



ORIGINAL ARTICLE

Early complications following modified radical mastectomy in patients with breast.

Shabab Hussain¹, Khan Karim Afridi², Viqar Aslam³, Mohammad Nasir⁴, Fazal Ahmad⁵

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ABSTRACT... Objective: To investigate the early complications, associated comorbidities and risk factors associated with modified radical mastectomy in patients suffering from breast cancer. **Study Design:** Prospective Cohort study. **Setting:** Department of Surgery, Khyber Medical University, Institute of Medical Sciences, District Headquarter Hospital, Kohat. **Period:** January 2021 to December 2022. **Material & Methods:** A total of 65 patients diagnosed with breast cancer who were planned to undergo through radical mastectomy during the study period were analyzed. Demographical and clinical characteristics of all patients were noted. Early complications, associated comorbidities and related risk factors were recorded. **Results:** In a total of 65 patients, the mean age was 47 ± 13 years (ranging 50-65 years). At the time of enrollment, 25 (38.5%) patients had painful lump in their breasts while remaining 40 (47.7%) patients reported that they were had swelling in their axillary region. There were 30 (46.2%) patients who had had stage-III breast cancer whereas other 34 (52.3%) were suffering from stage-II breast cancer. Formation of seroma was most commonly associated complication reported in 30 (46.2%) patients whereas 10 (15.4%) patients reported infections of wound. Twenty (30.8%) patients reported that they were having pain on the site of surgery along with paresthesia on the medial side of arm. Five (7.7%) patients had associated diabetes while 8 (12.3%) patients were overweight with their body mass index (BMI) value between 25-29.9 kg/m². Nine 9 (13.8%) patients were hypertensive. **Conclusion:** Most common early complications associated with modified radical mastectomy included infection of the surgical site, paresthesia and pain.

Key words: Breast Cancer, Mastectomy, Necrosis, Paralysis, Paresthesia.

INTRODUCTION

Breast cancer has been considered as the most common cause of cancer among women throughout the world with the 13% increased risk of breast cancer development.¹ According to the medical center of oncology, breast cancer has been found among both males and females with 22.8 % representation found among females with diagnosed cases of approximately 850 in year 2020.²

There are several associated signs and symptoms of breast cancer that acts as the primary indications for any abnormality occurring within the region.³ The most commonly occurring symptoms of breast cancer include pain in the breast region, formation of lumps, bruises and rash on the area, nipple inversion and discharge, flaking, scaling,

peeling and darkness of the area around the skin. In severe and chronic cases, further symptoms include depression, anxiety, overall weakness of the body, pain and excessive fatigue.⁴ The causes of breast cancer may include several reasons such as hormonal changes, family history, age, obesity, environmental factors, sedentary lifestyle or any previous history of breast cancer.³ The most frequently associated complications with breast cancer include pain, early lymphedema, necrosis of the tissue, ecchymosis of flap, bruising and fatigue.²

Management of breast cancer involves multidisciplinary approach including hormone replacement therapy, chemotherapy, radiotherapy and surgery.⁵ The standard approach for treating breast cancer is "modified radical mastectomy

1. FCPS (Surgery), Assistant Professor Surgery, Khyber Medical University Institute of Medical Sciences / DHQ Teaching Hospital KDA Kohat.
2. FCPS (Surgery), Surgical Specialist, DHQ Teaching Hospital KDA Kohat.
3. FCPS (Surgery), Associate Professor Surgery, MTI Lady Reading Hospital, Peshawar.
4. FCPS (Surgery), Chief District Surgeon, DHQ Teaching Hospital KDA Kohat.
5. FCPS (Surgery), Associate Professor Surgery, Khyber Medical University Institute of Medical Sciences, DHQ Teaching Hospital KDA Kohat.

Correspondence Address:

Dr. Shabab Hussain
Department of Surgery
Khyber Medical University Institute of Medical Sciences / DHQ Teaching Hospital KDA Kohat.
shababdr@gmail.com

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(MRM)".⁶ Different surveys have been conducted to determine the effectiveness of MRM along with the associated complications in patients with breast cancer.⁴ The most frequent complication that could occur after surgery is seroma formation having an incidence rates between 3–85%.² The rate of incidence for post operative infections varies from person-to-person (3–19%), symptoms of chronic pain ranging (20–30%) and necrosis of flap (3–32%).⁵ The literature reports that rate of incidence associated with lymphedema is less than 10% following a radical mastectomy.³

Shaikh et al in a local study highlighted that the complications associated with MRM which shows that seroma formation has 20% chances as early complications following surgery. In late complications, patients may develop dysfunction of shoulder (36%), tightness of chest (56%), loss of sensation (21%) and lymphedema (26%). In case of shoulder dysfunction, patients may experience restrictions in the shoulder that ranges along with multiple other gross restrictions.⁷ Another study carried on the early complications of MRM stated that wound infections are most commonly observed and noted in 16.6% cases. Formation of seroma being the second most common condition accounts for 14% cases while formation of hematoma accounts for 3.5%. Flap necrosis along the marginal areas were observed in 5.2% cases whereas extensive necrosis of the flap accounts for 1.75%. However, lymphedema has a very low rate of development causing partial restriction of the shoulder joint movements.⁸ The present study was done to investigate the early complications, associated comorbidities and risk factors associated with modified radical mastectomy in patients suffering from breast cancer.

MATERIAL & METHODS

A prospective cohort study conducted at The Department of Surgery, Khyber Medical University, Institute of Medical Sciences, District Headquarter Hospital, Kohat from January 2021 to December 2022. A total of 65 participants aged between 50-75 years of age who were planned to undergone surgery of MRM following breast cancer stage of either I, II or III during the study

period were analyzed. Patients were selected through non-probability consecutive sampling method. Patients who underwent MRM for purpose of palliative care were excluded. Ethical clearance was acquired from "Ethical Review Committee". Informed and written consent were sought.

Demographical and clinical characteristics of all patients were noted. Diagnosis of breast cancer was confirmed through open biopsy and staging was labeled. Standard surgical techniques were followed for performing MRM. Early complications, associated comorbidities and related risk factors were recorded. Early complications were described as complications occurring within 30 days following MRM.

Data analysis was done by using "Statistical Package for Social Sciences (SPSS)", version 26.0. Mean and standard deviation (SD) were calculated for quantitative variables whereas frequency and percentages were shown for qualitative variables. Pearson correlation was used to find out the relationship between study variables considering $p < 0.05$ as statistically significant.

RESULTS

In a total of 65 patients, the mean age was 47 ± 13 years (ranging 50-65 years) while 45 (69.2%) patients were between 50-60 years of age and remaining 10 between 61-65 years. At the time of enrollment, 25 (38.5%) patients had painful lump in their breasts while remaining 40 (47.7%) patients reported that they were had swelling in their axillary region. There were 30 (46.2%) patients who had had stage-III breast cancer whereas other 34 (52.3%) were suffering from stage-II breast cancer (Figure-1).

Table-I is showing details of post-operative complications. Formation of seroma was most commonly associated complication reported in 30 (46.2%) patients. Negatively drained pressure under the flap of skin was used by the patient on the basis of fluid draining with an amount of < 30 ml. Ten (15.4%) patients reported infections of wound and they were treated with dressings and

antibiotics. Twenty (30.8%) patients reported that they were having pain on the site of surgery along with paresthesia on the medial side of arm.

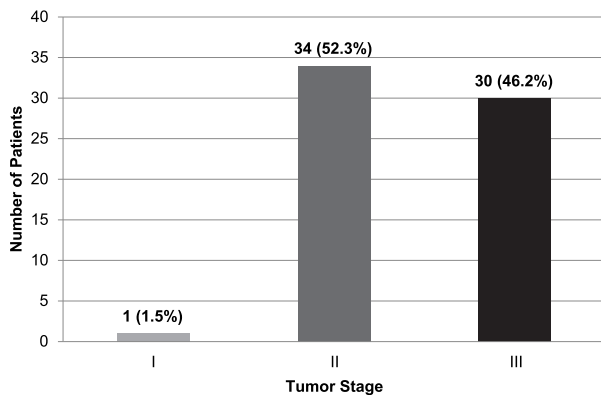


Figure-1

Complications	No of Patients (n) (%)
Formation of seroma	30 (46.2%)
Infections of wound	10 (15.4%)
Pain	20 (30.8%)
Ecchymosis of flap	5 (7%)
Necrosis of flap	5 (7%)
Early lymphedema	4 (1.5%)
Paralysis of muscles	1 (6%)

Table-I. Distribution of patients on the basis of post-operative complications

Five (7.7%) patients had associated diabetes while 8 (12.3%) patients were overweight with their body mass index (BMI) value between 25-29.9 kg/m². Nine 9 (13.8%) patients were hypertensive whereas 2 females (3.1%) were reported to have a recovered breast cancer but got cancer again on another breast. One (1.5%) patient was being treated for asthma by steroidal medications. Table-II is showing relationship of most commonly occurring post-surgical complications with associated comorbidities in terms of p-values.

Comorbidities	Formation of Seroma.	Infections of Wound.	Pain.
Diabetes mellitus.	0.001*	0.635	0.541
Smoking.	0.571	0.013*	0.001*
Hypertension.	0.005*	0.581	0.056
Obesity.	0.002*	0.367	0.584
Removal of drain.	0.019*	0.018	0.227
Stage of cancer.	0.528	0.645	0.608

Table-II. Association between post mastectomy complications and associated risk factors
*p<0.05 (statistically significant)

DISCUSSION

Management of breast cancer involves a multidisciplinary approach however, treatment through surgery is dependent upon the stage of cancer along with the presenting symptoms, patient's preference, age and choice of surgeon.⁹ The most commonly used standardized procedures for treatment of breast cancer is modified radical mastectomy along with the clearance of axillary lymph nodes.^{10,11} However, there are certain complications that are associated with the surgical procedures before and after the surgical management of breast cancer.¹²

The commonly observed complications associated with mastectomy in this study were formation of seroma observed in 30 patients. This was also suggested by some other studies to have seroma formation as the most standard complication.^{13,14} However, the rate of formation varies from person to person ranging from 5 – 85% in cases of undrained lymph nodes of axilla and 49% in cases of drained axilla.¹⁵ Current study reported that the rate of seroma formation is higher in this study as compared to other literatures available on the same topic.^{13,14} Reason behind this was that most patients reported to be in stage III and require the dissection of the lymph nodes of axilla till the level III. The incidence of seroma formation was also associated with the patient characteristics like the presence of axillary lymph nodes, age of patient, size of breast, any previous history of biopsy, use of steroids and hypertension.¹⁵

Current study noted that formation of seroma had a significant correlation with breast cancer patients of stage III with a statistically significant value of p< 0.001. Hypertension had also shown to have association with seroma formation with a p value of < 0.005. Formation of seroma has been observed in about 46 % of the cases undergoing breast cancer surgery. A study has been conducted by Anjani et al for determining the seroma formation frequency along with comorbidities like diabetes mellitus, chemotherapy, hypertension, nodal dissection for seroma development after mastectomy.¹⁶ Study suggested that the chemotherapy and

hypertension resulted in the marginal increase of formation of seroma. However, diabetes did not contribute any role in the formation of seroma. Some researcher have shown that MRM has an associated link with infections of wound ranging from 2.8 – 15 % in comparison with other reported studies with a rate of 20%.^{13,17}

Current study reported that wound infections were found in 28% of patients with a higher rate as compared to other studies.^{18,19} The higher rates of wound infection could be due to many factors including improper hygiene, malnutrition, wound care, drain and sterilization.²⁰ This study showed that formation of seroma was an associated major risk factor of mastectomy. Cigarette smoking and use of nicotine is reported to have adverse effects on vessels, thereby increasing the risk of wound infections post-surgically.²¹ The character and intensity of pain associated with mastectomy is constricting, burning along with paresthesia along the medial side of the arm after mastectomy.²²

The study has some limitations as details about the closure of wound, evaluation of pre-operative procedures, hemostasis, and meticulous procedures were not recorded. For this purpose, some recommendations are suggested for future researches. The current study has highlighted several complications associated with MRM but there is further need to carry out the studies to highlight more details about the associated complications involving studies having the large size of sample. There is further need to facilitate a well - developed and trained surgical team along with technical and scientific proficiency for decreasing the morbidities and complications related to MRM.

CONCLUSION

Formation of seroma was the most common early complication after undergoing modified radical mastectomy. Wound infections were also demonstrated to be the associated complication and were ranked secondly. Other complications included paresthesia, pain along the medial side of wall, flap of skin necrosis, flap of ecchymosis and formation of hematoma in some or all cases of modified radical mastectomy. Only few cases





presented with the symptoms of muscle paralysis.
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AUTHORSHIP AND CONTRIBUTION DECLARATION

No.	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Shabab Hussain	Data collection, Drafting.	
2	Khan Karim Afridi	Methodology, Discussion.	
3	Viqar Aslam	Study concept, Data analysis, Proof reading.	
4	Mohammad Nasir	Data Collection, Literature review.	
5	Fazal Ahmad	Data Collection, Literature review.	