

Research Article

Immediate Breast Reconstruction Following Modified Radical Mastectomy: A Comparative Study of Mastectomy Alone Versus Mastectomy with Immediate Reconstruction

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ABSTRACT

Background: Mastectomy remains necessary for a substantial proportion of women with breast carcinoma. Although oncologically appropriate, removal of the breast may adversely affect body image, psychological well-being and quality of life. Immediate breast reconstruction aims to restore breast contour at the same operative sitting and may reduce the psychosocial burden associated with mastectomy.

Aim: To compare mastectomy alone with mastectomy followed by immediate breast reconstruction, with emphasis on morbidity, operative duration, postoperative hospital stay, physical fitness, daily activities, overall quality of life, and aesthetic acceptability; and to identify the most suitable reconstructive method in the study setting.

Methods: Fifty patients with carcinoma breast were studied, with 25 undergoing modified radical mastectomy (MRM) with immediate reconstruction and 25 undergoing MRM alone. Reconstruction was performed using pedicled transverse rectus abdominis myocutaneous (TRAM) or latissimus dorsi (LD) flaps. Patients were assessed clinically and followed postoperatively. Statistical analysis in the thesis used Epi Info 3.5.3, with chi-square/Fisher exact tests, Z-tests and t-tests as appropriate; $p < 0.05$ was considered significant.

Results: The two groups each contained 25 patients. Among reconstruction procedures, 19/25 (76%) were TRAM flaps and 6/25 (24%) were LD

flaps. Reconstruction significantly increased mean operative duration (244.60 ± 20.71 vs 189.20 ± 40.51 minutes; $p < 0.000001$) and postoperative hospital stay (14.92 ± 3.26 vs 9.92 ± 1.77 days; $p = 0.017$). Overall morbidity was not significantly different (44.4% vs 55.6%; OR 0.71, 95% CI 0.22–2.25; $p = 0.55$), and no mortality was reported. Physical fitness, daily activities and overall quality of life were significantly better after surgery in the reconstruction group. Aesthetic acceptability was markedly better: 92% of reconstructed patients rated the result highly acceptable compared with none in the MRM-only group ($p < 0.00001$).

Conclusion: Within the limitations of this small comparative thesis cohort, immediate breast reconstruction after MRM was associated with longer surgery and hospital stay but no significant increase in overall morbidity or mortality, while demonstrating substantial advantages in postoperative physical function, daily activities, quality of life and aesthetic acceptability. TRAM was the predominant reconstructive technique in this series.

Keywords: breast carcinoma; modified radical mastectomy; immediate breast reconstruction; TRAM flap; latissimus dorsi flap; quality of life; aesthetic outcome

INTRODUCTION

Breast cancer is a major malignancy affecting women worldwide. Diagnosis is commonly based on clinical examination, breast imaging and tissue

diagnosis. Surgery remains a central component of treatment, supplemented where indicated by systemic therapy, endocrine therapy, radiotherapy and targeted treatment. Mastectomy is generally considered when disease is extensive, multicentric, inflammatory, or otherwise unsuitable for breast-conserving treatment. The supplied thesis notes that mastectomy continues to be performed in a substantial proportion of women despite the availability of breast-conserving surgery.

Loss of the breast is not only an anatomical event but may also have important psychological and social consequences. The thesis describes concerns related to altered body image, loss of femininity, self-esteem, sexuality, anxiety and depression. These consequences provide the rationale for reconstructive breast surgery, particularly when reconstruction can be safely performed without compromising oncological treatment.

Immediate breast reconstruction offers the potential advantage of restoring the breast contour at the same operation as mastectomy, avoiding a second reconstructive procedure and potentially reducing the period during which the patient experiences a major anatomical deformity. However, reconstruction adds operative time, may prolong hospitalization and introduces donor-site or flap-related morbidity. Therefore, the decision must consider oncological stage, patient preference, general condition, anticipated anatomical deficiency and the ability to comply with follow-up.

The supplied thesis specifically evaluates MRM with immediate reconstruction against MRM alone. The stated objectives were to assess the advantages of primary breast reconstruction over mastectomy alone, determine the most suitable method of primary reconstruction, assess patient satisfaction against expectations, and compare postoperative morbidity and mortality. These objectives were translated into the present journal-style manuscript.

AIMS AND OBJECTIVES

- To assess the advantages of immediate primary breast reconstruction over mastectomy alone.
- To identify the most suitable method of immediate primary breast reconstruction in the study setting.
- To assess patient satisfaction in relation to postoperative expectations.

- To compare postoperative morbidity and mortality between MRM with reconstruction and MRM alone.
- To compare postoperative physical fitness, daily activities, overall health and quality of life between the two groups.

MATERIALS AND METHODS

Study design and population: The thesis included 50 patients with carcinoma breast from different age groups, educational backgrounds and socioeconomic categories. Twenty-five patients underwent MRM with immediate reconstruction and 25 underwent MRM alone. The thesis describes selection according to clinicopathological status and patient preference.

Sample size: The thesis protocol calculated a required sample size of approximately 25 patients per arm using Epi Info STATCALC, resulting in a planned 1:1 allocation and a total sample of 50 patients. The protocol describes computer-generated random numbers; however, the final thesis text also states that the operative choice was influenced by clinical status and patient desire. This distinction should be clarified against the original study records before submission as a definitive randomized-trial claim.

Eligibility: The thesis protocol included patients diagnosed with carcinoma breast who were planned for mastectomy and considered fit for reconstruction, with an age limit of 60 years in the protocol. Reconstruction was considered according to stage, anticipated anatomical deficiency, age, mental preparedness, socioeconomic and educational background, ability to comply with follow-up, and patient demand. Severe comorbidity, other malignancy/metastatic disease, low life expectancy, smoking and age above 70 years were described among exclusion criteria in the thesis; patients suitable for breast-conserving surgery were also excluded.

Preoperative evaluation: Patients presenting with breast symptoms underwent clinical assessment. Palpable lesions were investigated with FNAC, with core/true-cut or excision biopsy when FNAC was suspicious or inconclusive. Non-palpable disease was assessed with mammography and breast ultrasonography with targeted cytology/biopsy as indicated. Patients with proven malignancy underwent staging and were treated according to the clinical stage and the treatment protocol described in the thesis.

Operative management: Patients in the reconstruction arm underwent MRM with axillary clearance and immediate reconstruction. The thesis describes pedicled TRAM and LD flaps. The MRM-only group underwent mastectomy without immediate reconstruction. The reconstructed breast and donor area were assessed for wound problems, necrosis, infection, seroma, deformity, recurrence and aesthetic appearance.

Follow-up and outcomes: Follow-up was performed initially at approximately two weeks after discharge, followed by later visits at three-month intervals and subsequent six-month intervals as described in the thesis. Assessment

included physical fitness, ability to perform daily activities, feelings about health, social activities, mental and physical health, overall quality of life, aesthetic appearance and postoperative complications. Patients treated with MRM alone were also interviewed regarding their desire for secondary reconstruction.

Statistical analysis: The thesis reports use of Epi Info 3.5.3. Cross-tabulation and inferential analyses included chi-square tests, corrected chi-square tests, Fisher exact tests, Z-tests for differences in proportions, t-tests for comparison of means and odds ratios with 95% confidence intervals. Statistical significance was defined as $p < 0.05$.

RESULTS

Fifty patients were included, with 25 patients in each group. The age distribution was comparable between groups (chi-square $p=0.74$). The largest age group was 40–49 years (34%), followed by 30–39 years and 60–69 years (22% each), 50–59 years (20%) and <30 years (2%). Overall, 76% of patients were aged ≥ 40 years.

Variable	MRM + reconstruction (n=25)	MRM only (n=25)	p value
Age distribution	Comparable	Comparable	0.74
Married	16 (64%)	15 (60%)	0.49
Unmarried	4 (16%)	2 (8%)	
Widow	5 (20%)	8 (32%)	
Primary education	8 (32%)	16 (64%)	0.07
Secondary education	12 (48%)	7 (28%)	
Post-secondary education	5 (20%)	2 (8%)	

Socioeconomic status was also comparable between groups ($p=0.22$). Sixty percent of patients were from the lower-middle socioeconomic group, 22% were from the poor group and 18% were from the higher-middle group. Histopathologically, infiltrating duct carcinoma constituted 72%, lobular carcinoma 18% and medullary carcinoma 10% of the cases.

Clinical stage	Number	Percentage
T2 N0 M0	8	16%
T2 N1 M0	13	26%
T3 N0 M0	3	6%
T3 N1 M0	15	30%
T3 N2 M0	3	6%
T4 N1 M0	1	2%
T4 N2 M0	7	14%
Total	50	100%

Clinical stage was significantly associated with the choice of reconstruction ($p=0.02$). Most patients with T2 and T3 disease underwent MRM with reconstruction, whereas T4 disease was preferentially managed with MRM alone in the study cohort.

Among the 25 reconstructed patients, 19 (76%) underwent pedicled TRAM reconstruction and 6 (24%) underwent LD flap reconstruction. TRAM was therefore the predominant technique in this series ($Z=7.35$; $p=0.00001$).

OPERATIVE AND POSTOPERATIVE OUTCOMES

Outcome	MRM + reconstruction	MRM only	Statistical result
Mean operative duration	244.60±20.71 min	189.20±40.51 min	t48=6.08; p<0.000001
Median operative duration	230 min	170 min	
Range of operative duration	220–290 min	140–230 min	
Mean postoperative stay	14.92±3.26 days	9.92±1.77 days	t48=6.73; p=0.017
Median postoperative stay	14 days	10 days	
Range of postoperative stay	12–25 days	8–15 days	
Any morbidity	8/25 (32%)*	10/25 (40%)*	Overall p=0.55
Mortality	0	0	No mortality reported

*The thesis table reports morbidity in 18/50 patients overall: 8 patients in the reconstruction arm and 10 in the MRM-only arm. Percentages within the total study population were 16% and 20%, respectively; the table's row percentages were 44.4% and 55.6%. The arm-specific percentages are 32% and 40%, respectively.

The mean duration of surgery was significantly longer in the reconstruction group. Similarly, postoperative hospital stay was significantly longer after reconstruction. Despite the increased operative burden, the thesis found no significant association between reconstruction and overall morbidity (p=0.55; OR 0.71, 95% CI 0.22–2.25). There was also no significant association between the type of morbidity and reconstruction (p=0.28).

Complication	MRM + reconstruction	MRM only	Total
Flap necrosis <20%	1 (4%)	0	1 (2%)
Flap necrosis ≥20%	1 (4%)	0	1 (2%)
Infection	4 (16%)	3 (12%)	7 (14%)
Seroma	2 (8%)	7 (28%)	9 (18%)
No morbidity	17 (68%)	15 (60%)	32 (64%)

No mortality occurred in the study. The thesis notes approximately 18 flap-related complications in the TRAM group in its discussion; however, the detailed complication table contains 2 flap-necrosis events among the reconstruction arm. Because these figures are not fully concordant, the final submission should reconcile the original case records/table before publication.

FUNCTIONAL AND QUALITY-OF-LIFE OUTCOMES

Physical fitness did not differ significantly between groups before surgery, but a significant difference was demonstrated after surgery (p=0.0003). The t-test showed no significant preoperative difference (t48=0.59; p=0.55), whereas the postoperative mean score was significantly higher in the reconstruction group (t48=4.71; p=0.00002).

Daily activities were significantly different between groups after surgery (p=0.00001), with improvement in the reconstruction group. The thesis similarly reports a significant postoperative advantage for the reconstruction group in the domain of general health and social functioning.

Overall quality of life showed no significant preoperative difference (p=0.13), but a highly significant postoperative difference was observed (p=0.00001). Mean quality-of-life scores increased from 11.44±1.01 to 22.32±1.65 in the reconstruction group and from 13.56±1.82 to 14.68±2.92 in the MRM-only group. The postoperative comparison was significant (t48=11.38; p=0.0000001).

Quality-of-life score category	Before: Reconstruction	Before: MRM only	After: Reconstruction	After: MRM only
≤10	3 (12%)	1 (4%)	0	2 (8%)
11–15	22 (88%)	21 (84%)	0	10 (40%)
16–20	0	3 (12%)	3 (12%)	13 (52%)
21–25	0	0	22 (88%)	0
Mean±SD	11.44±1.01	13.56±1.82	22.32±1.65	14.68±2.92

AESTHETIC OUTCOME AND PATIENT SATISFACTION

Aesthetic appearance after surgery was significantly better in the reconstruction group (corrected chi-square $p=0.00001$). Twenty-three of 25 reconstructed patients (92%) rated the appearance as highly acceptable, compared with none of the 25 patients in the MRM-only group. Two reconstructed patients (8%) considered the result acceptable. In the MRM-only group, 16 patients (64%) considered the appearance acceptable and 9 (36%) considered it not acceptable. The difference in the proportion reporting a highly acceptable result was significant ($Z=6.52$; $p=0.000001$).

Aesthetic assessment	MRM + reconstruction (n=25)	MRM only (n=25)	Total
Not acceptable	0 (0%)	9 (36%)	9 (18%)
Acceptable	2 (8%)	16 (64%)	18 (36%)
Highly acceptable	23 (92%)	0 (0%)	23 (46%)

DISCUSSION

The principal finding of this thesis is that immediate breast reconstruction was associated with better postoperative functional and psychosocial outcomes without a statistically significant increase in overall morbidity. This is clinically important because the principal objection to immediate reconstruction is usually the additional operative burden and potential for complications.

The groups were broadly comparable in age, marital status, education and socioeconomic status. The study population was predominantly composed of women aged 40 years or older, with the 40–49-year group being the largest. Most patients were married and belonged to lower-middle socioeconomic backgrounds. In histopathology, infiltrating duct carcinoma was the dominant subtype, consistent with the general pattern of invasive breast carcinoma described in the thesis.

Disease stage influenced the reconstructive decision. Reconstruction was most commonly undertaken in T2 and T3 disease, while T4 disease was preferentially managed without immediate reconstruction in this series. This reflects the need to integrate oncological considerations with reconstructive planning. Immediate reconstruction should not be regarded as an alternative to appropriate cancer treatment; rather, it is a

reconstructive component performed when oncological and patient-related circumstances permit.

The study demonstrated a substantial increase in operative time with reconstruction. Mean operative duration increased from approximately 189 minutes for MRM alone to approximately 245 minutes with reconstruction. Postoperative hospitalization was also longer, with mean stay of approximately 15 days versus 10 days. These findings emphasize that immediate reconstruction is a more resource-intensive procedure.

Despite this increased operative burden, the difference in overall morbidity was not statistically significant. The observed morbidity was 32% in the reconstruction arm versus 40% in the MRM-only arm when calculated per arm from the detailed table. The thesis reported an odds ratio of 0.71 (95% CI 0.22–2.25), suggesting no demonstrated excess risk in this sample. The study also reported no mortality.

TRAM was used in 76% of reconstructed patients and LD in 24%. The predominance of TRAM in this cohort was attributed in the thesis to its ability to provide substantial tissue volume and a natural breast contour. The choice between TRAM, LD, implant-based and other methods should nevertheless be individualized according to patient anatomy, oncological requirements, comorbidity,

donor-site factors, surgical expertise and patient preference.

The most striking benefit observed was in aesthetic acceptability and quality of life. Ninety-two percent of reconstructed patients rated their postoperative appearance as highly acceptable, whereas none of the MRM-only patients did so. Overall quality-of-life scores also improved substantially in the reconstruction group. These findings support the concept that restoration of breast contour can contribute to improved body image, social functioning and perceived overall health.

The findings are consistent with the thesis discussion, which cites prior studies describing improved satisfaction, body image and psychological outcomes after immediate reconstruction. However, the literature is not uniform: the thesis itself notes studies in which differences in adjustment were small or changed over time, and systematic reviews have not always demonstrated a consistent satisfaction advantage. Patient preference and realistic counselling therefore remain essential.

The study has important limitations. The sample size is small, the study is single-centre, and the supplied thesis contains some internal inconsistencies regarding the described randomization process, morbidity percentages and one discussion statement regarding flap-related complications. In addition, the thesis does not provide sufficient information in the supplied material to independently verify the ethics approval number, exact study dates, consent documentation, or a modern validated patient-reported outcome instrument. These elements should be completed or reconciled before journal submission.

STRENGTHS AND LIMITATIONS

- Direct comparison of 25 patients undergoing MRM with immediate reconstruction and 25 undergoing MRM alone.
- Assessment included operative variables, morbidity, physical functioning, daily activities, quality of life and aesthetic outcome.
- The thesis provides detailed statistical comparisons and effect estimates for several outcomes.

- Small sample size limits precision and generalizability.
- The supplied thesis has internal inconsistencies that should be checked against the original dataset before submission.
- The study predates several contemporary reconstructive and breast-cancer reporting standards; journal-specific reporting requirements should be addressed.
- Ethics approval, informed-consent documentation, exact study dates and author contribution statements were not available in the supplied thesis text and should be inserted from institutional records.

CONCLUSION

In this 50-patient thesis cohort, immediate breast reconstruction following modified radical mastectomy was associated with a significantly longer operation and longer postoperative hospitalization but did not demonstrate a significant increase in overall morbidity or mortality. Reconstruction was associated with significantly better postoperative physical fitness, performance of daily activities and overall quality of life. Aesthetic acceptability was markedly superior after reconstruction, with 92% of reconstructed patients rating the outcome as highly acceptable compared with none in the MRM-only group. TRAM was the predominant reconstructive technique, accounting for 76% of reconstructions.

The findings support consideration of immediate breast reconstruction in appropriately selected patients after mastectomy, provided oncological safety, patient preference, reconstructive expertise and follow-up capacity are adequately addressed. The conclusions should be interpreted in light of the small sample size and the methodological/data inconsistencies noted above.

DECLARATIONS

Ethical approval: The supplied thesis text does not provide an ethics committee approval number. The original institutional ethics approval details should be inserted before submission.

Informed consent: The supplied thesis text does not provide the exact consent wording or documentation. Confirmation of written informed consent should be added from the original study records.

Conflict of interest: Not stated in the supplied thesis. Authors should provide their current declaration.

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Data availability: Study data are contained in the original thesis records. Availability should be stated according to institutional policy and journal requirements.

Author contributions: To be completed and approved by all authors according to the target journal's authorship criteria. Dr. Debashis Sikdar is listed as Author 4 and is also identified by the requesting author as a co-author; because all listed authors are co-authors in standard journal terminology, duplicate listing should generally be avoided in the final submission.

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