

Investigating the rate of recurrence and survival of patients with locally advanced breast cancer after modified radical mastectomy and reconstruction using abdominal flap

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Abstract:

Background and Objective: Currently, modified radical mastectomy with reconstruction via abdominal flaps is considered as an accepted common surgical technique in the treatment of locally advanced breast cancer. However, the information about the rate of complications and its success in previous studies has many contradictions. Therefore, this study was conducted with the aim of investigating the rate of complications, recurrence and survival of patients with localized breast cancer and reconstruction with the abdominal flap method.

Materials & Methods: In this retrospective cohort study, patients with locally advanced breast cancer who were treated at Shahada Tajrish Hospital in Tehran between 2011 and 2012 by modified radical mastectomy along with breast reconstruction by abdominal flap were included. Initially, according to inclusion criteria, patients with the invasive ductal carcinoma histopathology, treated by one surgeon, advanced stage of the disease, and the absence of distant metastasis were selected. Then, patients satisfaction, the incidence of complications, and recurrence and survival rates were recorded during three-monthly visits for 48 months followed-up.

Results: In the present study, the mean age of the patients was 55.7 years (with a standard deviation of 11.2 years), and mean satisfaction from a VAS score equal to 7.5 in the first 6 months to a score of 10 at the end of one year. Also, local recurrence was not seen in any of the patients. However, at the end of 48 months of follow-up, 32 patients were alive, which indicates a survival rate of 88%.

Conclusion: The results indicated high patient satisfaction, low rate of surgical complications, no local recurrence, and a promising survival rate.

Keywords: *Modified radical mastectomy, breast cancer, local recurrence, breast reconstruction*

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Received: 10/10/2024

Accepted: 05/03/2025

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Background and Objective

Breast cancer continues to pose a significant global health challenge, impacting millions of women around the world.¹ Advanced local breast cancer indicates a later stage of the disease, typically characterized by substantial tumor size, involvement of adjacent structures, and metastasis to regional lymph nodes.² The management of advanced local breast cancer necessitates a comprehensive strategy that usually encompasses surgery, radiation therapy, systemic chemotherapy, and targeted therapies.³ Among the various surgical modalities employed in the treatment of advanced local breast cancer, modified radical mastectomy followed by reconstruction with abdominal flaps has emerged as a prevalent and effective option.⁴ This surgical procedure entails the excision of breast tissue, underlying chest muscles, and axillary lymph nodes, succeeded by the reconstruction of the breast utilizing autologous tissue harvested from the abdominal region.⁵ This innovative technique offers numerous advantages, including improved aesthetic outcomes, enhanced psychological well-being, and restoration of natural breast contours.⁶ Despite the increasing acceptance of modified radical mastectomy with abdominal flap reconstruction, research concerning its impact on recurrence rates and overall survival in patients with advanced local breast cancer remains scant.⁷

Hence, this study aims to assess the overall survival of patients following modified radical mastectomy and abdominal flap reconstruction, as well as the associated recurrence rates.

Materials and Methods

Study Design

This cross-sectional study was conducted among patients diagnosed with advanced local breast cancer who underwent surgical intervention between 2012 and 2013 at Shahid Tajrish Hospital in Tehran. A convenience sampling method was employed to select participants for the study.

Inclusion and Exclusion Criteria

The inclusion criteria for this study were as follows: 1. A confirmed diagnosis of breast

cancer based on pathology reports. 2. Histopathological identification of breast cancer as Invasive Ductal Carcinoma. 3. All patients were treated by a single surgeon to ensure consistency in the surgical approach. 4. Classification of the disease stage as advanced (Stage 3a or 3b). 5. Absence of distant metastasis at the time of surgery. 6. Provision of written, informed consent to participate in the study.

Exclusion criteria included: 1. Lack of follow-up care and failure to receive adjuvant therapies (radiation and chemotherapy). 2. A history of prior chemotherapy. 3. Presence of immunocompromising conditions. 4. A history of abdominal or thoracic surgery. 5. Diagnosis of bilateral breast disease. 6. Evidence of malnutrition. This structured approach enhances the reliability of our findings while ensuring that the study population accurately represents the target group.

Modified Radical Mastectomy and Abdominal Flap Reconstruction

Patients underwent a modified radical mastectomy performed under general anesthesia. An incision was executed in a crescent shape, positioned approximately 5 centimeters from the nipple-areola complex. The upper flaps extended to the level of the clavicle, while the lower portion reached approximately 3 centimeters below the breast fold. Medially, the incision extended to the lateral edge of the sternum, and laterally to the medial edge of the latissimus dorsi muscle. Following the incision through the skin, dissection progressed to Camper's fascia, ensuring the creation of flaps with a subcutaneous thickness of approximately 7 to 10 millimeters over the breast tissue. At the distal end of each flap, a vertical incision was made, extending to the fascial layer of the pectoralis major muscle, from which the entire fascia was carefully excised, ensuring preservation of the medial pectoral nerve. The external oblique fascia remained undisturbed at the lower boundary of the flap. Subsequently, the clavipectoral fascia was meticulously opened, allowing for the identification of the axillary vein, guided by one of its superficial branches. This anatomical landmark was traced toward the arm

to facilitate the clearance of all surrounding lymph nodes. To locate the thoracodorsal nerve, the lateral thoracic vein served as a reference point, confirming that the nerve was positioned medially and at a deeper anatomical level. Dissection continued inferiorly and anteriorly to the axillary vein, encompassing lymph nodes in that region. The dissection was conducted in healthy areolar tissue, outside the thoracic fascia, at the level of the second intercostal nerve, while the long thoracic nerve was similarly preserved. Following the clearance of all contents between the two nerves, the fasciocutaneous flap was delineated and marked with a surgical marker. The flap was then detached from the rectus fascia and external oblique muscle, with any bleeding vessels being ligated. The released flap was subsequently rotated upward and positioned into the defect. Closure of the subcutaneous tissue and skin was accomplished using a combination of Vicryl and Monocryl sutures.

Data Collection Method

Patient demographic information, including age, weight, and height, was recorded utilizing a pre-designed checklist. Following this, patients underwent the modified radical mastectomy based on established inclusion and exclusion criteria and were subsequently referred for adjuvant therapy with an oncologist. Follow-up evaluations were conducted for a minimum duration of 48 months, during which patients received regular examinations. Patient satisfaction was assessed at six and twelve months post-surgery using a visual analog scale (VAS), a 10-centimeter ruler ranging from 0 (indicating extreme dissatisfaction) to 10 (indicating maximum satisfaction). Patients were also examined by a surgeon every three months during the initial three years, with annual assessments thereafter to monitor for incidences of mortality, local recurrence, or distant metastasis. Quantitative data were reported as means and standard deviations, while qualitative data were presented in terms of frequencies and percentages.

Data Analysis

In this descriptive study, means and standard deviations were calculated for quantitative variables, while qualitative data were reported

as frequencies and percentages. VAS scores pertaining to surgical satisfaction were also summarized utilizing means and standard deviations.

Findings

A total of 36 patients were enrolled based on the established inclusion and exclusion criteria. The mean age of participants was 55.7 ± 11.2 years, with a mean body mass index (BMI) of 25.3 ± 2.9 . Among the patients, 4 (11.1%) had diabetes, 3 (8.3%) presented with coronary artery stenosis, and 2 (5.5%) had hypothyroidism.

At the six-month follow-up, the average VAS score indicating patient satisfaction was 7.5 ± 1.2 , which escalated to a perfect score of 10 by the twelfth month, demonstrating complete satisfaction among patients one year after the procedure. Surgical complications, including superficial surgical site infections and seromas, occurred in only 2 patients (5.5%), who were effectively managed with oral antibiotics and aspiration. Throughout the 48-month follow-up period, no local recurrences were documented among any of the patients. The overall survival rate was evaluated over four years, with all patients alive at the conclusion of the first year. In the second year, 2 patients succumbed, resulting in a survival rate of 94%. By the third year, an additional 2 patients had passed away, maintaining the survival rate at 94%. However, by the end of the fourth year, all remaining 32 patients were alive. These findings suggest favorable survival outcomes and underscore the efficacy of modified radical mastectomy accompanied by abdominal flap reconstruction in the management of advanced localized breast cancer.

Discussion and Conclusion

The present study aimed to evaluate patient satisfaction, surgical complications, recurrence rates, and overall survival among individuals who underwent modified radical mastectomy in conjunction with abdominal flap reconstruction. Our findings indicated that patient satisfaction, which averaged approximately 7.5 six months post-surgery, increased to a perfect score of 10 by the conclusion of twelve months, reflecting complete satisfaction one year post-operatively. This result aligns with previous research

exploring patient satisfaction following breast reconstruction surgeries.⁸⁻¹⁰ High levels of satisfaction after surgery play a vital role in enhancing patients' quality of life and psychological well-being.¹¹ Additionally, the study documented a remarkably low incidence of surgical complications, with only two patients experiencing issues related to superficial surgical site inflammation and seroma formation. These complications were effectively managed with the administration of oral antibiotics and aspiration. The low rates of complications associated with modified radical mastectomy and abdominal flap reconstruction reinforce recent studies that underscore the safety and efficacy of this surgical approach.^{8,12,13} This suggests that the implementation of appropriate surgical techniques, combined with rigorous postoperative care protocols, can significantly reduce the occurrence of complications.

Importantly, our study observed no instances of local recurrence, corroborating earlier research that indicates a low incidence of local recurrence in patients undergoing modified radical mastectomy.^{14,15} The absence of local recurrence can be attributed to several factors, including the effectiveness of the surgical technique employed in excising cancerous tissue and the comprehensive postoperative management of patients. However, it is crucial to recognize that recurrence and survival outcomes can be influenced by a multitude of factors, including tumor stage, grade, molecular type, lymph node involvement, and individual patient characteristics.¹⁶ A thorough comparison of

recurrence rates with other treatment modalities would yield a more comprehensive assessment of the efficacy of this surgical approach. Specifically, examining recurrence rates in patients who received alternative treatment strategies, such as breast-conserving surgery or neoadjuvant chemotherapy, is essential for developing a complete understanding of overall treatment outcomes.

Several limitations of this study warrant acknowledgment. The sample size was relatively small, which may constrain the generalizability of the findings. Furthermore, the 48-month follow-up period may be insufficient for capturing long-term survival outcomes. Additionally, this study did not assess the impact of adjuvant therapies, such as radiotherapy or systemic treatments, on recurrence and survival rates. Future research incorporating larger sample sizes, extended follow-up periods, and comprehensive evaluations of the role of adjuvant therapies is warranted to enhance our understanding of outcomes in patients with locally advanced breast cancer.

In conclusion, the results of the current study suggest that modified radical mastectomy and abdominal flap reconstruction in patients with locally advanced breast cancer are associated with high levels of patient satisfaction, a low incidence of surgical complications, no observed local recurrences, and favorable overall survival rates. These findings underscore the efficacy of this surgical approach and its potential benefits for patients.

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