IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)
e-ISSN: 2279-0853, p-ISSN: 2279-0861.Volume 21, Issue 3 Ser.4 (March. 2022), PP 58-62
www.iosrjournals.org

A Prospective Study of Early Complications Following Modified Radical Mastectomy in a Tertiary Care Centre in Sub-Urban South India

Dr. Nitin Mariappan M.S.
Prof. Dr. K. Vijayakumar M.S.,

ABSTRACT
Background:
Carcinoma breast is a growing concern in the modern world. With recent advancement if the field of medical science, treatment modalities have significantly reduced mortality and morbidity in these patients owing to earlier diagnosis and better quality of treatment.
Methods:
The present prospective and observational study was conducted in the Department of General Surgery of Government Mohan Kumaramangalam Medical College Hospital, Salem, Tamil Nadu. One hundred patients of carcinoma breast were treated with modified radical mastectomy from September 2019 to September 2021.
Results:
The mean age of cases was 49.87 years with a standard deviation of 24.12 years. In all the cases (100%) chief complaint was lump in breast, followed by axillary swelling in 35 cases (35%) and history of pain (in lump) in 18 cases (18%). ecchymosis of the flap was seen in 26 patients (26%). The 10 cases (10) had surgical site infection, Minimal seroma collection (<10ml) was seen in 9 cases. 3 cases (3%) had pain at the surgical site. Tissue necrosis was observed in 7 cases (7%).
Conclusions:
It was concluded that immediate post-operative complications of MRM included wound dehiscence, seroma, surgical site infection, hematoma, altered sensation and pain.
Keywords:
Breast cancer, Modified Radical Mastectomy, Early Post-operative complication, Seroma, Wound dehiscence

---

Date of Submission: 01-03-2022 Date of Acceptance: 11-03-2022

I. Introduction

Breast cancer is the most common cancer in females globally, accounting to almost 2 million new cases a year globally and upto 1,00,000 new cases in India every year. It is the most common cancer overall second only to Lung cancer (i.e. in both males and females). This represents about 12% of all new cancer cases and 25% of all cancers in women.[1] The number of breast cancer cases is rising rapidly in India. It is estimated that one in 22 women in India are likely to get breast cancer during the life time as compared to one in eight American women being affected by this disease.[2] The modern day approach to breast cancer management is multidisciplinary and includes a combination of surgery, radiotherapy, hormonal therapy and chemotherapy.[3] However, surgical excision of the tumor is the hallmark of treatment of breast cancer. Among a plethora of surgical procedures available and being performed, modified radical mastectomy (MRM) is the most common.[4]

Complications following MRM may occur early or late in the post operative period and contribute to morbidity. This in turn leads to prolonged stay in hospital -which despite causing economic burden to the patients, also exposes them to nosocomial infections and delay wound healing and there by delaying the adjuvant chemotherapy or radiotherapy to be carried out. Early complications are defined here as complications occurring within 30 days after surgery. It is documented that early wound complications after modified radical mastectomy include chronic pain, altered sensations in post op area, wound infections which may lead to wound dehiscence, seromas or hematomas, flap necrosis and flap necrosis. Based on different conducted surveys, the incidence of SSI's following breast surgeries may vary anywhere between 0.8-26%.[5,6] Seroma formation is the most frequent postoperative complication seen after MRM with an incidence ranging from 3% upto 85%.[7] Secondary infection of unresolved seroma may lead to unnecessary morbidity and may even require re-admission, re-imaging, drainage and antibiotic usage.[8] Incidence rates for postoperative wound infections range from 3% to 19% and chronic pain is seen in 20-30% of the cases. Incidence of flap necrosis is reported between

3% and 32%.[9-11] The incidence of functionally significant lymphedema after a modified radical mastectomy is estimated to be less than 10%.

Complications after mastectomy can be minimized with thorough a thorough preoperative evaluation, meticulous skill with minimal tissue handling, perfect hemostasis and proper wound closure. In addition to the standard oncologic evaluation, pre-operative evaluation of patients must includes assessment of patients overall physiologic condition with particular emphasis on tolerability of anesthesia and co-morbidities like diabetes, hypertension, anemia, coagulopathy or steroid therapy which may impede wound healing must be addressed appropriately.[12]

II. Methods

A prospective observational study with regards to the frequency of early complications following Modified Radical Mastectomy in patients with breast cancer was conducted in the Department of General Surgery, Government Mohan Kumaramangalam Medical College Hospital, Salem, Tamil Nadu. Duration of study was 2 years i.e. September 2019 to September 2021 where a total of 100 patients of carcinoma breast were operated and observed for early post operative complications.

Inclusion criteria

• All the patients who underwent modified radical mastectomy procedure

Exclusion criteria

• Pre-existing pain at operative area
• Patients on anticoagulants/aspirin
• Patients with malignant breast carcinoma.

Method of collection of data

Data was collected from an especially designed case recording proforma pertaining to patient particulars, clinical history with examinations and diagnostic tests. Post-operative complications were noted on day 4th, day 10th and in 1 month follow up. It was then subjected to statistical analysis with the assistance of bio-statistician of the institute. Before start of present study, an oral and written consent for the same was obtained in local vernacular of each patient.

Procedure

The Modified Radical Mastectomy - Auchincloss type was performed where all breast parenchyma along with the pectoralis fascia, the nipple areola complex, necessary skin, and level I, level II and level III axillary lymph nodes were removed. Negative suction drain was kept in situ in the axilla and beneath flaps in the chest wall. Drain was kept for a minimum of 3 days and it was removed on the day when 24 hour drain output was less than 10 ml. In all cases the drain was strictly removed on 7th day at the latest.

Statistical analysis

Statistical analysis was done by using descriptive and inferential statistics using chi square test and software used in the analysis were SPSS 17.0 version and Graph-pad Prism 5.0 and $p < 0.05$ is considered as level of significance ($p < 0.05$).

III. Results

Maximum number of the cases i.e. 41 (41%) belonged to the age group 51-60 years, followed by 26 (26%) cases in the age group of 31-40 years, 18 (18%) cases in 41-50 years and 15 (15%) cases were above 60 years of age. The mean age of cases was 49.87 years with a standard deviation of 24.12 years. The youngest patient was of 32 years and oldest of 75 years. Only one patient (1%) was diagnosed with carcinoma breast at the age of 32 years. In all the cases (100%) chief complaint was lump in breast, followed by axillary swelling in 35 cases (35%) and history of pain (in lump) in 18 cases (18%). ecchymosis of the flap was seen in 26 patients (26%). The 10 cases (10%) had surgical site infection and were treated with higher IV antibiotics and betadine dressing. Minimal seroma collection (<10ml) was seen in 9 cases (9%) and were addressed with proteolytic drugs like Trypsin and Chymotripsin and compressive bandages. 3 cases (3%) had pain at the surgical site and required parenteral analgesics. Tissue necrosis was observed in 7 cases (7%) of which 6 cases showed marginal blackening of skin with epidermal sloughing. They were treated with daily saline dressings and dressing with Placenta gel - all of which healed completely in a couple of weeks. One case developed significant wound gaping which required secondary suturing at POD 22.

A bar chart is shown below according to distribution of patients according to complication on post-operative day 4 (Table 1).

Table 1: Distribution of patients according to complication on POD 4.

PARAMETER	NUMBER OF PATIENTS	PERCENTAGE
Abnormal flap colour (ecchymosis)	26	26
Signs of infection	10	10
Seroma	23	23
Altered sensation	0	0

Table 2: Distribution of patients according to complication on POD 10.

PARAMETER	NUMBER OF PATIENTS	PERCENTAGE
Pain	32	32
Tissue Necrosis	7	7
Wound Dehiscence	16	16
Seroma	10	10
Altered Sensation	28	28
Hematoma	4	4
Lymphoedema	0	0

Post operatively, pain was the most predominant complaint with significance in 32 cases who required parenteral analgesics even on POD-10. Wound dehiscense was present in 16 cases (16%), 15 patients had minor dehiscence (<2cm) which was treated with daily dressings and Placenta gel dressing and 1 patient required secondary suturing of the wound. Among these 16 cases, 10 patients had signs of infection and 3 patients had both seroma formation and signs of infection, prior to 10th day. Seroma was present in 23 cases. All cases were treated with compressive dressing and proteolytic anti-inflammatory drugs. Needle aspiration was done in 2 case. Altered sensation was observed in 28 cases (28%) at the anterior axillary fold and medial aspect of arm. Hematoma was seen in 4 cases (4%) along the lower flap who were treated with aspiration (Table 2).

Table 3: Distribution of patients according to postoperative complication on 1 month of follow up.

PARAMETER	NUMBER OF PATIENTS	PERCENTAGE
Pain	2	2
Wound Dehiscence / unhealthy scar	12	12
Signs of infection	0	0
Altered Sensation	11	11
Lymphoedema	0	0

Twelve cases had minor wound dehiscence (<2cm). Among these 12 cases 3 cases had earlier flap necrosis, 4 patients had seroma, 2 cases had surgical site infection, one patient had seroma with surgical site infection, one case had haematoma with surgical site infection and flap necrosis. Only one patient had no earlier complications. Altered sensation persisted in 11 cases (11%). None of the patients had significant lymphoedema within the study period of 1 month (Table 3).

IV. Discussion

In present study,maximum number of the cases i.e. 41 (41%) belonged to the age group 51-60 years, followed by 26 (26%) cases in the age group of 31-40 years, 18 (18%) cases in 41-50 years and 15 (15%) cases were above 60 years of age. The mean age of cases was 49.87 years with a standard deviation of 24.12 years. In a study of 150 patients by Dahri FJ et al, maximum patients were 40-60 year of age with a mean age of 52 year.[13] It is estimated that incidence of carcinoma of men is around 1%. An Indian by Sandhu DS et al in 304 patients of breast cancer found that the incidence was around 1.3%; whereas Weiss et al, reported it as <1% in his study.[14,15] There were no male breast cancers operated at our institute in the given period and it does co-relate with literature. 23 cases developed seroma in the early post-operative period of 4th day though drain was in situ, away from the location of drain. These cases were managed with proteolytic drugs and compressive bandages and needle aspiration being necessary in selected cases. Seroma formation is a side effect of surgery rather than complication. However, it can delay patient recovery and must be addressed promptly. Rate of seroma formation can be reduced significantly by insertion of suction drain deep to mastectomy flaps in axilla. In the present study occurrence of seroma formation was in concurrence with that of the available literature.

Table 4: Comparison of incidence of seroma in different studies.

Study	
Bhatty I et al	20%
Dahri FJ et al	33.33%
Altinyollar H et al	15.5%
Wedgwood KR et al	25 %
Present Study	23%

Surgical site infection

In the present study, 10 cases had signs of surgical site infection (10%) on POD 4 and were treated with higher IV antibiotics and betadine dressing. Among these, most settled, but 3 cases developed wound dehiscence despite adequate aseptic precautions. This might be attributed to the fact that 2 of them were diabetics and the other one had poor hygiene. David GB et al, in his study with a sample size of about 38,800 patients, reported an incidence of SSI to be 2.3%. Obesity with an increased BMI, prolonged surgical time and factors affecting wound healing like Diabetes mellitus and smoking are risk factors ($P<0.05$) for the development of SSIs as per literature.

Wound dehiscence

In present study there was no wound dehiscence on 4th day, dehiscence was noted in 16 cases on 10th day (16%) which was reduced 12 cases at the end of 1 month (12%). Among these 16 cases 15 patients (93.75%) had minor dehiscence (<2cm) which was treated with daily dressings and 1 patient (6.25%) had flap necrosis with significant wound gapping and required secondary suturing of the wound (Table 5).

Table 5: Comparison of incidence of post mastectomy wound dehiscence in different studies.

Compte DV et al	11.9%
Dahri FJ et al	1.9%
Present Study	12%

Table 6: Comparison of incidence of flap necrosis in different studies.

Compte DV et al	14.5%
Shaikh FB et al	5.1%
Alam Jan W et al	3.9%
Dahri FJ et al	1.9%
Present Study	1%

V. Conclusion

It can be concluded that early post-operative complications of MRM included wound dehiscence, seroma, surgical site infection, hematoma, altered sensation and pain. It was observed that post operative pain was the most common complication followed by wound dehiscence and altered sensation in the operated site and medial aspect of the corresponding arm in the early post operative period. Proper per-operative assessment of patients, better skill and proper technique of surgery with adequate aseptic precautions and patient specific post operative management may help in minimizing these complications.

Acknowledgements

Authors would like to express their profound gratitude to all the participants for their co-operation.
Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

References

[1]. Ferlay J, Steliarova-Foucher E, Lortet-Tieulent J, Rosso S, Coebergh JW, Comber H, et al. Cancer incidence and mortality patterns in Europe: estimates for 40 countries in 2012. Eur J Cancer. 2013 Apr 1;49(6):1374-403.
[2]. What is breast cancer? Available at: http://www.cancer.org/cancer/breastcancer/overview. Accessed 1 January 2012,
[3]. Hudis CA, Norton L. Adjuvant drug treatment for resectable breast cancer. Oncologist. 1997 Dec1;2(6):351-8.
[4]. Thompson AM. Axillary node clearance for breast cancer. J Royal Coll Surg Edinburgh. 1999 Apr;44(2):111-7.
[5]. Prospero E, Cavicchi A, Bacelli S, Barbadoro P, Tantucci L, D'errico MM. Surveillance for surgical site infection after hospital discharge: a surgical procedure-specific perspective. Infect Control Hospital Epidemiol. 2006 Dec;27(12):1313-7.
[6]. Ruvalcaba-Limón E, Robles-Vidal C, PoitevinChacón A, Chávez-MacGregor M, Gamboa Vignolle C, et al. Complications after breast cancer surgery in patients treated with concomitant preoperative chemoradiation: a case– control analysis. Breast Cancer Res Treatment. 2006 Jan 1;95(2):147-52.
[7]. Kumar S, Lal B, Misra MC. Post-mastectomy seroma: a new look into the aetiology of an old problem. J Royal Coll Surgeons Edinburgh. 1995 Oct;40(5):292-4.
[8]. Coveney EC, O'Dwyer PJ, Geraghty JG, O'Higgins NJ. Effect of closing dead space on seroma formation after mastectomy--a prospective randomized clinical trial. Eur J Surg Oncol. 1993 Apr;19(2):143-6.

[9]. Vitug A, Newman L. Complications in breast surgery. Surg Clin North Am. 2007 Apr;87(2):431- 51.
[10]. Tasmuth T, Von Smitten K, Kalso E. Pain and other symptoms during the first year after radical and conservative surgery for breast cancer. Br J Cancer. 1996 Dec;74(12):2024-31.
[11]. Larson DL, Basir Z, Bruce T. Is oncologic safety compatible with a predictably viable mastectomy skin flap?. Plastic Reconstructive Surg. 2011 Jan 1;127(1):27-33. 12. Vinton AL, Traverse LW, Jolly PC. Wound complications after modified radical mastectomy compared with tylectomy with axillary lymph node dissection. Am J Surg. 1991 May 1;161(5):584-8.
[12]. Dahri FJ, Awan MS, Qazi AR, Khaskheli NM, Soomro IA. Early wound complications following modified radical mastectomy with axillary clearance. J Surg Pak (Int). 2011 Oct;16(4).
[13]. Sandhu DS, Sandhu S, Karwasra RK, Marwah S. Profile of breast cancer patients at a tertiary care hospital in north India. Indian J Cancer. 2010 Jan 1;47(1):16-22.
[14]. Weiss JR, Moysich KB, Swede H. Epidemiology of male breast cancer. Cancer Epidemiol Prevention Biomarkers. 2005 Jan 1;14(1):20-6. 16. Srivastava V, Basu S, Shukla VK. Seroma formation after breast cancer surgery: what we have learned in the last two decades. J Breast Cancer. 2012 Dec 1;15(4):373-80.
[15]. Somers RG, Jablon LK, Kaplan MJ, Sandler GL, Rosenblatt NK. The use of closed suction drainage after lumpectomy and axillary node dissection for breast cancer. A prospective randomized trial. Ann Surg. 1992 Feb;215(2):146.
[16]. Wedgwood KR, Benson EA. Non-tumour morbidity and mortality after modified radical mastectomy. Ann Royal Coll Surg England. 1992 Sep;74(5):314.
[17]. Bhatty I, Ibrahim M, Chaudhry ML. Complications after modified radical mastectomy in early breast cancer. Pakistan J Med Sci. 2004;20(2):125-30.
[18]. Altinyollar H, Kapucuoglu N, Pak I, Berberoglu U. Lymphatic mapping and sentinel lymphadenectomy in early stage breast carcinoma. J Experiment Clin Cancer Res. 2000;19(2):141-4.
[19]. Davis GB, Peric M, Chan LS, Wong AK, Sener SF. Identifying risk factors for surgical site infections in mastectomy patients using the National Surgical Quality Improvement Program database. Am J Surg. 2013 Feb; 205(2):194-9.
[20]. Compte DV, Castillejos A, Hernandez-Mello N, Vidal CR, Volkow P. Characteristics and treatment of surgical site complications in patients undergoing mastectomy at a cancer hospital in Mexico. Wounds 2010;22(12):316-21.
[21]. Shaikh FB, Memon AA, Kumar M, Soomro E. Complications of modified radical mastectomy in carcinoma breast patients. Medical Channel. Jan Mar 2014;20(1):43-6.
[22]. Shaikh K, Shabbir MN, Ahmed I, Soomro S, Najam MS. Frequency of early complications after modified radical mastectomy in breast cancer in tertiary care centre. Pak J Surg. 2013;29(1):17-22.
[23]. Alam Jan W, Haq MI, Haq MAU, Khan AS. Early complications of modified radical mastectomy with axillary clearance. J Postgrad Med Inst. 2006;20(5):249-51.

Dr. Nitin Mariappan M.S, et. al. "A Prospective Study of Early Complications Following Modified Radical Mastectomy in a Tertiary Care Centre In Sub-Urban South India." *IOSR Journal of Dental and Medical Sciences (IOSR-JDMS)*, 21(03), 2022, pp. 58-62.