

Frequency of early complications after modified radical mastectomy in breast cancer in tertiary care centre

Khurram Shaikh, Muhammad Najmuddin Shabbir, Imtiaz Ahmed, Salim Soomro, Muhammad Shahzeb Najam

Abstract:

Breast cancer is the second most common cause of cancer-related deaths in women. Modified radical mastectomy is a type of mastectomy that combines the excision of all breast tissue from the affected breast along with axillary lymph node removal. The most common surgery-related complication is seroma formation. Only limited information is available, our study would therefore, provide a valuable data regarding this issue along with wound infection.

Objective: To determine the early complications after modified radical mastectomy in female patients with breast cancer presenting to tertiary care center.

Design & duration: Descriptive case study from 24th august 2009 to 24th February 2010.

Study Setting: Department of Surgery, Jinnah Postgraduate Medical Center, Karachi.

Patients: All patients fulfilling the selection criteria were selected.

Results: A total of 57 patients with modified radical mastectomy of breast cancer full filling the inclusion criteria were included in this study, wound infection was found in 2 (4.5%) patients while 15 (26.3%) patients had complication of seroma formation, further more it was found that complications were commoner in stage II of breast cancer than stage I, like 14 (35.0%) patients had complication of seroma formation in stage II compared to 1 (5.9%) patient in stage I and wound infection was in 2 (7.1%) patients in stage II compared to 0% in stage I.

Conclusion: The study concluded that complications like wound infection is much lower, however, the frequency of seroma formation is in line with national studies which warrants new interventions to decrease this complication rate.

Keywords: Modified radical mastectomy, Seroma, wound infection

Introduction:

Modified radical mastectomy is a type of mastectomy that combines the removal of all breast tissue from the affected breast with lymph node removal from the armpit on the affected side of the body. This surgery typically includes the removal of both the nipple and areola, but the surgery can be performed using skin and nipple sparing techniques.¹ The purpose for modified radical mastectomy is the removal of breast cancer. Modified radical mastectomy is the most widely used surgical procedure to treat operable breast cancer.²

Breast cancer is the most common malignancy in women in Pakistan. Our patients suffer from

the disease at a younger age than that reported in Western literature. A significant proportion of cases are 35 years old or younger.³ A study was conducted in Pakistan in 2004 to study complications after modified radical mastectomy. Early complications include seroma formation (20%) whereas late complications included anterior chest tightness (56%), shoulder dysfunction (36%), lymphedema (26%) and sensory loss (22%). Shoulder dysfunction included limited range of movement in all 18 patients and gross multiple restrictions were seen in 11 (61.11%) of these patients.⁴

Another study was conducted in Pakistan in 2004, to identify the early complications of

Department of Surgery,
Jinnah Postgraduate
Medical Center, Karachi

K Shaikh
MN Shabbir
I Ahmed
S Soomro
MS Najam

Correspondence:

Dr Khurram Shaikh
Assistant Professor, Dept
of Surgery, United Medical
& Dental College, Karachi
Cell: 0333 3808824
email: drkhurramshk@
hotmail.com

modified radical mastectomy. The study found that wound infection was the commonest complication occurring in 19 patients (16.6%). Seroma formation occurred in 17 patients (14%). While haematoma occurred in 4 patients (3.5%). Marginal necrosis of flap was seen in 6 patients (5.2%), whereas the extensive flap necrosis occurred in 2 patients only (1.75%). Only one patient developed early lymph edema of the arm and partial limitation of the shoulder joint movements.⁵

Early complications as noted from history and medical records included seroma formation 20%, wound infection 18% and skin flap necrosis in 02% patients². Others have reported seroma formation in 100%⁶, incidence rate of wound infection ranging from 6-14%⁷ and necrosis in 8-60%⁸ of cases. These complications are of little clinical significance and patients recover completely with use of antibiotics, drainage, and proper use of flaps.^{2,9,10}

A seroma is the most frequent complication of breast cancer surgery, the etiology of which remains obscure. For evaluating its cause a study was conducted in 2003 by Gonzalez et al. The study found that the overall seroma rate was 15.8%, Seromas occurred in 19.9% of patients undergoing MRM and in 9.2% of patients undergoing breast-conserving surgery ($p=0.01$).¹¹

Seroma formation following modified radical mastectomy with axillary lymph node dissection for breast cancer is a most common wound complication. It occurs in approximately 50% of patients undergoing mastectomy.¹²

The study was conducted in 2009 to evaluate the access to axilla, postoperative complications, and cosmetic results of the modified radical mastectomy. Out of 117 consecutively selected women no intraoperative complications were observed. In each case, the axillary dissection (with level 3 node clearance when needed) was performed with ease. The wound was healed by primary adhesion, giving an excellent cosmetic result without lateral dog ear deformity. Skin flap necrosis was found in 2 elderly patients. Wound

hematoma and surgical site infection developed in 1 patient each. Necrosis of the apex of axillary triangle occurred in one woman with diabetes. These rare complications were managed successfully in all the cases.¹³

Material and Methods:

This descriptive case series study was carried at the Department of Surgery, Jinnah Postgraduate Medical Center, Karachi from 24th August 2009 to 24th February 2010.

The sample size estimation was based on prevalence of 18%, margin of error = 10% and CI= 95%, the required sample size was 57 patients. Non-probability purposive Sampling technique was adapted.

Inclusion criteria:

1. Patients more than 15 years of age.
2. Only females presenting to outpatient department.
3. Histopathologically proven cases of infiltrating ductal carcinoma (by presence of malignant cells).
4. Patients with stage I and II of breast cancer.
5. Patients undergoing modified radical mastectomy.
6. Patients that can be followed up for six weeks.

Exclusion criteria:

1. Patients with inflammatory breast cancer.
2. Immunocompromised patients such as DM, TB, HIV, other malignant cases.
3. Patients who received pre operative chemotherapy.

This study was conducted in Jinnah Post graduate medical center Surgery department, Karachi. The female patients following the selection criteria, presented to outpatient department and were identified with breast cancer undergoing modified radical mastectomy, after the written informed consent. Ethical approval was granted by the ethical approval board of the institution. The modified radical mastectomy was conducted by surgeons of more than 5 years of post fellowship experience. Patients were dis-

charged by the second day of surgery and were followed up at the out patient clinic every week for the first six weeks for the evaluation of early complications such as wound infection and seroma formation. All the relevant demographic information such as age and clinical information such as stage of breast cancer along with the final complications at the end of six weeks were noted.

Data was entered and analyzed in SPSS version 12. Descriptive statistics was used to summarize the categorical data in percentages and proportions for wound infection, seroma formation, stages of breast cancer while continuous variables like age was presented as mean $\pm$ S.D. Confounding factors like age and stages of breast cancer was stratified for controlling them.

Results:

A total of 57 patients with modified radical mastectomy of breast cancer full filling the inclusion criteria were included in this study. The mean age of the patients was found as 45.81 ± 12.97 years and the age range was between 20 – 76 years. The average post operative day for wound infection estimated as 5.00 ± 1.414 days whereas the average post operative day for seroma formation estimated as 10.00 ± 3.44 days.

Forty two (71.2%) patients found in breast cancer stage 2 while 17 (28.8%) patients were found in breast cancer stage 1. wound infection found in 2 (4.5%) patients while 15 (26.3%) patients had complication of seroma formation as given in table 1 & 2.

When we compared stages of breast cancer with wound infection; 2 (7.1%) patients had wound infection in stage II as compared to 0% in stage I, whereas 1 (5.9%) patient had complication of seroma formation in stage I compared with 14 (35.0%) patients had complication of seroma formation in stage II.

When stratified age with complications 1 (8.3%) patients had wound infection, her age was between 48 – 61 years while 1 (25.0%) patients had wound infection with age more than 62 years.

Similarly 5 (19.2%) patients had seroma formation between 34 – 47 years of age, 7 (38.9%) patients were in age group of 48 – 61 years while 3 (50%) patients had seroma formation in age group of more than 62 years.

Discussion:

Radical mastectomy was first described in 1894 by William Stewart Halsted and for a number of decades it remained the standard operation for early breast cancer. Modified radical mastectomy combines the removal of all breast tissue from the affected breast with lymph node removal from the armpit on the affected side of the body.^{1,2} The purpose for modified radical mastectomy is the removal of breast cancer. The highest rates of breast cancer occur in Western countries and the lowest among Asian countries.²

Breast cancer is the second most common cause of cancer-related death in women. In most patients, imaging demonstrates thoracic changes resulting from either treatment, complications of treatment, or tumor recurrence or metastasis. The postsurgical imaging appearance of the chest wall depends on the surgical method used (radical mastectomy, modified radical mastectomy, breast-conserving surgery, breast reconstruction). The most common surgery-related complication is seroma. Radiation therapy frequently causes radiation pneumonitis.

Ultrasonography and computed tomography are more sensitive than physical examination for detecting local and regional recurrence. The thorax is a common site of metastasis, which may affect the lymph nodes, bone, lung, pleura, or heart and pericardium. Bone metastasis is usually evaluated with bone scintigraphy and may cause spinal cord compression, a serious complication that requires early diagnosis. Intrapulmonary metastasis may manifest as single or multiple pulmonary nodules, airspace pattern metastasis, lymphangitic metastasis, or endobronchial metastasis. Pleural metastasis usually manifests as pleural effusion, with or without a pleural mass. Familiarity with the spectrum of radiologic findings in breast cancer patients al-

Table 1: Seroma formation complication

Seroma Formation	Frequency	Percent	Valid Percent
Yes	15	25.4	26.3
No	42	71.2	73.7
Total	57	96.6	100.0
Missing System	2	3.4	
Total	59	100.0	

Table 2: Frequency of complication Wound infection

Wound infection	Frequency	Percent	Valid Percent
Yes	2	3.4	4.5
No	42	71.2	95.5
Total	44	74.6	100.0
Missing Data	15	25.4	
Total	59	100.0	

lows accurate image interpretation and correct diagnosis.¹⁴

Study in Pakistan in 2002 concluded that despite significant advances made in cancer care in the United States, patients in Pakistan still present at an advanced stage. Antecedent use of unconventional therapies before seeking any medical advice is widespread. There is a great need for public education to enhance awareness about cancer and other health habits.¹⁵

A study was conducted in 2006 to compare these two modified radical mastectomy techniques, by analyzing their degrees of difficulty and complications. The study included 430 patients divided randomly into Patey and Madden techniques. The study showed that mean duration of the surgical procedures was 105 (+/- 29.9) and 102 minutes (+/- 33), for the Patey and Madden groups, respectively ($p = 0.6$). Hospitalization duration was 2.3 days for both groups. The mean number of lymph nodes resected was 20.3 (+/- 7.6) for Patey and 19.8 (+/- 8.1) for Madden ($p = 0.5$). There were no differences in terms of vascular or nerve sections, hematomas or infections. The surgeons reported the same degree of difficulty for the two methods.¹⁶ Our study did not report the mean duration of stay in hospital however our study determine that the average post operative day for wound infection estimated as 5.00 ± 1.414 days whereas the average post operative day for seroma infection estimated as 10.00 ± 3.44 days.

Another study reported that seroma formation following modified radical mastectomy with axillary lymph node dissection for breast cancer is a most common wound complication. It occurs in approximately 50% of patients undergoing mastectomy.¹² Much less in our study only 26%.

A study was conducted in Karachi in 2006, to determine the frequency of seroma formation, and the role of hypertension, diabetes mellitus, neoadjuvant chemotherapy and nodal dissection in the development of seroma after breast surgery. The study concluded that seroma formation is a common complication of the modified radical mastectomy. The only factor that appeared to contribute to seroma formation in this series was hypertension. Neoadjuvant chemotherapy marginally increased the risk, but diabetes had no role in seroma formation.¹⁷

A study was conducted by Chintamani et al., 2005 to compare the amount and duration of drainage between a half negative suction and full vacuum suction drainage in patients following modified radical mastectomy. The study reported that there was no significant difference in the incidence of seroma formation in the two groups and there was a significant reduction in the total hospital stay in patients with half vacuum suction drainage systems as compared to the full suction drainage group ($p < 0.001$) without any added morbidity.¹⁸

A study in 2003 by Puttawibul compare outcomes after modified radical mastectomy (MRM) with and without drainage at the pectoral area. It was an randomized controlled trials (RCT) conducted on 60 patients. The study concluded that overall complications in the conventional group and the group without drain did not differ significantly.¹⁹

A study was conducted by Altinyollar in 2000 to calculate the incidence of postoperative seromas after definitive breast cancer operations utilizing electrocautery dissection. Patients were subdivided by operative procedure: modified radical mastectomy (MRM; $n = 148$), breast preservation with axillary node dissection ($n =$

64), or MRM with immediate reconstruction ($n = 40$). Electrocautery was used in development of skin flaps. Seromas developed in 39 of the 252 operations for an incidence of 15.5 per cent. Seroma formation was significantly lower in those patients receiving MRM with immediate reconstruction than in those receiving MRM (2.5% vs 19.6%) and tended to be lower than for patients receiving breast preservation with axillary node dissection (14.06%). The incidence of postoperative seromas was low despite the use of electrocautery. An association of postoperative seromas with neoadjuvant chemotherapy was noted. Additionally, it appears that immediate reconstruction may reduce the incidence of postoperative seromas, presumably by filling the dead space in the chest wall.²⁰

Our study conducted on 57 female patients with breast cancer and undergoing modified radical mastectomy found that the mean age of the patients was found as 45.81. Forty two (71.2%) patients were of stage II and 17 (28.8%) patients were of stage I. The results of the study concluded that the average post operative days for wound infection estimated were five days whereas the average post operative days for seroma formation estimated were ten days. The complications include wound infection was found in 2 (4.5%) patients while 15 (26.3%) patients had seroma formation. These complications were more in stage II disease.

Conclusion:

The study concluded that complications like wound infection was commonly seen on 5th postoperative day while seroma formation was seen on 10th postoperative day. The frequency of wound infection was found in 2 (4.5%) patients while of seroma in 15 (26.3%) patients.

The frequency of wound infection is much lower, however, the frequency of seroma formation is in line with national studies, with the exception of few international studies showing incidence rate of 50%.

Our study did not include long term complications and other short term complications such

as pain, strength and range of motion of muscles, bleeding and lymphedema, which remains the major limitation of our study, however an important gap to be filled up by future studies.

The frequency rate of seroma formation (26%) warrants new interventions to decrease this complication rate.

Future studies including other complications assessment with large sample sizes are need of the hour. So, as studies on identifying approaches to decrease the frequency rate of seroma formation in patients undergoing modified radical mastectomy.

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