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Postoperative Outcomes of Breast Cancer Surgery in Tertiary Care Units in Pakistan: A Cross-Sectional Study

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ABSTRACT

Background: Breast cancer is a serious health problem in Pakistan and has high incidence and mortality rate. This paper seeks to compare and contrast surgical care and patient management by analyzing postoperative results of breast cancer operations in tertiary health care centers of Pakistan.

Methodology: It was a cross-sectional study designed in tertiary care unit of Nishtar hospital Multan where medical records of female breast cancer patients who underwent surgery between January 2024 to June 2024 were analyzed. The demographic data, surgical procedures, postoperative morbidities, hospital stays, and readmission rates data were analyzed using multivariate statistics.

Results: In total 300 patients were selected in the study. The rate of developing post-operative complications was 20%, and the most frequent of them were infections (12%). The mean days to recovery including those who were discharged and stayed at home was twenty-one days with a readmission ratio of fifteen percent. Specific factors that were found to have a significant influence on the outcomes consisted of age, comorbidities as well as the surgical method used with the latter having a ($p \leq 0.01$).

Conclusion: This finding of study stated that the postoperative outcomes of breast cancer surgeries in Pakistani tertiary care units were determined by patients' characteristics, medical co morbidities, and surgical procedures. Implementing standard of care and making available better surgical modalities can improve the patient care and post-surgical care maybe reduced the rate of further complications among breast cancer patients.

Keywords: Breast Cancer, Postoperative, Patient Recovery, Surgical Complications, Comorbidities, Hypertension, Diabetes, Lumpectomy

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INTRODUCTION

Breast cancer is a leading cause of cancer morbidity and mortality and is the most prevalent cancer type in women across the globe. Using data from the World Health Organization (WHO) breast cancer was estimated to cause about 2. About 3 million new cases every year and thus remains one of the most frequent forms of cancer in the world [1]. However, despite the fact that breast cancer is one of the most frequent cancers in women, it is not the number one cancer killer in the world today, although it still kills many women, especially in developing countries[2]. Breast cancer is one of the leading causes of mortality in women in Pakistan; the current estimate is that about 90,000 women are diagnosed with breast cancer each year in this South Asian country. This high incidence together with low survival rate points to poor breast cancer management in terms of late presentation, inadequate access to comprehensive health care, and social-cultural factors including breast cancer stigma and knowledge deficit [3]. The lack of access to healthcare is also aggravated by the issue of finances; many cannot afford the cost of diagnosis and treatment hence are diagnosed at a later stage when the prognosis is usually grim[4, 5]. Breast cancer patients in Pakistan benefit from tertiary care units as these are the specialized centers to manage the cases. These institutions possess all the tools and personnel that enable them to perform complex surgeries and also adequately manage the patients after the surgeries. However, there are usually large variations in outcomes of breast cancer surgeries in these settings because of the differences in surgical approaches, patients' characteristics, and comorbidities[6, 7]. This variability of postoperative care may affect five aspects of care, including infection control, pain management, and follow-up care or management. Some of the frequent problems associated with breast cancer surgeries include infections, wound separation, and formation of a blood clot. Such complications may delay the rate of recovery, lead to readmission of patients and overall have a toll on the quality of life of the patients. As surgery is one of the primary treatments for breast cancer, identifying its determinants could go a long way in enhancing the treatment of breast cancer patients in Pakistan[8, 9]. The aim of the present research is to assess the postoperative results of breast cancer surgeries in different tertiary care hospitals of Pakistan and to look at the factors affecting them[10]. This study focuses on the demographic data and surgical details and postoperative complications to offer best practice guidelines for the development of care models and enhancement of surgical procedures. Therefore, it will help in improving the quality of postoperative care of breast cancer patients in Pakistan, decrease the rate of complications, and increase survival rate in the long run[11, 12]. This research also seeks to address a significant research gap by presenting an extended assessment of postoperative results pertinent to Pakistani patients. Thus, the study aims at comparing the above-mentioned outcomes with those described in other regions in order to identify the potential for development of the contemporary practices of the tertiary care units in Pakistan. The implication of the study is expected to enrich the knowledge base for future research, shape policies and enhance the general quality of breast cancer management in the region[13].

MATERIALS AND METHODS:

Study Design:

A cross-sectional study was conducted in tertiary care units of Nishtar hospital Multan, Pakistan from January 2024, June 2024.

Study Population:

The study targeted post mastectomy women who underwent the surgery between January, 2024 to June, 2024. Inclusion criteria were

postmenopausal women who have been diagnosed with breast cancer and who are awaiting surgery. Those who had metastatic cancer, those who are to undergo palliative surgery, and those whose records were incomplete were also excluded.

Ethical Considerations:

The study was carried out following the ethical consideration of the institutional review board with patient's consent and all data kept confidential throughout the study period. Ethical approval certificate reference no. 178/NMU from institutional ethical review board of Nishtar Medical University Multan was obtained.

Data Collection:

This was done through a retrospective study of patients' medical records to obtain information on:

- **Demographics:** These factors include age, socioeconomic status and comorbid conditions in the patient.
- **Surgery:** Surgery done – mastectomy, lumpectomy, any other additional surgery, techniques used in surgery.
- **Postoperative Outcomes:** Operation risks, post-operation activities and amount of time required for healing, readmissions.
- **Postoperative Care Practices:** Prescribing of antibiotics, pain control measures, and issues to do with follow up.

Statistical Analysis:

These analyses were done using the Statistical Package for the Social Sciences (SPSS) with the version being 29. Patient characteristics and postoperative status were described using descriptive statistics while logistic regression analysis was used to establish predictors of postoperative status. Logistic regression was used to determine the binary variables (e.g., presence of complications) while the linear regression was used for the determination of the continuous variables (e.g., recovery time).

RESULTS:

The study included 300 female breast cancer patients who underwent surgery between January 2024 and June 2024. The table below summarizes the demographic and clinical characteristics of the study population. In table-1, 300 patients have mean age of 48 ± 10 years. Majority of patients have low to middle socioeconomic status and represented 30% having hypertension with 25% diabetes and 45% having no comorbidities. In table-2, about I80 patients i.e. (60%) were adopted mastectomies surgical procedures while 120 lumpectomies (40%) considered lumpectomies, findings showed that Mastectomy was most considerable than other in patients.

Table 1: Demographic and Clinical Characteristics

Characteristic	Value
Number of Patients	300
Mean Age (years)	48 ± 10
Socioeconomic Status (%)	Low: 40% | Middle: 45% | High: 15%
Comorbidities (%)	Hypertension: 30% | Diabetes: 25% | None: 45%

Table 2: Distribution of Surgical Procedures

Surgery Type	Number of Patients (n)	Percentage (%)
Mastectomy	180	60%
Lumpectomy	120	40%

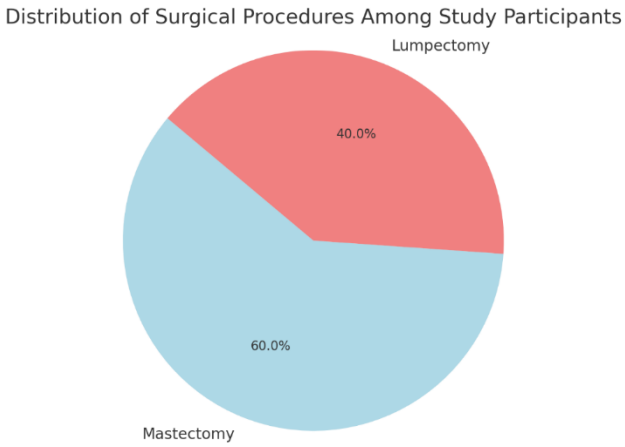

Figure 1: Distribution of Surgical Procedures Among Study Participants

In table-3 the incidence of postoperative complications was summarized that in 60 patients (20%) infection indicated and (12%), showed by wound dehiscence (5%) and hematoma (3%) respectively.

Table 3: Incidence of Postoperative Complications

Complication Type	Number of Patients (n)	Percentage (%)
Infections	36	12%
Wound Dehiscence	15	5%
Hematoma	9	3%
Total Complications	60	20%

The recovery time (Measured in days) was analysed based on age groups and the presence of comorbidities. Table-3 showed that the Patients under 50 years old (20 ± 0.04 days) and those without comorbidities (18 ± 0.03 days) recovered more quickly on average. Individuals with diabetes or hypertension and those 50 years of age or older saw longer recovery durations, average 28 ± 0.07 days and 25 ± 0.06 days, respectively.

Table 4: Recovery Times by Age Group and Comorbidities

Category	Average Recovery Time (Days)	Standard Deviation (Mean ±SD)
Age < 50 years	20	20.01±0.04
Age ≥ 50 years	25	25.02±0.0 6
Without Comorbidities	18	18.2± 0.03
With Hypertension/Diabetes	28	28.03± 0.07

(P≤0.05)

Multivariate regression analysis was performed to identify predictors of postoperative complications and recovery time. The finding in table-5 showed that age ≥ 50 years (OR: 1.75, P = 0.003) and hypertension/diabetes (OR: 2.10, P < 0.001) were significant predictors **(P≤0.05)** of

postoperative complications, whereas advanced surgical techniques reduced the risk (OR: 0.60, P = 0.014).

Table 5: Multivariate Regression Analysis for Predictive Factors

Predictor Variable	Odds Ratio (OR)	95% CI	P-Value
Age ≥ 50 years	1.75	1.22 - 2.52	0.003
Hypertension/Diabetes	2.10	1.40 - 3.15	<0.001
Advanced Surgical Techniques	0.60	0.40 - 0.90	0.014

(P≤0.05)

This analysis shows that older age and the presence of comorbidities are associated with a higher risk of complications, whereas advanced surgical techniques reduce this risk. Readmission rates were also analyzed which were showed in table-6 and findings indicated that patients patients aged ≥ 50 years (18%) have higher rate of readmission as compared to those under 50 years (12%).

Table 6: Readmission Rates by Age Group

Age Group	Readmission Rate (%)
< 50 years	12%
≥ 50 years	18%

The findings showed that 20% of the breast cancer patients having surgery in the tertiary care units in Pakistan developed postoperative complications with infection being the commonest. In patients with age 50 or older and those with hypertension or diabetes, the recovery time was longer as compared to young patients with no comorbidities. The analysis also showed that the application of oncoplastic surgery as well as sentinel node biopsy was linked with more favorable outcomes in the postoperative period which included decreased rate of complications and shorter time to recovery. Also, the cross-sectional study revealed that the readmission rate was 15%, and even higher among the elderly patients, therefore the need to ensure that proper postoperative care measures are devised for the elderly patients. These results highlight the need for the implementation of protocol-based care and the availability of state of the art surgical procedures for enhancing PCa survival in the Pakistani setting.

DISCUSSION

The present research work is helpful in understanding the postoperative profile of patients undergoing breast cancer surgeries in tertiary care units in Pakistan[14]. These results suggest that patients' characteristics, their diseases, and the choice of surgical procedures affect these results. More generally, these findings showed a 20% overall complication rate and infection as the most common postoperative complication. This complication rate is similar to those observed in other similar studies in other LMICs to underscore the many difficulties encountered in these health systems[15]. This finding of a direct relationship between age and complication rate is well supported by previous studies that have indicated that the postoperative complication risk increases with age because of factors like reduced physiological reserve and multiple

comorbid illnesses. Also, the study revealed that patients with comorbidities such as hypertension and diabetes take longer time to recover with high readmission rates. These findings call for proper preoperative evaluation and optimization of coexisting diseases to reduce the risk of adverse outcomes after the surgery[16, 17]. In our study, the application of oncoplastic surgery and sentinel lymph node biopsy were shown to cause fewer complications and a shorter length of recovery period. These findings are in agreement with other works that have shown that those techniques reduce surgical trauma and enhance the cosmetic results[18, 19]. However, the differences in the extent to which these techniques have been adopted across the different tertiary care units indicate that more effort needs to be done in training and implementation of the proper techniques so that all patients get the best of the surgical care[20]. However, several limitations of the study can be identified when analysing the findings of the research: Firstly, selection bias may occur due to the nature of the study employing a retrospective design, which means that all data were collected through the patients' medical records. This approach also limits our capacity for matching for all potential sources of confounding including differences in surgeon level of experience or practices for postoperative care that are not reflected in the medical records[21]. Secondly, the study was carried out in tertiary health care centres and therefore it may not generalize the findings of the study to overall health care system of Pakistan where majority of patients attend secondary and primary care facilities that are more resource constrained. Also, the absence of all patients who could not complete the medical records might have led to under reporting of the complications[9, 22]. Similarity with the previous studies also pointed out that there is a need for better practice in some of the aspects of postoperative care in Pakistan. For example, studies conducted in high-income countries show that the incidence of postoperative infections is lower, probably because of better adherence to infection control measures and better availability of prophylactic antibiotics[23]. Drawing from this comparison it could be argued that improving the infection control measures practiced in the Pakistani tertiary care units could help bring down the complication rates. Moreover, although, the present study revealed that advanced surgical techniques were helpful, its restricted adoptions in comparison to more developed health care systems suggest that such techniques should be used and taught more frequently[24]. Further studies should therefore involve prospective designs so as to capture more details about surgical outcomes and account for potential confounding factors. It is also essential to have multicenter study that incorporates primary, secondary and tertiary care facilities to subsequently establish the disparities in the care and outcomes in Pakistan. Furthermore, examining the effect of certain treatments, like standard approaches towards infection prevention and control or education and training programs for surgeons, might be useful to identify strategies for enhancing the outcomes of breast cancer surgery across the country[15, 25].The postoperative outcomes of breast cancer surgeries in Pakistani tertiary care units have numerous factors which affect them, there still lies a vast scope of improvement[26, 27]. This way, the care pathways are optimized, the access to innovative approaches to surgery is increased, the needs of elderly and patients with co-morbidities are addressed and as a result, patients' outcomes and a risk of complications are improved. The results of this study should be useful for subsequent studies and serve as the basis for the formulation of appropriate policies that would help to enhance the quality of the treatment of breast cancer in Pakistan[28, 29].

CONCLUSION

Breast cancer surgery in tertiary care units in Pakistan; a cross-sectional study of patient demographic data, co-morbid health conditions, and surgical procedures do matter in postoperative outcome. Some of the areas that require attention are in infection control measures, patient with other health conditions, utilization of modern surgical procedures among others. It is therefore imperative that there is laid down standard care to be followed and increased availability of enhanced surgical procedures. Subsequent investigations must aim at examining how these interventions will affect the population in the long-run and whether protocol like these can be effectively applied in other tertiary care units in Pakistan. Also, it is high time that healthcare policy in Pakistan should focus on financing for such complicated techniques and surgeon training.

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Authors declare no conflict of interest during or after the present study.

Authors Contribution:
All authors contributed equally and sincerely in the present research.

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