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EVALUATION OF EARLY COMPLICATION OF MODIFIED RADICAL MASTECTOMY WITH SPECIAL REFERENCE TO THE SEROMA FORMATION AND FLAP NECROSIS

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ABSTRACT

Background: *One of the most prevalent diseases among women globally, breast cancer continues to be a serious public health issue. One popular surgical method used to treat breast cancer is the Modified Radical Mastectomy (MRM). Despite its effectiveness, patients may experience a number of early postoperative problems, including ipsilateral neuralgia, cellulitis or abscess, shoulder decreased mobility, flap necrosis, and seroma formation, which can worsen patient morbidity and prolong recovery. Therefore, improving surgical outcomes requires early detection of these problems*

Methodology: *71 patients who had Modified Radical Mastectomy for astrologically confirmed breast cancer were included in a prospective descriptive observational study. The study comprised patients who met the inclusion criteria and were at least eighteen years old. A standardized data collection form was used to gather information on demographics, body mass index (BMI), comorbidity, Neoadjuvant chemotherapy, surgical features, and early postoperative problems. After the data was examined using SPSS, descriptive statistics like frequencies, percentages, means, and standard deviations were calculated.*

Results: *The participants' average age was 49.77 ± 10.08 years, and their average BMI was 30.16 ± 5.37 kg/m². The majority of patients were overweight or obese, and prevalent commodities included diabetes mellitus (56.3%) and hypertension (71.8%). 85.9% of procedures involved electrosurgical unit, while 64.8% of patients underwent Neoadjuvant chemotherapy. Seroma development was the most frequent early postoperative consequence (64.8%), followed by ipsilateral neuralgia (29.6%), shoulder decreased mobility (45.1%), flap necrosis (43.7%), and cellulitis or abscess (39.4%).*

Conclusion: *Patients receiving Modified Radical Mastectomy continue to experience early postoperative problems, the most prevalent of which is seroma development. Higher BMI, diabetes mellitus, hypertension, and surgical features are examples of patient-related factors that may influence these results. To reduce problems and enhance patient recovery, thorough preoperative evaluation, careful surgical technique, standardized postoperative care, and frequent follow-up are crucial.*

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Key words: *Breast Cancer, Modified Radical Mastectomy, Seroma Formation, Flap Necrosis, Postoperative Complications, Shoulder Impaired Mobility, Cellulitis, Ipsilateral Neuralgia, Body Mass Index, Breast Surge*

INTRODUCTION

The most prevalent cancer in women globally, breast cancer poses a serious threat to public health, especially in low- and middle-income nations where patients often have locally advanced illness. Achieving total oncological clearance while reducing morbidity is the major goal of surgical management, which is still a crucial part of treating breast cancer. Due to tumor related considerations, patient preference, and resource constraints, even though breast-conserving surgery is more common, modified radical mastectomy (MRM) is still commonly performed has become more popular in early-stage cancer. (None et a1.,2026).

One of the most common surgical techniques for treatable breast cancer is still modified radical mastectomy (MRM). It is linked to a range of short-term morbidity and early postoperative problems that can have a substantial impact on patient recovery, hospital stay, quality of life, and overall treatment outcomes. Seroma development, surgical site infection, flap necrosis, hematoma, wound dehiscence, and upper limb morbidities such discomfort, restricted shoulder movement, and lymph-oedema are common early postoperative problems after MRM. These issues could worsen oncological outcomes by delaying Neoadjuvant treatments and raising healthcare expenses. Although there is research on specific problems, stated incidence rates are still inconsistent, and there is no agreement on the best surgical adjustments. (Ghosh et a1., 2026).

A thickening or lump in the breast, which is often painless, alterations to the breast's dimensions, form, or appearance, and anomalies in the skin that covers it, including dimpling, redness, or pitting, are all signs of breast cancer. These may be accompanied by abnormal or bloody nipple discharge, as well as changes in the appearance of the areola surrounding the nipple. Certain genetic gene mutations, such as BRCA1, BRCA2, and PALB2, significantly raise the risk of breast cancer. Prophylactic mastectomy or chemotherapy may be considered as preventative measures for women with these genes. Modified radical mastectomy (MRM), which eliminates the nipple-areola complex along with the whole breast, is a frequently used surgical procedure to treat breast cancer. (Ashok et a1., 2025).

Seroma can impair mobility and interfere with a patient's everyday activities by causing pain, tightness, and discomfort at the surgery site (1).Persistent seroma may impede the healing of wounds, increasing the risk of infection or causing wound dehiscence (opening).Seromas increase the likelihood of postoperative infections like cellulitis or abscess formation by fostering an environment that is favorable to bacterial growth (5).Seromas have the ability to alter a patient's body image and psychological health in addition to compromising aesthetic results by distorting the surgery site's form. Prolonged hospital stays and higher healthcare utilization may result from the management of symptomatic or chronic seromas, which may require further interventions such repeated aspirations or drainage procedures. (Shakya et a1., 2025).

The clinical stage and unique patient characteristics determine the modality that is selected. Surgery continues to be the mainstay of care for non-metastatic cases. Due to its positive outcomes for long-term survival and reduced local recurrence, modified radical mastectomy (MRM) is often chosen among the surgical choices. (Kumar et a1., 2025).

MRM is associated with a variety of primary problems that impact patient recovery and quality of life, despite the fact that it is still quite successful in treating cases involving breast cancer. Early postoperative problems include adhesive capsulitis of the shoulder joint, wound infection, seroma development, hematoma lymphoedema, or chronic discomfort. Longer hospital stays, more outpatient visits, and more patient suffering are all consequences of complications. After a mastectomy, patients may have emotional and psychological anguish if adjuvant therapies are delayed. Their sense of identity and duties in life may shift as a result, and they may have emotions

of diminished femininity and low self-esteem. (Naqvi et a1., 2024).

In addition to modified radical mastectomy, patients with breast cancer frequently have axillary dissection and broad local excision. Seroma development, skin ap necrosis, wound infection, and a high rate of morbidity and mortality are common early complications following breast surgery. an infection within the wound is referred to as a postoperative wound infection. Axillary dissection for breast cancer has continued with radical mastectomy modifications ever since it was first reported as a part of the procedure. All external mammary nodes were meticulously removed as part of this framework, which also necessitated the removal of lymph nodes at three levels, from the medial boundary of the axilla to the second to sixth ribs along the chest wall. To reach the level III apical nodes, the pectoralis minor muscle was Tran sectioned. (Jamil et a1., 2024).

For women undergoing surgery for breast cancer, postoperative complications are a major source of concern. Women who have a mastectomy are more likely to experience postoperative problems, regardless of whether they receive rapid reconstruction. Health care personnel must be aware of these risks and take the appropriate safety measures to lessen them. The purpose of this study is to assess the immediate consequences of breast cancer surgery with regard to postoperative problems length of hospital stay, and patient associated risk factors for difficulties. (Gajra et a1., 2024).

Seroma, lymphoedema, and wound infection are some of the post-mastectomy problems. Lymphoedema is a localized swelling brought on by lymphatic fluid retention in the interstitial space as a result of lymphatic drainage failure. There are two types of lymphoedema: primary and secondary. The primary one is caused by abnormalities in the development of the lymphatic vasculature; the secondary one is caused by a variety of causes or risk factors, such as trauma, systemic disease, and surgery, particularly if axillary lymph node dissection (ALND) was performed; the quantity and quality of surgically removed lymph nodes; radiation and chemotherapy; the size and grade of the primary tumour; age; comorbidity; and body mass index. (Obaid et a1., 2024).

The surgical treatment of breast cancer still relies mostly on modified radical mastectomy (MRM), which provides better survival and efficient local disease control. MRM is linked to significant postoperative discomfort despite its oncologic advantages, which might hinder recovery, lengthen hospital stays, and increase the risk of developing chronic pain syndromes. Although successful, the conventional use of general anesthesia for breast surgery frequently requires the administration of systemic opioids, which have the potential to cause dependence as well as nausea, vomiting, drowsiness, and respiratory depression. Due to their potential to improve postoperative analgesia, lower the need for opioids, and lessen perioperative complications, regional anesthesia techniques—most notably thoracic spinal anesthesia have seen a paradigm change in recent years. (Mohammed et a1., 2024).

Globally, breast cancer is the most prevalent cancer in women. Breast cancer starts as a cluster of cancerous cells in the breast that travel to other parts of the body or infect nearby tissues. Breast cancer is a general name for a group of illnesses marked by aberrant cells that proliferate and infiltrate the body's healthy cells. A mastectomy can result in a number of problems, from a minor seroma to flap necrosis, even though the majority of operations are classified as low morbidity procedures. Breast cancer starts as a group of malignant cells in the breast that infiltrate surrounding tissues or move to other areas of the body. Breast cancer is the most common malignancy in women worldwide. (Kumari et a1., 2023).

It is still unclear whether seroma is defined as the buildup of mostly sterile tissue fluid inside a wound cavity. However, in surgically damaged soft tissue, inflammatory, exudative, and transudative processes as well as weakened lymphatic channels affect its growth. Reduced lymphatic drainage, postoperative limb mobilization, and the severing of lymphatic vessels during surgery all contribute to fluid accumulation and seroma formation. There are three grades for seroma: Grade I: if found solely by ultrasonography and without any symptoms; Grade II refers to symptoms that can

be controlled with medication or aspiration; Grade III refers to symptoms that necessitate radiologic or surgical intervention. Complications from postoperative seromas include delayed healing, infections, necrosis, lymphoedema, discomfort, and issues with function or appearance. (Rana A M et a1., 2023).

Although there are a number of methods for performing modified radical mastectomy (MRM), dissection is often done using an electrocautery technique or a traditional scalpel. Conventional steel-scalpel dissection is superior to electrocautery in that it reduces seroma formation, but at the expense of higher blood loss, suture knot slippage, and longer surgical times. Electrocautery has been widely used for dissection in MRM because it greatly minimizes blood loss; however, it is linked to a higher incidence of seroma formation because of thermal tissue damage that causes a local inflammatory response and incomplete lymphatic and vascular occlusion. In addition to the traditional methods, there are more recent technologies like Liga Sure TM (Covidien, CO, USA) that use a bipolar vessel-sealing technology that reduces local tissue damage and improves vessel sealing capabilities, perhaps leading to safer surgery. (Ud Din et a1., 2023).

Mastectomy is the preferred surgery in Ethiopia due to the lack of radiotherapy facilities and the advanced stage of patients at presentation. Therefore, it is critical to examine the in-hospital outcomes of mastectomy in a low-income country to evaluate its safety with regard to short-term complications and efficacy with regard to the status of oncologic resection. Therefore, it is crucial to examine the in-hospital results of mastectomy in a low-income nation in order to evaluate its efficacy in terms of oncologic resection status and safety in terms of short-term sequelae. (Bawoke et a1., 2021).

Due to their rarity, among individuals following breast surgery. Serum production and wound infection are the most frequent side effects. Postoperative wound infection rates range from 3 to 19%. Patients with breast cancer may suffer more as a result of these consequences, which may result in prolonged hospital stays and outpatient follow-up. Furthermore, these breast surgery problems could postpone additional adjuvant therapy. More emotional and psychological assistance is needed for the sensation of losing femininity, metamorphosis, self-esteem, health, role, and life following mastectomy. The objective of this study was to control the early difficulties that patients with breast cancer experienced following a radical modified mastectomy. (Ali et a1., 2022).

Every one in eight women has a lifetime risk of acquiring breast cancer, making It is the most common cancer among women worldwide. In Pakistan, the prevalence of breast cancer is rising.3 The cornerstone of managing breast cancer is surgical excision, either immediately or in conjunction with neo-adjuvant chemotherapy.4 Although a variety of techniques have been carried out, modified radical mastectomy is emerging as the most popular procedure .The axillary lymph nodes on the same side as well as breast tissues are removed during this this treatment; however, unlike radical mastectomy, the pectoralis major The most common operation is now modified radical mastectomy.. The condition of the breast tissue's estrogen or progesterone receptors plays a major role in post-operative care, which includes hormonal or chemotherapy. Patients who have been demonstrated to be at a high hereditary risk are being treated with it as a preventative measure. Furthermore, it is the preferred course of treatment for breast cancer in stages II and Iii (Melwani et a1.,2020).

Accumulation of serous fluids that forms beneath the skin flaps or in the dead area in the axilla following axillary dissection and/or mastectomy is known as a seroma after breast surgery. Although the exact cause of seroma is still unknown, there are a number of risk factors and predictors, including age, breast size, concomitant diseases, and the presence of numerous malignant nodes in the axilla. Seromas are thought to develop as an exudate from an immediate inflammatory response that occurs after surgical trauma. This is because enhanced fibrinolytic activity in serum and lymph causes an increase in serous fluid collection. The idea that seromas most likely arise from lymph is corroborated by the fact that during the postoperative phase, seromas had lower fibrinogen levels than plasma. (Singh et a1., 2018).

For patients with cN0 breast cancer, sentinel lymph node biopsy (SLNB) has essentially replaced axillary lymph node dissection (ALND), although this cutting-edge method is now unavailable in Sudan. According to Sudan's national recommendations for breast cancer management, ALND is therefore advised as a component of the main surgical management of patients with invasive breast cancer in our setting.8 ALND is crucial to the surgical treatment of breast cancer. The pathologic assessment of the removed lymph nodes helps identify the pathologic stage of the illness and gives information crucial to the treatment of breast cancer. Among the well-known side effects of ALND include wound infection, arm lymphoedema, lymphangitis, arm numbness, and limited arm movement. (Abass et a1., 2018).
Between 25 and 60 percent of the females got chronic, long-lasting postoperative pain, whereas 40 percent of them had acute postoperative pain. The patient reports burning, pressure, and numbness limited to the axilla, upper leg, and anterior and lateral chest wall. Inflammation brought on by tissue damage results in pain, while interruption of the second to sixth intercostal nerves causes neuropathic pain. Longer hospital stays, more postsurgical hospital admissions, and extreme discomfort are the effects of this. Post-surgical pain is reduced by a variety of pain management techniques. NSAIDs are linked to heartburn and indigestion, while opioids cause nausea, vomiting, shallow breathing, drowsiness, and disorientation. Furthermore, wound infusion with liposome bupivacaine and local anesthetic infiltration are interventional procedures. (Seth US et a1., 2022).

LITERATURE REVIEW

(Sutariya DB et a1., 2026). In situations where advanced cancer presentation and restricted access to breast conservation techniques are common, modified radical mastectomy (MRM) continues to be a cornerstone in the surgical management of breast carcinoma. Local postoperative problems are still a primary contributor to patient morbidity and delays in adjuvant therapy, even with improvements in surgical technique. The aim of this observational, prospective study was to assess the prevalence, range, or contributing factors of local problems in patients with breast cancer after MRM. In order to record problems such seroma, haematoma, flap necrosis, wound dehiscence, wound infection, lymphoedema, and local recurrence, patients receiving MRM were routinely monitored. postoperative illness. The most common event was seroma, which was followed by wound-related problems. Patients receiving neoadjuvant chemotherapy had greater incidence of complications. The results emphasize the continued clinical burden of local problems following MRM and emphasize the significance of careful surgical technique, the best possible perioperative care, and early risk factor identification. By addressing these issues, it may be possible to lower postoperative morbidity, enable prompt adjuvant therapy, and eventually
(Ghosh P et a1., 2026). An investigation into the early postoperative consequences of modified radical mastectomy. For women between the ages of 20 and 59, The most common cancer that is site-specific is breast cancer. to determine the frequency and risk factors for Early after effects of a modified radical mastectomy. to determine the effects of changing surgical methods in order to avoid and lessen those consequences. Supplies and Techniques: Over the course of the 18-month research, 60 patients who underwent modified radical mastectomy were enrolled in this institution-based, non-randomized prospective observational analysis. The age and tumor stage distribution of the two groups were similar. At discharge, seroma occurred in 13.3% of the modification group compared to 30.0% of the non-modification group, and mastectomy skin flap necrosis was considerably less common in the modification group (3.3%) than in the non-modification group (20.0%). We came to the conclusion that short-term morbidities and early postoperative problems were assessed with an emphasis on surgical technique changes. According to the analysis, the use of modified procedures was not significantly impacted by patient age, tumor stage, nodal status, or previous neoadjuvant treatment.
(Ashok A et a1., 2025). Analysis of seroma formation, flap necrosis, and postoperative pain following modified radical mastectomy in patients with breast cancer. Breast cancer continues to be

one of the leading causes of cancer worldwide. A popular procedure is modified radical mastectomy (MRM), which removes the whole breast, axillary lymph nodes, and nipple-areola complex. However, the quality of life and recuperation of patients are greatly impacted by postoperative problems include flap necrosis, seroma and discomfort development. The occurrence and appearance of seroma and flap necrosis, the degree and distribution patterns of post-MRM discomfort, and the relationships between these complications and clinical indicators were the objectives of this study. This prospective cohort study comprised Patients under the age of eighteen, those with bilateral illness, those undergoing reconstruction or breast-conserving surgery, and one hundred consecutive patients with histologically confirmed breast cancer who were scheduled for MRM were not included. Clinical examination was used to document seroma (evaluated on POD 14) and flap necrosis using predetermined surgical criteria. A standardized questionnaire was used to gather information. Twenty (20%) and twenty-six (26%) of the 100 patients had flap necrosis. Seroma development was significantly correlated with BMI (χ^2 = 20.252, $p < 0.05$). Flap necrosis and cancer stage had a strong correlation (χ^2 = 16.715, $p < 0.05$). On POD 15 ($p < 0.05$), POD 30 ($p < 0.05$), and POD 90 ($p < 0.05$) The results highlight the significance of evaluating patient-specific risk factors, such as age, BMI, and cancer stage, in order to minimize problems and improve postoperative care tactics.

(Dandpat et a1., 2025). The frequency of seroma formation after modified radical mastectomy, as well as risk factors. In the general surgery department, a prospective observational study was carried out. Seroma development is one of the most common side effects after a modified radical mastectomy (MRM) for breast cancer. which can result in infection, a prolonged hospital stay and delayed wound healing. One hundred female patients receiving MRM were among them. Demographic, clinical, and operational data were recorded. Seroma was defined as a fluid collection that required aspiration within 30 days aft surgery and could be detected by ultrasonography or clinical examination. Data analysis was done using SPSS version 25.0. Overall, 32% of seroma development cases were reported. The BMI (BMI ≥27 kg/m2, p = 0.002). Seroma production was associated with longer hospital stays, but there was no discernible wound morbidity MRM. After MRM, seroma is still a frequent postoperative consequence. Significant risk factors include high BMI, longer operating times, and longer drain times. Seroma incidence may be decreased by careful surgical technique and patient factor optimization.

The most recommended method is modified radical mastectomy. The most frequent issue following a mastectomy is seroma development. In order to reduce future occurrences of seroma formation, the purpose of this study was to assess the incidence of seroma development following modified radical mastectomy in relation to age, body mass index on postoperative days 1, 2, and 3, and the impact of neoadjuvant chemotherapy. 116 patients participated in an observational prospective study. The main end point was thought to be seroma formation. A statistical study was carried out. Seroma development occurred in 38 out of 116 patients, yielding an incidence rate of 32.76%. The p-value for age, body mass index, mean drain output on postoperative days 1 and 3. Higher age, a higher body mass index, high drain output on pods 1 and 3, and total drain output are all strongly correlated with seroma formation. Additionally, it is unrelated to the use of neoadjuvant chemotherapy. (Kumar Set a1., 2025). Risk factors for seroma formation after modified radical mastectomy are evaluated.

The prevalence of breast cancer, which is thought to be the most frequent malignant tumor in women, has been steadily increasing. One successful course of treatment is modified radical mastectomy (MRM).

This study's objective was to ascertain the prevalence, etiology, and distribution of postoperative problems related to MRM. The Surgical Department carried out a cross-sectional descriptive study. Included were sixty-one female patients (aged 15 and older) receiving radical modified mastectomy and neoadjuvant radiation therapy for pathologically proven stage I or II infiltrative ductal cancer. After being released, patients were monitored for six weeks to

check for wound infection and seroma formation. Using descriptive statistics and mean/standard deviation for variables, data was examined using SPSS v23 (IBM Inc.). 14 patients (23%) had seroma development, which typically appeared by postoperative day 8.70 ± 4.20. Longer hospital stays, postponed adjuvant treatments, and greater patient suffering were all consequences of complications. The patient's age, cancer stage, and surgical parameter were predictive of complications. In MRM procedures, better management techniques are crucial to lowering complication rates and improving patient outcomes. (Naqvi et a1., 2024). The frequency of early postoperative problems in individuals with breast cancer after a modified radical mastectomy. The incidence rate of breast cancer, a common malignant tumor in women, is rising every year. Shortened hospital stays are encouraged by a global cost-cutting policy. For most women who undergo major breast cancer surgery, hospital stays are the norm. Examining postoperative issues and duration of hospitalisation were the aim of this study. Ony At the Department of General Surgery, only 24 out of 72 patients (33.33%) had post-operative complications after MRM or BCS for locally advanced breast cancer (Stages IIIA and IIIB) or breast cancer (Stages I and II) after neo-adjuvant chemotherapy. The research participants spent an average of 2.88 ± 1.06 days in the hospital. Patients should receive guidance and information regarding their overall quality of life after surgery, with treatment options based on their individual choices and the stage of their breast cancer. (Gajra et a1., 2024). A study on hospital stay, post-operative complications, and factors related to patient complications.

A great surgical method for treating Modified radical mastectomy (MRM) for breast cancer. Seroma, lymphoedema, and wound infection are a few post mastectomy problems, to investigate the role of lymph nodes in certain MRM problems. One hundred women who were admitted with breast cancer were included in a prospective study. Depending on the degree of lymph node involvement, we performed MRM with stages one, two, and three axillary lymph node excision. Patients were divided into groups one, two, or three based on how many lymph nodes were affected. Patients in group three had higher rates of wound infection, lymphoedema, and seroma; only the rates of lymphoedema and seroma differed substantially between the three groups. The occurrence of lymphoedema and seroma is significantly influenced the number and intensity of lymph nodes involved role of lymph nodes in certain MRM problems. (Obaid et a1., 2024). Axillary lymph nodes' involvement in some modified radical mastectomy complications.

The second most frequent cause of cancer-related mortality in women is breast cancer. A modified radical mastectomy involves the removal of all breast tissue and axillary lymph nodes. Seroma is the most typical surgical complication. to determine the most frequent initial difficulties that patients with early-stage breast cancer encounter after a modified radical mastectomy with axillary clearing. This descriptive study comprised 135 women with early-stage breast cancer who had modified radical mastectomy with level II axillary clearance. The most common outcome observed in 47 patients (34.8%) was seroma development, whereas 35 patients (24.9%) had arm oedema. Seven patients (5.2%) experienced skin flap necrosis, and 15 patients (11.1%) had wound infections. Seroma development, wound infection, arm oedema, bleeding, skin flap necrosis, serratus anterior muscle paralysis, intercostobrachial nerve paranesthesia, and axillary dissection are among the complications that may arise with a modified radical mastectomy. These problems can be identified with proper postoperative care. (Jamil et a1., 2024). The Risks of Early Complications from Level II Axillary Clearance.

A modified radical mastectomy involves removing entire breast tissue from the affected breast in addition to the axillary lymph nodes. Flap necrosis and seroma development are the most frequent surgical complications. Between October 2017 and September 2019, fifty patients who were admitted to the Department of General Surgery participated in this prospective observational study. Fifty patients who met the inclusion criteria and had a modified radical mastectomy for breast cancer were included in this study. of these, 16 (32.0%) had a seroma development problem, and

5 (10%) suffered flap necrosis. The most frequent post-mastectomy consequence is still seroma, which is unavoidable in certain patients and whose precise cause is still unknown. (Kumari et a1., 2023). Evaluation of Modified Radical Mastectomy's Early Complications with Particular Attention to Seroma Formation

The purpose of this study is to compare the results of Liga SureT M dissection and scalpel dissection in terms of seroma development in the skin flaps. The Department of General Surgery was the site of the investigation. Each patient underwent axillary lymph node dissection along with a modified radical mastectomy. Group II had Liga Sure TM dissection, while Group I got conventional scalpel dissection. The evaluation of the seroma formation was the main result. SPSS (version 22.0) was used to create and analyze the recorded data. Following surgery, seroma development in skin flaps was observed in 6.7% (n=2) patients in group I and 10% (n=3) patients in group II (p-value = 0.640). In groups I and II, the average time needed for surgery was 109.9 ± 7.9 minutes and 105.1 ± 8.3 minutes, respectively (p-value = 0.027). Liga Sure TM-assisted dissection does not significantly minimize post-operative seroma formation or lengthen hospital stay when compared to traditional scalpel dissection. Liga Sure TM assisted dissection greatly shortens the surgical time. By shortening the duration of surgery, Liga Sure TM-assisted dissection can be utilized in creative hospital settings to lower the morbidity. (Ud Din et a1., 2023). Comparison of Seroma Formation in Modified Radical Mastectomy: Conventional Scalpel Versus Liga sure™ Technique.

This study looked into the efficacy of using surgical drains to administer bupivacaine to wounds in order to control pain after MRM. This study trial was conducted using a randomized control design. Thirty women in Group B received 40 millilitres of injectable 0.25% bupivacaine, whereas thirty women in Group C received no medicine at all. When the patient was given analgesia following surgery, the duration was noted in hours. Findings: 52.48±4.76 years was the average age. Group B's mean duration of analgesia was substantially longer than Group C's (10.93±1.84 vs. 5.03±1.35 hours, p=0.0005). Bupivacaine administered via surgical drains on MRM patients' wound beds improves postoperative analgesia. (Seth et a1., 2022). Bupivacaine administered via surgical drains causes postoperative analgesia in individuals undergoing modified radical mastectomy.

The preferred surgery in facilities with little or no radiation services is modified radical mastectomy. In low-income nations, it is crucial to research the procedure's complications and in-hospital results. All patients who underwent modified radical mastectomy are included in this multi-center prospective observational research. Eighty-seven patients in all were examined. With an average lymph node dissection of 10.2 ± 0.83, all study participants underwent curative surgery. The 17.2% seroma rate was significantly correlated with diabetes (AOR: 6.2 (CI 1.5–8.7)) and neoadjuvant chemotherapy (AOR: 8.9 (CI 1.2–14.2)). Surgical site infection occurred in 14.9% of patients and was significantly associated with both neoadjuvant chemotherapy (AOR: 1.8 (CI 1.3–3.9)) and retroviral infections (AOR: 4.2 (CI 2.1–5.8)). No in-hospital deaths occurred during the study. While the seroma rate was lower than in other studies, the surgical site infection rate was higher. Neoadjuvant chemotherapy was associated with frequencies of seroma and surgical site infections. Moreover, hyper glycemia increased the incidence of seroma. Surgical site infections were more likely to occur in patients with retroviral infections. (Bawoke et a1., 2021). Modified radical mastectomy experience in a low-income nation.

To control the early problems following radical modified mastectomy in breast cancer patients This descriptive case study was carried out at Muhammad Teaching Hospital's surgery department. Non-probability purposive sampling was the technique employed. With the preceding conversant written approval, patients who satisfied the selection criteria had a modified radical mastectomy. On the second day following surgery, the patients were sent home, and throughout the first six weeks, they were checked for major complications such wound infection and seroma formation every week at the clinic. SPSS software version 21 was used to enter and analyze the data. 62 Women who had a modified radical

mastectomy for breast cancer and who satisfied all inclusion requirements were included in the study. The average wound infection postoperative day was 4.60±1.9 days, while the average seroma postoperative day was 9.21±3.98 days. Five patients (8.1%) had wound infections, while sixteen patients (25.8%) had problems with seroma development. Although the prevalence of seroma is comparable with national studies that support innovative interventions to diminish the likelihood of these complications, this study demonstrated a significant decrease in consequences such wound infection. (Ali et at., 2022) primary problems following a modified radical mastectomy in patients with breast cancer. This study is carried out to ascertain the frequency of early post-operative problems of modified radical mastectomy during a four-week period in order to prevent and minimise postoperative difficulties. Most difficulties in individuals with breast cancer occur after a modified radical mastectomy. A suitable non-probability sampling strategy was used to conduct a cross-sectional case series. Included were 89 patients with FNAC-proven breast cancer; those who received radiation therapy or neoadjuvant chemotherapy were excluded. SPSS version 23 was used for data analysis. Quantitative data was reported using frequency in percentages. The most frequent complication was breast seroma, which occurred in 12 (13.48%) of the cases. Patients who were older than 50 years, had tumours larger than 8 cm, weighed more than 70 kg, and had three or more palpable lymph nodes after wards had haematomas in 6 (6.74%), lymphoedema in 5 (5.62%), wound infections in 4 (4.49%), and shoulder dysfunction in 4 (4.49%). No patient had scar hypertrophy. The most frequent early complications following modified radical mastectomy were seroma development and haematoma. (Melwani et a1., 2020). Frequency of early postoperative complication of modified radical mastectomy within the period of four weeks.

3.1: OBJECTIVE

General Objective:

To evaluate the early postoperative complications following Modified Radical Mastectomy (MRM), with special reference to seroma formation and flap necrosis, among patients with histologically confirmed breast cancer undergoing surgery at Mayo Hospital, Lahore.

Specific Objective:

- To determine the frequency of early postoperative complications following Modified Radical Mastectomy, particularly seroma formation and flap necrosis.
- To assess the occurrence of other early postoperative complications, including ipsilateral neuralgia, shoulder impaired mobility, and cellulitis/abscess following Modified Radical Mastectomy.
- To describe the demographic and clinical characteristics of patients undergoing Modified Radical Mastectomy, including age, BMI, hypertension, diabetes mellitus, neoadjuvant chemotherapy, duration of surgery, and use of electrocautery.
- To evaluate the distribution of early postoperative complications according to patient-related and surgical characteristics.

3.2: HYPOTHESIS

3.2.1: NULL HPOTHESIS:

. There is no significant association between modified radical mastectomy and the occurrence of early postoperative complications specially seroma formation and flap necrosis.

. OR if comparing risk factors: The incidence of seroma development is not significantly different.and flap necrosis among patients undergoing modified radical mastectomy based on studied risk factors.

3.2.2: ALTERNATIVE HYOPTHESIS:

. There is a significant association between modified radical mastectomy and the occurrence of early postoperative complications, Specially, seroma formation and flap necrosis.

. OR if comparing risk factors: There is a significant difference in the incidence of seroma formation and flap necrosis among patients undergoing modified radical mastectomy based on studied risk factors.

3.3: OPERATIONAL DEFINITION(S)

3.3.1: Modified Radical Mastectomy:

Modified radical mastectomy is a surgical procedure in which the entire breast, including the nipple-areola complex, is removed along with the lymph nodes in the axilla (underarm), while the pectoralis major muscle is preserved .it is commonly performed to treat breast cancer and to remove cancerous tissue while maintaining the chest wall muscles.

3.3.2: Seroma Formation:

The buildup of clear, sterile serous fluid in the dead space left after a modified radical mastectomy is known as seroma development, and it can lead to oedema, pain, and an increased risk of infection.

3.3.3: Flap Necrosis:

inadequate blood supply. It is an early postoperative complication that can delay wound healing.

3.3.4: Postoperative Complications:

Seroma formation Flap necrosis is the death of part or all of the skin flap created during modified radical mastectomy due to
Flap necrosis
Hematoma
Surgical site infection
Delayed wound healing

MATERIAL AND METHODS

4.1: Study Design:

This study was prospective observational study conducted to evaluate the early complication of modified radical mastectomy with special reference to the seroma formation and flap necrosis.

4.2: Study Setting:

This study was conducted at the surgical ward, Lahore mayo Hospital, Lahore Pakistan. Patients were observed during their hospital stay.

4.3: Study Duration:

The duration of research was four Month, following the approval of the synopsis.

4.4: Sampling Technique:

All eligible patients who met the inclusion criteria and presented to the department of the surgery at mayo hospital Lahore during the study period were consecutively enrolled until the sample size was achieved

4.6: Sample Selection:

Inclusion criteria:

- Patients aged 18 years and above who underwent Modified Radical Mastectomy for breast cancer.
- patients whose breast cancer has been verified by histology.
- Patients who were available for postoperative follow-up during the study period for assessment of early complications.

Exclusion criteria:

. Patients who underwent breast-conserving surgery, simple mastectomy
. Patients with incomplete or missing medical records.
. patients who did not return for follow-up after surgery.

4.7: ETHICAL CONSIDERATIONS

The ethical principles set forth by the University of Lahore's ethical committee were followed in the research, guaranteeing that the participants' rights were upheld.

- Every participant provided written informed consent, as seen in the attached document.
- To preserve privacy, all data and information collected were treated with Utmost confidentiality.
- To protect the privacy of the participants, their identities were kept anonymous throughout the duration of the study.
- Prior the study, participants were informed that there were no known disadvantages or risks associated with the study's procedure.
- Participants were given the freedom to withdraw from the study at any time without any negative consequences or penalties.
- The participants 's involvement in the research was completely voluntary.

4.8: DATA COLLECTION PROCEDURE

After obtaining ethical approval from the Ethical Review Committee of The University of Lahore and permission from the Department of Surgery, Mayo Hospital, Lahore, data collection was started. Written informed consent was obtained from all eligible patients before their inclusion in the study. A total of **71 patients** who underwent modified radical mastectomy and met the inclusion and exclusion criteria were enrolled in the study through consecutive sampling. Demographic and clinical data were recorded on a predesigned data collection proforma. All patients were followed during the postoperative period. Early postoperative complications were observed and recorded, with special attention to **seroma formation** and **flap necrosis**. The collected data were checked for completeness and then entered into the statistical software for analysis.

4.9: DATA ANALYSIS PROCEDURE

Data was all tabulated and analyzed through Microsoft Excel and SPSS (version 27.0). The baseline demographic and clinical characteristics were summarized using descriptive statics, whereby the percentages represented the categorical variables. Data visualization was done, and bar charts or pie charts were used to help make results more presentable.

RESULTS

Table 1

Descriptive statistics					
Variable	**Mean**	**Standard deviation**	**Median**	**Minimum**	**Maximum**
Age	49.77	10.077	50.00	30	73
BMI (kg/m^2)	30.158	5.370	28.900	18.0	41.2
Tumor size (cm)	3.68	1.103	3.60	2	6
Exact duration of surgery (min)	153.73	23.017	150.00	90	190
Intra-Operative blood loss (ml)	436.76	112.514	500.00	250	650

Table 1 presents that the Mean and Standard deviation of age of the patients was 49.71 ± 10.08 years, with an age range of 30 to 73 years, indicating that the majority of participants were middle -aged women. The mean and Standard deviation body mass index (BMI) was 30.16 ± 5.37kg/m^2, suggesting that a considerable proportion of the patients was overweight. The mean and standard deviation of tumor size was 3.68 ± 1.10cm, with a median of 3.60cm, reflecting that most patients has moderately sized tumors. Furthermore, the mean and standard deviation duration of surgery was 153.75 ± 23.92 minutes, while the mean and standard deviation intra-operative blood loss was 436.76 ± 112.51ml. overall, these findings demonstrate that the study population mainly consisted of middle-aged women with moderate tumor size, and the operative characteristics were within the expected range for Modified Radical Mastectomy procedures.

Table 2

Descriptive variable – Comorbidities and surgical Characteristics

Descriptive Variables – Comorbidities and Surgical Characteristics			
Variables	**Category**	**Frequency**	**Percentage**
BMI Classification	Underweight	1	1.4
	Normal weight	10	14.1

	Overweight	29	40.8
	Obese Class I	22	31.0
	Obese Class II	8	11.3
	Obese Class III	1	1.4

Table 2 presents the Body Mass index (BMI) classification of the 71 patients. The majority of patients were overweight (29,40.8%), followed by the obese class 1 (22,31.0%). Normal-weight patients accounted for 10(14.1%), while obese class 11 included 8(11.3%) patients only 1(1.4%) patient was underweight and 1(1.4%) patient belonged to obese class 111.overall these findings indicate that most patients undergoing modified radical mastectomy had a BMI above the normal range.

Figure 1

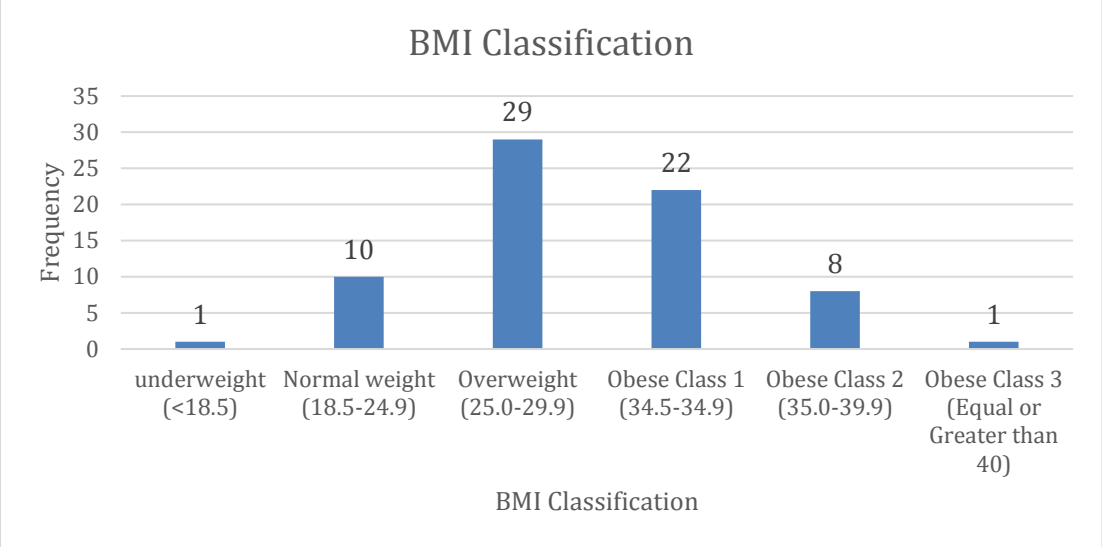


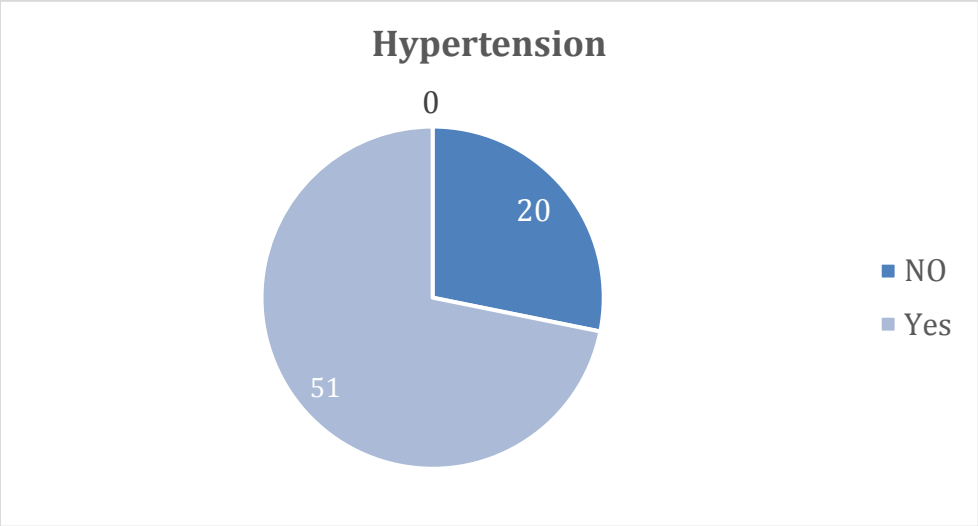
Figure 1 illustrate the distribution of BMI classification among the 71 patients. The graph shows that the highest number of patients were overweight (n=29), followed by obese class 1(n=22). Normal-weight patients accounted for 10, while class 11 included 8 patients. Only one patient where underweight, and one patient was classified as obese class 111.

Table 3
Descriptive Variables - Hypertension

Descriptive Variables – hypertension			
Variables	**Category**	**Frequency**	**Percentage**
Hypertension	Yes	51	71.8
	No	20	28.2

Table 3 shows that distribution of hypertension among the 71 patients. Out of total participants, 51(71.8%) patients were diagnosed with hypertension, while 20(28.2%) pateints had no history of hypertension. The finding indicate that hypertension was a common comorbidity in the study population.

Figure 2



Pie Chart of Descriptive variable –hypertension

Figure 2 presents the proportion of patients with and without hypertension .out of 71 patients, 51(71.8%) were diagnosed with hypertension, whereas 20(28.8%) did not have hypertension. The Pie chart clearly indicate that hypertension was present in the majority of the study population, while a smaller proportion of patients we

Table 4
Descriptive Variable – Diabetes Mellitus

Variables	Category	Frequency	Percentage
Diabetes Mellitus	Yes	40	56.3
	No	31	43.7

Table 4 presents the distribution of diabetes mellitus among the 71 patients. Of the total participants, 40(56.3%) patients had diabetes mellitus, whereas 31(43.7%) patients did not have diabetes mellitus. The finding shows that more than half of the study population was diabetic, indicating that diabetes mellitus was a common comorbidity among patients undergoing modified radical mastectomy.

Table 5
Descriptive Variable – Neoadjuvant Chemotherapy (NACT)

Descriptive Variables – Neoadjuvant Chemotherapy (NACT)			
Variables	**Category**	**Frequency**	**Percentage**
Neoadjuvant Chemotherapy (NACT)	Yes	46	64.8
	No	25	35.2

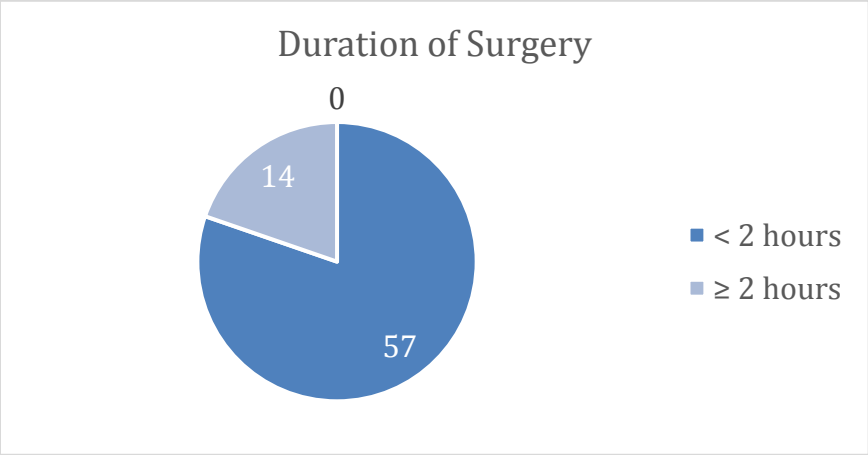
Table 5 presents the distribution of patients according to the receipt of neoadjuvant chemotherapy (NACT) before undergoing Modified Radical Mastectomy (MRM). Out of total 71 patients, 46 patients (64.8%) received neoadjuvant chemotherapy, while 25 patients (35.2%) did not receive NACT prior to the surgery. This suggest that preoperative chemotherapy was commonly used in the study population, likely to reduce the tumor size and improve the effectiveness of surgical management.

Table 6
Descriptive Variable – Cautery Used

Descriptive Variables – Comorbidities and Surgical Characteristics			
Variables	**Category**	**Frequency**	**Percentage**
Cautery used	Yes	61	85.9
	No	10	14.1

Table 6 shows that distribution of patients based on the use of cautery during Modified Radical Mastectomy (MRM). Out of 71 patients 61 patients (85.9%) underwent surgery with +cautery, while 10 patients (14.1%) had the procedure performed without cautery. The result demonstrate that cautery was the preferred surgical technique for most patients in this study. Its frequent use Indicate its importance in achieving adequate bleeding control and assisting with tissue dissection during operation.

Figure 3.



Pie Chart of Descriptive variable – Duration of Surgery

Table 7
Descriptive Variable – Duration of surgery

Descriptive Variables – Duration of surgery			
Variables	**Category**	**Frequency**	**Percentage**
Duration of Surgery	< 2 hours	57	80.3
	≥ 2 hours	14	19.7

Figure 3 and Table 7 illustrate the distribution of patients according to the duration of surgery. Out of the 71 patients, 57 patients (80.3%) underwent Modified Radical Mastectomy (MRM) in less than 2 hours, while 14 patients (19.7%) had a surgical duration of 2 hours or more. The pie chart clearly shows that the largest proportion of the patients had an operative time of less than 2 hours, whereas only small proportion required longer duration.

Table 8
Descriptive Variable – Post-Operative Seroma Formation

Descriptive Variables - Post-Operative Complications			
Variable	Category	Frequency	Percentage
Seroma Formation	Yes	46	64.8
	No	25	35.2

Table 8 presents the distribution of patients according to the occurrence of seroma formation following Modified Radical Mastectomy (MRM). Among the 71 patients included in the study, 46 patients (64.8%) developed seroma formation, while 25 patients (35.2%) did not experience this complication. The finding indicates that seroma formation was observed in the majority of patients after surgery. overall, these results suggest that seroma formation was a common early post-operative complication among the patients included in this study.

Figure 4

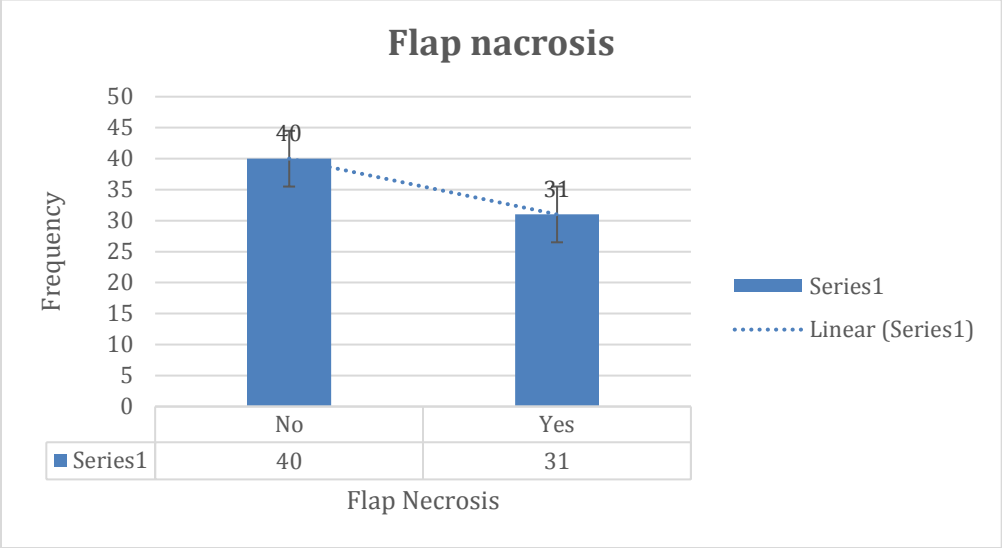


Table 8
Descriptive Variable – Post-Operative Flap Necrosis

Descriptive Variables - Post-Operative Flap Necrosis			
Variable	Category	Frequency	Percentage
Flap Necrosis	Yes	31	43.7
	No	40	56.3

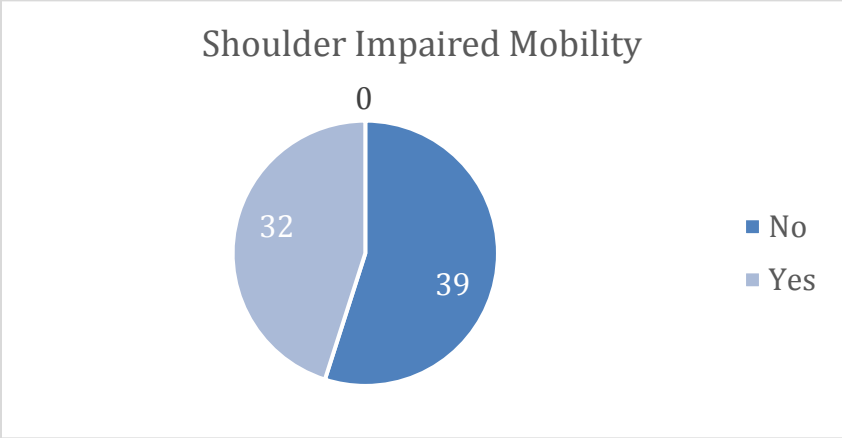
Table 8 and Figure 3 present the frequency distribution of post-operative flap necrosis among the 71 patients included in the study. The finding shows that 31 patients (43.7%) develop flap necrosis following modified radical mastectomy, while 40 (56.3%) did not experience this complication. The result indicate that the majority of patients remained free from flap necrosis after surgery. However, the occurrence of flap necrosis in nearly two-fifths of the study population highlights.

Table 9
Descriptive Variable – Post – Operative Ipsilateral neuralgia

Descriptive Variables - Post-Operative Ipsilateral neuralgia			
Variable	**Category**	**Frequency**	**Percentage**
Ipsilateral Neuralgia	Yes	21	29.6
	No	50	70.4

Table 9 presents the frequency distribution of post-operative ipsilateral neuralgia among the 71 patients. The results shows that 21 patients (29.6%) experienced ipsilateral neuralgia after Modified Radical Mastectomy, whereas 50 patients (70.4%) did not develop this complication. The result suggesting that nerve-related pain remains an important post-operative complication. Therefore, careful surgical technique, appropriate pain management, and regular post-operative follow up are essential to reduce the occurrence of ipsilateral neuralgia.

Figure 5



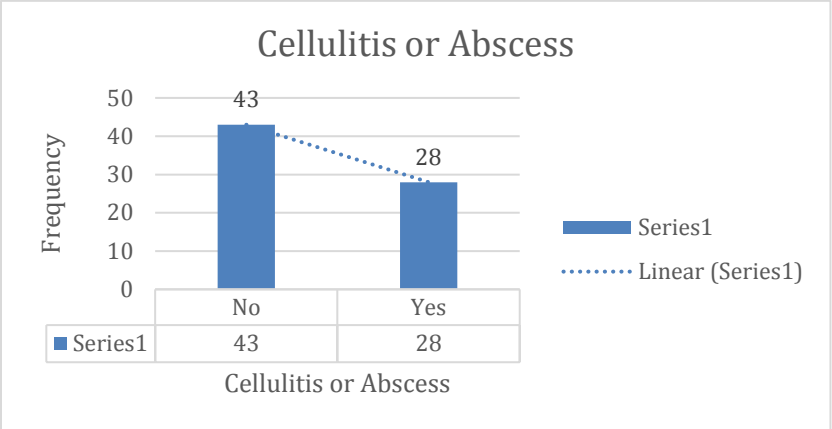
Pie Chart of Descriptive Variable – Shoulder Impaired Mobility

Figure 5 illustrates the distribution of post-operative shoulder impaired mobility among the 71 patients. The finding shows that 39 patients (54.9%) did not experience the shoulder impaired mobility, whereas 32 patients (45.1%) developed the complication. The result indicate that more than half of the patients maintained normal shoulder mobility after surgery. These findings emphasize the importance of early physiotherapy, regular shoulder exercises, appropriate main management, and continuous follow-up to improve shoulder function, enhance recovery, and reduce long-term disability.

Table 10
Descriptive Variable – Post-Operative Cellulitis or Abscess

Descriptive Variables - Post-Operative Cellulitis or Abscess			
Variable	**Category**	**Frequency**	**Percentage**
Cellulitis or Abscess	Yes	28	39.4
	No	43	60.6

Figure 6



Bar chart of cellulitis or Abscess

- **Table 10 and figure 6** presents the distribution of post-operative cellulitis or abscess among the 71 patients. The findings shows that 28 patients (39.4%) developed cellulitis or abscess, whereas 43 patients (60.6%) did not experience this complication. The results indicate that the majority of the patients remained free from post-operative cellulitis or abscess. These findings emphasize the importance of maintaining the strict aseptic technique during surgery, provide appropriate post-operative wound care, and ensuringfollow-up to minimize the risk of infection and promote better healing and recover.

DISCUSSION

71 individuals who had modified radical mastectomy were included in the current study. The participants' mean age was 49.77±10.08 years, which was marginally less than the 53.9±12.18 years reported in the comparative study. The majority of the patients in our study were overweight or obese, as evidenced by the mean BMI of 30.16±5.37 kg/m². In line with the comparative analysis, where the majority of tumours measured between 2 and 5 cm, the average tumour size was 3.681.10 cm. The average surgical time in our study was 153.73±23.02 minutes.

And the mean intra operative blood loss was 436.76±112.51ml. Electrocautery was used in the majority of patients (85.9%). Hypertension and diabetes mellitus were the most frequently observed comorbidities. Regarding post operative outcome, Seroma formation was the most common complication (64.8%), followed by shoulder impaired mobility (45.1%), flap necrosis (43.7%0), cellulitis or abscess (39'4%). Although the frequency of complications differed between the two studied, both reported seroma formation as the most common postoperative complication, suggesting that it remains a frequent concern following modified radical mastectomy. (Sutariya et a1., 2026).

The average age of the patients in this study was 49.77±10.08 years, which is comparable to the comparison study, where the majority of patients were similarly middle-aged. The majority of patients in our study were overweight or obese, as indicated by their average BMI of 30.16±5.37 kg/m². In a similar vein, the comparative study found a strong correlation between seroma production and BMI. In contrast to the comparison study, which revealed a lower frequency of 26%, seroma was the most frequent postoperative complication in our study (64.8%). 43.7% of our patients had flap necrosis, compared to 20% in the comparison research. Seroma and flap necrosis were shown to be significant postoperative problems in both investigations. Overall, both studies consistently demonstrated that patient-related parameters such age, BMI, and illness features affect postoperative outcomes following breast surgery, even though the frequency of complications was higher in our study. (Ashok et a1., 2025)

Since seroma production was the most frequent postoperative complication following breast surgery, the results of the current investigation are in line with the published studies. On the other hand, our study had a greater incidence of seroma (64.8%) than the published study (23.68%). Our study's mean patient age of 49.77 years was comparable to that seen in other studies. Additionally, the mean BMI of our patients was high (30.16 kg/m2), which is consistent with previous research showing that a higher BMI is linked to a higher risk of seroma formation. Other typical problems, including as cellulitis, ipsilateral neuralgia, flap necrosis, and shoulder decreased mobility, were also noted in our study. Overall, both studies show that seroma is still a common postoperative consequence, highlighting the necessity of using cautious surgical methods. (Shakya et a1., 2025).

Seroma is the most frequent postoperative complication, with a rate of 64.8% in the current research compared to 32.76% in the prior study. Patients in both studies had comparatively high BMIs and were middle-aged, which may have contributed to postoperative problems. While the current study mostly addresses the frequency of problems without statistically assessing these correlations, the prior study found that age, BMI, and drain output were significant predictors of seroma formation. Further common problems that were not covered in the previous study were shoulder decreased mobility (45.1%), flap necrosis (43.7%), cellulitis or abscess (39.4%), and ipsilateral neuralgia (29.6%). Overall, seroma is a significant postoperative complication following breast surgery, according to both studies. (Kumar et a1., 2025).

Regarding the mean age of patients, which was 49.77±10.08 years in the current study and 48.50±12.30 years in the previous study, the results of the two studies are comparable. both trials documented postoperative problems, however the frequency of these events varied. In contrast to the previous analysis, where it was recorded in only 23% of patients, seroma development was the most frequent complication in the current study (64.8%). In contrast, the present investigation observed additional problems, including shoulder decreased mobility, flap necrosis, cellulitis or abscess, and ipsilateral neuralgia. Both studies showed that postoperative problems remain common after surgery (Naqvi et A1.,2024).

The mean age of the patients in the current study and the earlier study was comparable (49.77±10.08 vs. 48.50±12.30 years). Additionally, the current study evaluated previously unreported factors such as BMI, tumour size, surgical time, blood loss, and electrocautery use. Compared to 23% in the prior analysis, seroma was the most frequent consequence in the current study (64.8%). While the current study found new problems like shoulder mobility restriction, flap necrosis, cellulitis/abscess, and ipsilateral neuralgia, the prior study reported wound infection (11.4%). In order to lower complications and improve patient outcomes, both studies stress how crucial it is to improve postoperative care. (Bawoke et a1., 2021).

The results of the current study on patients undergoing modified radical mastectomy were comparable to those of the earlier study. With a somewhat higher mean age (49.77±10.08 vs. 46.10±13.02 years), the current study had 71 individuals as opposed to 62 in the prior study. The most frequent postoperative complication in both investigations was seroma, which was more common in the current research (64.8% vs. 25.8%). According to the prior study, 70.9% of patients had Stage II breast cancer, and 8.1% of patients had wound infections. In addition, the present study found shoulder decreased mobility, flap necrosis, cellulitis/abscess, and ipsilateral neuralgia. All things considered, both studies emphasize the necessity of efficient postoperative care in order to lower complications and enhance patient outcomes. (Ali et a1., 2022).

71 people with a greater mean age of 49.77 years were included in our study, while the previous study

covered 60 younger patients (mean age 38–40 years). Our study demonstrated a higher seroma rate (64.8%) and a longer operative time (153.7 minutes) compared to the prior study's low seroma rate (6.7–10%) and shorter operative time (105–110 minutes). Our study's mean blood loss was 436.76 ml, which had never been measured before. In 85.9% of instances, electrocautery was

employed; other problems included ipsilateral neuralgia, cellulitis/abscess, flap necrosis, and shoulder impairment. Variations in patient characteristics, surgical methods, sample size, and clinical practice environments could all be responsible for these discrepancies. (ud Din et a1., 2023).

Regarding the mean age of patients, the current study's results were comparable to those of the prior study (49.77 vs. 48.50). The most frequent postoperative complication in both groups was seroma, although it happened more frequently in the current research (64.8% vs. 23%). Infectious problems were also more common; in the prior study, wound infection was documented in 11.4% of cases, whereas cellulitis/abscess was reported in 39.4%. Ipsilateral neuralgia, flap necrosis, and shoulder decreased mobility were also prevalent in this study. According to both research, postoperative problems raise patient morbidity, lengthen recovery, postpone adjuvant therapy, and emphasize the need for better surgical methods and postoperative care. Naqvi et a1., 2024).

The current study's results are somewhat in line with those of the earlier investigation. Wound infection, lymphoedema, and seroma were shown to be more likely with larger lymph node involvement in the prior study; only lymphoedema and seroma showed significant differences. Similarly, the most frequent postoperative complication in this study was seroma (64.8%), which was followed by ipsilateral neuralgia, cellulitis or abscess, flap necrosis, and shoulder decreased mobility. Both studies emphasize seroma as the most common postoperative complication, despite the fact that problems were not examined based on lymph node involvement in this investigation. Overall, these results highlight the necessity of prompt management and meticulous postoperative surveillance to enhance patient outcomes. (Obaid et a1., 2024)

The current study's results are in line with those of the earlier investigation. which reported a 32% incidence of seroma following modified radical mastectomy (MRM) and identified high BMI, prolonged operative time, and longer drain duration as significant independent risk factors. Similarly, the present study demonstrated a mean BMI of 30.16 ± 5.37 kg/m² and a mean operative time of 153.7 ± 23.02 minutes, with seroma being the most frequent postoperative complication (64.8%). These findings reinforce the association between higher BMI, longer operative time, and increased seroma risk. Although drain duration was not assessed in the present study, the high incidence of seroma aligns with previous evidence. Overall, both studies highlight the importance of optimizing patient-related factors, meticulous surgical technique, and effective postoperative management to reduce seroma formation and improve surgical outcomes. (Dandpat et a1.,).

7.1: CONCLUSION(S)

According to the study's findings, the majority of participants were middle-aged and typically had a high body mass index, suggesting that overweight and obesity were prevalent in the studied group. Diabetes and hypertension were often noted as significant comorbidities. Prior to surgery, the majority of patients underwent neoadjuvant chemotherapy, and electrocautery was frequently utilized. Most procedures had significant intraoperative blood loss and were finished in less time. Seroma development was the most frequent postoperative consequence, followed by flap necrosis and impaired shoulder movement. A significant percentage of patients had cellulitis or an abscess, although ipsilateral neuralgia was rather uncommon. Overall, the study shows that postoperative problems following breast surgery may be influenced by surgical features and patient-related factors. In order to lower problems and enhance patient recovery, these results highlight the significance of thorough preoperative evaluation, suitable surgical planning, and efficient postoperative care

7.2: RECOMMENDATION(S)

- Patients undergoing Modified Radical Mastectomy should receive comprehensive preoperative assessment, particularly for risk factors such as obesity, diabetes mellitus, hypertension, and advanced disease, to reduce the likelihood of postoperative complications. Surgeons should follow meticulous surgical techniques with careful tissue handling, adequate haemostasis, and standardized drain management to minimize the occurrence of seroma formation

and flap necrosis. Standardized postoperative care protocols, including regular wound assessment, early detection of complications, timely drain removal, and patient education regarding wound care, should be implemented in all surgical units. Early physiotherapy and shoulder mobilization exercises should be encouraged to reduce postoperative shoulder impairment and improve functional recovery.

7.3: LIMITATION(S)

- The study was conducted at a **single hospital**, which may limit the generalizability of the findings to other healthcare settings.
- The **sample size was relatively small (71 patients)**, which may have reduced the statistical power and representativeness of the study population.
- The study assessed **only early postoperative complications** and did not evaluate long-term outcomes such as chronic pain, lymphedema, recurrence, or quality of life.
- Important factors such as **smoking status, nutritional status, drain duration, surgeon experience, and detailed pathological characteristics** were not included in the analysis.
- The study was **observational in nature**; therefore, it could identify associations but could not establish a definite cause-and-effect relationship between risk factors and postoperative complications.
- The follow-up period was **limited**, so complications developing after the early postoperative phase may not have been detected.
- Since the study was conducted in a **specific patient population**, the findings may not be directly applicable to patients from different regions or healthcare systems.

REFERENCES

Sutariya, D. B., Chacha, S. N., & Chaudhary, A. G. (2026). A Study on Local Complications of Modified Radical Mastectomy. *International Journal of Medical and Pharmaceutical Research*, *7*, 1435-1438.

Ghosh, P., Dutta, M. K., & Saha, M. (2026). STUDY OF EARLY POSTOPERATIVE COMPLICATIONS AND SHORT-TERM MORBIDITIES OF MODIFIED RADICAL MASTECTOMY WITH SPECIAL FOCUS ON MODIFICATIONS OF SURGICAL TECHNIQUE. *European Journal of Cardiovascular Medicine*, *16*, 696-701.

Ashok, A., Chaudhary, A. K., Shanker, P., Singh, C. S., Rana, Y., SHANKER, P., ... & Arti, A. (2025). Analysis of seroma formation, flap necrosis, and postoperative pain following modified radical mastectomy in patients with breast cancer: a prospective study. *Cureus*, *17*(10).

Shakya, M. Determinants of Seroma Formation Following Modified Radical Mastectomy: A Prospective Observational Study from Central India.

Kumar, S., Paramba, K. L., & Kumar, A. (2025). EVALUATION OF RISK FACTORS FOR SEROMA FORMATION FOLLOWING MODIFIED RADICAL MASTECTOMY AT A TERTIARY CARE CENTER IN JHARKHAND. *Int J Acad Med Pharm*, *7*(5), 1199-1202.

Naqvi, S. K. R., Nazir, A., Amir, A., Waris, H., Irshad, B., Ibrahim, M., ... & Rehman, A. (2024). The incidence of early postoperative complications following modified radical mastectomy in breast cancer patients. *Cureus*, *16*(12).

Jamil, T., Tarar, J. M., Nasir, F., Zahid, M. M., & Ali, A. (2024). The Risks of Early Complications from Level II Axillary Clearance in Modified Radical Mastectomy: Level II Axillary Clearance in Modified Radical Mastectomy. *Pakistan Journal of Health Sciences*, 120-124.

Gajra, B., Kaushik, A. K., & Shankarwal, R. (2024). THE IMPACT OF THE SHORT-TERM OUTCOMES OF BREAST CANCER SURGERY: A STUDY ON POST-OPERATIVE COMPLICATIONS, HOSPITAL STAY AND FACTORS ASSOCIATED WITH COMPLICATIONS OF PATIENTS. *Int J Acad Med Pharm*, *6*(2), 1345-1350.

Obaid, H. A., Mohammed, M. R., & Abd, H. H. (2024). Role of Axillary Lymph Nodes Involvement in Some Complications of Modified Radical Mastectomy. *Medical Journal of Babylon*, *21*(4), 893-896.

Mohammed, M. A. S., Abdelglel, A. A. H., Ibrahim, K. M. H., & Tawfik, A. M. I. (2024). Postoperative Analgesia and Opioid Use After Modified Radical Mastectomy: General Anesthesia Compared to Thoracic Spinal Anesthesia. *CuestioneS de Fisioterapia*, *53*(03), 5220-5242.

Kumari, S., Kumar, A., & Thakur, I. S. (2023). EVALUATION OF EARLY COMPLICATION OF MODIFIED RADICAL MASTECTOMY WITH SPECIAL REFERENCE TO SEROMA FORMATION AND FLAP NECROSIS IN PATNA MEDICAL COLLEGE AND HOSPITAL. *Int J Acad Med Pharm*, *5*(4), 2060-2062.

ud Din, S. S., Hussain, M. T., Khan, E., Shah, M., Sadiq, A., & Syed, A. (2023). Comparison of Seroma Formation in Modified Radical Mastectomy: Conventional Scalpel Versus Ligasure™Technique. *Journal of Islamabad Medical & Dental College*, *12*(3), 193-198

Seth, U. S., Perveen, S., Ahmed, T., Kamal, M. T., Soomro, J. A., KHomusi, M. M., ... & Soomro Jr, J. A. (2022). Postoperative analgesia in modified radical mastectomy patients after instillation of bupivacaine through surgical drains. *Cureus*, *14*(4).

Bawoke, G., Kejela, S., Alemayehu, A., & Bogale, G. T. (2021). Experience with modified radical mastectomy in a low-income country: a multi-center prospective observational study. *BMC surgery*, *21*(1), 371.

Ali, H. I. F. S. A., Muhammad, S. H. O. A. I. B., Balouch, V. A. R. D. A., Shaikh, M., & Kumari, P. (2022). Incidence of primary complications afterward s modified radical mastectomy in breast cancer.

Khan, M. A. (2017). Effect of preoperative intravenous steriods on seroma formation after modified radical mastectomy. *Journal of Ayub Medical College Abbottabad*, *29*(2), 207-210.

Roman, M., Nogaret, J. M., Fils, J. F., & Bourgeois, P. (2015). Seromas and punctures after complete axillary node dissection for breast cancer: Differences between mastectomy and lumpectomy. *J Surgery*, *3*(2), 7.

Khan, H., Khan, A. U., Khan, M. A., & Saeed, T. (2013). Association between hypertension and seroma formation in patients after modified radical mastectomy for carcinoma breast. *KJMS*, *6*(2), 307.

Baek, J. M., Lee, J. A., Nam, Y. H., Sung, G. Y., Lee, D. S., & Won, J. M. (2012). Chylous leakage: a rare complication after axillary lymph node dissection in breast cancer and surgical management. *Journal of Breast Cancer*, *15*(1), 133.

Seth, U. S., Perveen, S., Ahmed, T., Kamal, M. T., Soomro, J. A., Khomusi, M. M., ... & Soomro Jr, J. A. (2022).