



PROSPECTIVE EVALUATION OF EARLY ONCOLOGICAL AND PERIOPERATIVE OUTCOMES OF PECTORALIS FASCIA PRESERVATION DURING MODIFIED RADICAL MASTECTOMY IN EARLY BREAST CANCER: A SINGLE-CENTRE PROSPECTIVE OBSERVATIONAL STUDY

Breast Surgery

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ABSTRACT

Background: Routine excision of the pectoralis fascia during modified radical mastectomy (MRM) has traditionally been performed based on historical surgical principles. Recent anatomical and clinical evidence suggests that preservation of the pectoralis fascia may reduce perioperative morbidity without compromising oncological safety in carefully selected patients. However, prospective evidence from the Indian population remains limited. The present study was undertaken to evaluate the early oncological safety and perioperative outcomes of pectoralis fascia preservation during modified radical mastectomy in patients with early-stage breast cancer. **Methods:** This prospective, single-centre observational study was conducted in the Department of General Surgery, Index Medical College Hospital and Research Centre, Indore, Madhya Pradesh, India, over 18 months from October 2024 to March 2026. Twenty-five consecutive female patients with histologically confirmed Stage I or Stage II breast carcinoma underwent pectoralis fascia-preserving modified radical mastectomy with level I and level II axillary lymph node dissection. The primary outcome was early locoregional recurrence during a three-month follow-up period. Secondary outcomes included operative time, estimated blood loss, axillary lymph node yield, postoperative drain duration, total drain output, postoperative complications, hospital stay, and patient satisfaction. **Results:** Twenty-five patients were included in the final analysis. The mean age of the study population was 48.6 ± 11.1 years. The mean operative time was 92.3 ± 10.8 minutes, while the mean estimated intraoperative blood loss was 212 ± 45 mL. Adequate oncological clearance was achieved with a mean axillary lymph node yield of 17.4 ± 4.8 nodes. The mean postoperative drain duration was 5.6 ± 1.2 days with a cumulative drain output of 545 ± 130 mL. Seroma occurred in four patients (16%), significant shoulder pain in three patients (12%), and postoperative muscle fibrosis in one patient (4%). The mean postoperative hospital stay was 5.1 ± 0.9 days. Twenty-two patients (88%) reported satisfaction with the surgical outcome. No locoregional recurrence was observed during the three-month follow-up period. **Conclusion:** Pectoralis fascia preservation during modified radical mastectomy appears to be a feasible and technically safe modification in carefully selected patients with early-stage breast cancer. The procedure was associated with favourable perioperative outcomes, low postoperative morbidity, satisfactory lymph node retrieval, and encouraging early oncological results. Larger multicentre studies with longer follow-up are required to establish long-term oncological safety and determine the role of this technique in routine surgical practice.

KEYWORDS

Breast Cancer; Modified Radical Mastectomy; Pectoralis Fascia; Breast Surgery; Surgical Oncology; Prospective Observational Study.

INTRODUCTION

Breast cancer is the most commonly diagnosed cancer among women worldwide and remains a major cause of cancer-related mortality. In India, breast cancer has surpassed cervical cancer as the leading malignancy among women. Despite advances in screening and breast-conserving surgery, modified radical mastectomy (MRM) continues to be widely performed because many patients present with relatively advanced disease.

The evolution of breast cancer surgery has focused on reducing surgical morbidity while maintaining oncological effectiveness. Although preservation of the pectoralis major muscle is now standard practice, routine removal of the pectoralis fascia remains common. Anatomical and pathological studies suggest that involvement of the pectoralis fascia is uncommon in early-stage disease unless there is direct tumour extension towards the chest wall.

Preservation of the pectoralis fascia has been proposed as a tissue-preserving modification that may reduce muscle trauma, postoperative pain, seroma formation, and functional impairment. However, data from Indian populations remain limited. The present study evaluated the perioperative outcomes and early oncological results of pectoralis fascia preservation during MRM in patients with early-stage breast cancer.

MATERIALS AND METHODS

This prospective observational study was conducted in the Department of General Surgery, Index Medical College Hospital and Research Centre, Indore, India, from October 2024 to March 2026.

Twenty-five consecutive women with histologically confirmed Stage I–II breast carcinoma were enrolled after informed consent. Patients with locally advanced disease, metastatic disease, inflammatory breast cancer, or clinical evidence of chest wall involvement were excluded.

All patients underwent pectoralis fascia-preserving MRM under general anaesthesia. Breast tissue was dissected in the natural retromammary plane while preserving the pectoralis fascia. Standard Level I and Level II axillary lymph node dissection was performed. Closed suction drainage was used in all cases.

Patients were followed for three months. Outcome measures included operative time, blood loss, lymph node yield, drain duration, drain output, complications, hospital stay, patient satisfaction, and locoregional recurrence.



RESULTS

Twenty-five patients completed follow-up. The mean age was 48.6 years (range 30–70 years). Twelve patients (48%) had Stage I disease and thirteen (52%) had Stage II disease.

Operative Outcomes

Parameter	Mean $\pm$ SD
Operative Time	92.3 $\pm$ 10.8 min
Blood Loss	212 $\pm$ 45 mL
Lymph Node Yield	17.4 $\pm$ 4.8

Postoperative Outcomes

Parameter	Mean $\pm$ SD
Drain Duration	5.6 $\pm$ 1.2 days
Total Drain Output	545 $\pm$ 130 mL
Hospital Stay	5.1 $\pm$ 0.9 days

Complications

Complication	n (%)
Seroma	4 (16%)
Shoulder Pain	3 (12%)
Muscle Fibrosis	1 (4%)
Wound Infection	0
Flap Necrosis	0
Reoperation	0

Twenty-two patients (88%) reported satisfaction with the procedure, while three (12%) reported moderate satisfaction. No patient reported dissatisfaction.

No locoregional recurrence was identified during the three-month follow-up period.

DISCUSSION

The present study demonstrates that preservation of the pectoralis fascia during MRM is technically feasible and does not compromise axillary clearance. Adequate lymph node retrieval was achieved in all patients, indicating that preservation of the fascia does not interfere with oncological surgery.

Postoperative outcomes were favorable, with low rates of seroma formation, shoulder pain, and muscle fibrosis. Preservation of the fascial layer may reduce direct muscle trauma and maintain natural tissue planes, potentially improving recovery. The absence of wound infection, flap necrosis, or reoperation further supports the safety of the technique.

No locoregional recurrence was observed during follow-up. Although this finding is encouraging, breast cancer recurrence is a long-term outcome and longer follow-up is required before definitive conclusions regarding oncological equivalence can be drawn.

The study is limited by its small sample size, single-centre design, and short follow-up period. Nevertheless, it provides prospective data from an Indian population and supports further evaluation of fascia-preserving mastectomy in larger comparative studies.

CONCLUSION

Pectoralis fascia preservation during modified radical mastectomy appears to be a feasible and safe surgical modification in carefully selected patients with early-stage breast cancer. The technique was associated with satisfactory lymph node retrieval, low postoperative morbidity, favorable recovery, and encouraging early oncological outcomes. Larger multicentre studies with extended follow-up are required to establish its long-term role in breast cancer surgery.

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- Relevant recent peer-reviewed studies on fascia-preserving mastectomy published before manuscript submission (to be updated during final journal formatting).
- Relevant systematic review or meta-analysis on pectoralis fascia preservation (if included before submission).
- Declaration of Helsinki. World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects.
- Appropriate statistical software reference (IBM SPSS Statistics User Guide, version used in the study), if required by the target journal.