIIB	3	10.72
Stage IIIC	0	0
Stage IV	0	0
Total	28	100

Modified Radical Mastectomy was the primary procedure done in maximum number of patients i.e., 28 patients (93.3%), simple mastectomy was done in 2 patients (6.7%). This is comparable to the study carried out by Shaikh *et al*⁴ wherein Modified Radical Mastectomy was done as primary procedure in 100% patients. In the present study LD flap was used in 16 (53.3%) patients, with LD flap with Silicone Implant in 6 (20%) patients and with TRAM flap in 8 (26.7%) patients. This is comparable to the study conducted by Sarkar *et al*³ wherein LD Flap reconstruction was done in 53.33% patients and PTRAM Flap reconstruction done in 10% patients and in contrast to the study performed by Shaikh *et al*⁴ wherein TRAM Flap was used in 96.7% and LD Flap reconstruction in 3.3% patients. It was noted that LD Flap reconstruction was very useful and safest technique of Post mastectomy immediate breast reconstruction and best suited for small size breast. To increase volume, sub pectoral insertion of silicone implant was done in 6 patients in addition to LD Flap reconstruction.

Table 5: Method of Breast Reconstruction in comparison with other studies

Procedure	Current Study		Shaikh <i>et al</i> ⁴		Sarkar <i>et al</i> ³	
LD flap	16	53.3	18	3.3%	16	53.33%
LD flap with implant	6	20	Nil	Nil	Nil	Nil
PTRAM flap	8	26.7	528	96.7%	3	10%

In the present study, 4 (18.18%) patients who underwent LD flap reconstruction had marginal flap necrosis. Partial and Total flap necrosis was not observed in any of these patients. This is comparable to the study conducted by Shaikh *et al*⁴ where Marginal Flap Necrosis was observed in 2 (11.11%) patients, Partial Flap Necrosis in 1 (5.55%) patients and Total Flap Necrosis in none with LD Flap and in the study conducted by Sarkar *et al*³ where Marginal Flap Necrosis, Partial Flap Necrosis and Total Flap Necrosis did not occur in any of the patients with LD Flap. In the current study, among the patients in whom TRAM Flap reconstruction was done, 5 (62.5%) patients had Partial Flap Necrosis and 3 (37.5%) patients had Marginal Flap Necrosis, none had Total Flap Necrosis. This is comparable to the study conducted by Sarkar *et al*³, Marginal Flap Necrosis was observed in 2 (66.66%) patients, Partial Flap Necrosis in 1 (33.33%) patients and Total Flap Necrosis did not occur in any of the patients with TRAM Flap. In contrast to study conducted by Shaikh *et al*² wherein Marginal Flap Necrosis was observed in 18 (3.40%) patients and Partial Flap Necrosis in 1 (0.57%) and Total Flap Necrosis did not occur in any of the patients with TRAM Flap reconstruction.

Table 6: Complications of post mastectomy immediate breast reconstruction in comparison with other studies

Complication	Procedure	Currentstudy	Shaikh <i>et al</i> ⁴	Sarkar <i>et al</i> ⁸
Marginal flapnecrosis	LD Flap	4 18.18%	2 11.11%	0 0%
	TRAM Flap	3 37.5%	18 3.40%	2 66.66%
Partial flapnecrosis	LD Flap	0 0%	1 5.55%	0 0%
	TRAM Flap	5 62.5%	3 0.57%	1 33.33%
Total flapnecrosis	LD Flap	0 0%	0 0%	0 0%
	TRAM Flap	0 0%	0 0%	0 0%

In the present study, among the 22 patients who underwent reconstruction with LD flap it was observed that 3 patients (13.63%) developed donor site seroma. In study by Spear SI *et al*⁹, 17.8% patients had seroma at donor site. In the present study, 2 (9.1%) patients had donor site stitch infection, while in study conducted by Spear SI *et al*⁹, Bassiouny *et al*¹⁰, Hartrampf *et al*⁸ donor site infection was observed in none of the patients. In the present study Post TRAM Flap seroma at donor site was observed in none of the patients. This is in comparison to study performed by Hartrampf *et al*⁸ where seroma at donor site was observed in 26 % patients. In the current study donor site infection after TRAM Flap was observed in 12.5 % patients. This is in comparison with study carried out by Bassiouny *et al*¹⁰ it was observed in 12.5% patients and in study performed by Hartrampf *et al*⁸ it was noted in 1.3% cases.

Table 7: Donor site complications in comparison with other studies

Complication	Procedure	Currentstudy	SpearSI <i>et al</i> ⁹	Bassiouny <i>et al</i> ¹⁰	Hartrampf <i>et al</i> ⁸
Seroma	LD Flap	3(13.63%)	17.8%	Nil	Nil
	TRAM	0%	0	0	26%
Donor site Infection	LD Flap	2 (9.1%)			
	TRAM	1 (12.5%)		12.5%	1.3%

Average hospital stay for LD Flap patients in the present study was 9 days. This is comparable with study carried out by Shaikhet *al*⁴ wherein it was 7-8 days and in study conducted by Perdakis *et al*¹¹ it was 2 days. In the current study average hospital stay in TRAM Flap patients was 14 days. This is comparable to the study conducted by Shaikh *et al*² where it was 7-8 days and in the study conducted by Hartrampf *et al*⁸ it was 7.2 days

Table 8: Average Duration of Hospital Stay in comparison with other studies

Procedure	CurrentStudy	Shaikh <i>etal</i> ²	Hartrampf <i>et al</i> ⁸	Perdikis <i>et al</i> ¹¹
LD Flap	9 days	7-8days	-	2 days
LD Flap With Implant	9 days	-	-	2 days
TRAM flap	14 days	7-8 days	7.2 days	-

In the present study recurrence of carcinoma breast was observed in 6.66% patients. Hartrampf *et al*⁸ noted no recurrence of carcinoma breast in any of the patients.

Table 9: Late Complications in patients underwent post mastectomy immediate breast reconstruction

Morbidity	No. of patients	Percentage
Recurrence of Carcinoma breast	2	6.66%
Abdominal Hernia	0	0
Abdominal Laxity	0	0

In the present study, 14 (46.7%) patients had a reconstructed breast symmetrical to the opposite breast; this is comparable to the study conducted by Hartrampf *et al*⁸ where symmetry was achieved in 52% patients. In the remaining 16 patients, opposite side reduction mammoplasty was required in 10 (33.3%) patients, in 5 (16.7%) patients of TRAM Flap partial flap necrosis had occurred, and in one patient silicone implant migrated to the axilla.

Table 10: Symmetry of Breast achieved postmastectomybreast reconstruction

Symmetry of Breast	No. of patients	Percentage
Symmetrical	14	46.7
Asymmetrical	16	53.3
Total	30	100

Table 11: Nipple and areola reconstruction in patients underwent post mastectomy immediate breast reconstruction

Nipple and areolareconstruction	No. of patients	Percentage
Done	6	20%
Not Done	23	80%

22 patients (73.3%) were satisfied with post mastectomy immediate breast Reconstruction while 8 (26.7%) patients were not satisfied with the procedure because of Implant Migration which occurred in 1 patient and Partial Flap Necrosis happened in 5 patients, 2 patients had recurrence of carcinoma. Nipple and areola reconstruction done for 6 patients after 3 months follow up by Modified Skate Technique. All 6 (100%) patients were satisfied after nipple and areola reconstruction.

Table 12: Patient Satisfaction in patients underwent Post mastectomy immediate breast reconstruction

Patient Satisfaction	No. of patients	Percentage
Satisfied	22	73.3
Not Satisfied	8	26.7

CONCLUSION

1. Post mastectomy immediate breast reconstruction should be undertaken whenever possible.
2. LD Flap reconstruction is simple to perform and safest technique of Breast Reconstruction.
3. TRAM flap is cosmetically excellent but good in expert hands.
4. Nipple and areola reconstruction is final stage after immediate breast reconstruction, it is not mandatory and depends on patients choice.

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