Original article

Early Complications in Modified Radical Mastectomy and Level-II Axillary Clearance for Carcinoma Breast in a Tertiary Care Centre: A Retrospective Cross-Sectional Study

Shanta Bir Maharjan, Bishal Thapa, Janardan Gautam, Nikol Guragain

Abstract

Introduction: Breast carcinoma is the most common cancer in woman and is the second common mortality in woman globally. There are different treatment modalities for breast cancer. The Modified Radical Mastectomy with axillary clearance is one important surgical treatment of carcinoma breast. The main aim of this study is to determine early complications after MRM and axillary clearance in carcinoma breast.

Methods: This is a retrospective cross-sectional study conducted in department of Surgery, Patan Hospital, Patan Academy of Health Sciences from March 2022 to February 2025. This study included all patients undergoing MRM with axillary clearance and excluded patients undergoing toilet mastectomy and breast conserving surgery.

Results: This study included 37 patients and the mean age was 53.78 ±11.89years. Early complications were noted in 11 patients (29.73%), among which seroma was found in 4 patients (10.81%), followed by margin necrosis in 3 patients (8.1%), flap necrosis in 2 patients (5.4%) , wound infection in 1 patient (2.7%) and hematoma in 1 patient (2.7%).

Conclusion: In our study seroma formation was the most common early complication in MRM with level II axillary clearance followed by margin necrosis, flap necrosis, wound infection and hematoma formation respectively.

Keywords: breast carcinoma; complications; modified radical mastectomy.

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Introduction

Breast cancer is the most common cancer of women globally.[1] It is the second most leading cause of death in women worldwide after lung cancer.[2] The management of breast cancer is multidisciplinary which includes surgery, chemotherapy, hormone therapy, radiotherapy and neoadjuvant therapy.[3,4] Among surgeries, simple mastectomy, breast conserving surgery (eg. wide local excision) and modified radical mastectomy with axillary clearance are performed.

Nowadays, modified radical mastectomy (MRM) with axillary clearance is commonly performed surgery for carcinoma breast.[3,5,6] In this surgery whole breast tissue along with fatty tissue and lymph nodes of axilla are removed. There are some early complications like seroma formation, wound infection, hematoma formation, surgical margin necrosis and flap necrosis noted post MRM. These complications result in more hospital stay, increase costs and delay further treatments like adjuvant chemotherapy, hormone therapy etc. to patients. So identification and prompt management of these complications are important.

Methods

This study was a descriptive and retrospective cross sectional study conducted in the Department of Surgery, Patan Hospital, Patan Academy of Health Sciences from March 2022 to February 2025. All the cases of modified radical mastectomy and axillary clearance for carcinoma breast were included, while toilet mastectomy and breast conserving surgeries were excluded. All the necessary data were obtained from record files in record section. This study comprised total of 43 patients in three year period among which only 37 patients were enrolled due to missing record files of remaining six patients.

In MRM and axillary clearance, whole breast including the tumor, axillary fatty tissue along with lymph nodes are removed. Single dose of prophylactic antibiotic (i.e. Inj. Ceftriaxone 1gm intravenous) was given before induction. Two negative suction drains were placed: one at axilla and other over pectoralis major. The drains were taken out once drain output was less than 30-50ml. After discharge, the patients were followed up regularly on OPD basis. Early complications of surgeries like seroma formation, wound infection, hematoma formation, wound margin necrosis and flap necrosis were considered up to 1 month after surgery.

Results

This study included total 37 patients in three year period that underwent MRM with level II axillary clearance in our hospital. The mean age of patients was 53.78 year ±11.89. Among them 11(30%) patients received neoadjuvant treatment to downgrade the tumor. Majority of cases were invasive breast carcinoma except one with squamous cell carcinoma who underwent MRM. In this study 10 cases (27%) were hypertensive, 4 (10.81%) had diabetes and 4 (10.81%) were smokers (**Table 1**).

Total 11 patients (29.73%) developed early complications in this study. Seroma was the most common complication found in 4 patients (10.81%) followed by margin necrosis in 3 patients (8.1%), flap necrosis in 2 patients (5.4%), wound infection in 1 patient (2.7%) and hematoma formation in 1 patient (2.7%) respectively (**Table 2**).

Table 1. Distribution of patients with risk factors who developed early complications

Risk Factors / Comorbidities	Total no. of patients (n)	Early complications n(%)
Hypertension	10	4 (40%)
Diabetes	4	2 (50%)
Smoker	4	1 (25%)
Neoadjuvant therapy	11	2 (18%)

Discussion

A variety of Surgeries like simple mastectomy, breast conserving surgery (eg. wide local excision and axillary clearance) and modified radical mastectomy and axillary clearance are performed for management of carcinoma of breasts. Modified Radical Mastectomy and axillary clearance is commonly performed surgical procedure for carcinoma breast.[7] Following MRM there are certain complications that may develop. Early complications are seroma formation, wound infections, wound margin necrosis, flap necrosis, neuralgia, winging scapula etc. described in many literatures.[8,9]

Seroma formation is one of most common complication and reported rate ranging from 4.2 to 89 percent in patients with no drain and 53 percent with axillary drain placement.[10,11] Gonzalez at al showed seroma formation rate was 15.8% in their study.[12] In our study seroma was found in 4 patients (10.81%) and were treated with percutaneous aspiration and pressure dressing. Two drains were placed in all patients: one at axilla and other over pectorslis major to minimize seroma.

In our study, the next common complications were wound margin necrosis in 3 patients (8.1%) followed by flap

Table 2. Frequency of early complications after MRM (n=11)

Complications	No. of patients (n)	Percentage (%)
Seroma	4	10.81
Margin necrosis	3	8.1
Flap necrosis	2	5.4
Wound infection	1	2.7
Hematoma	1	2.7

Figure 1. Flap necrosis

Figure 2. After Split Skin Graft

necrosis in 2 patients (5.4%). Wound margin necrosis cases were managed with regular dressing and no major procedures were required. Flap necrosis patients needed debridement, more dressings, antibiotics and split skin grafting (SSG) (**Figure 1 and 2**). Patients required readmission for SSG in our cases. Compte et al reported 14.5% incidence of flap necrosis while Mizuno H reported 7.9% and Bernard RW reported 9.52% incidence of flap necrosis.[13–15] Flap necrosis may occur due to excessive dissection, mobilization and tension.

Wound infection was observed in one patient (2.7%) in our study. It was managed with antibiotics and regular dressing. The literature reported wound infection rate of 3.6% by Lang C J , 3.51% by Lefebvre et al, 1.5% by Rizwi et al, and 28% by Shah et al respectively.[10,16–18] Hematoma had developed in one patient (2.7%) in our study. Hematoma is developed due to improper hemostasis during surgery. Meticulous surgery, placing negative suction drain and proper pressure dressing can minimize hematoma formation. Our patient who had hematoma, was managed with evacuation of hematoma and multiple dressings. Kang BJ and Brown MH has reported hematoma formation in 5% and 0.85% patients respectively.[19,20]

In our study, 11 patients had received neoadjuvant therapy, 10 patients were hypertensive, 4 patients had diabetics and 4 patients were smoker. This study couldn't establish their association statistically with early complications due to inadequate sample size.

Conclusion

In our study, 29.73% patients developed early complication after Modified Radical Mastectomy and level II axillary clearance for carcinoma breast. Seroma formation was the most common complication followed by margin necrosis, flap necrosis, wound infection and hematoma formation. Complications can cause readmission of patients, increasing stress and delay in further treatment.

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