



ORIGINAL RESEARCH PAPER

General Surgery

IMPACT OF COMORBIDITIES AND NUTRITIONAL STATUS ON SEROMA FORMATION AFTER MODIFIED RADICAL MASTECTOMY

KEY WORDS: Breast cancer, Seroma, Mastectomy, Diabetes, Hypertension, Hypoalbuminemia

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ABSTRACT

Background: Seroma formation following breast surgery can significantly impact recovery, morbidity, and adjuvant therapy timing. This study evaluates the role of comorbidities (diabetes mellitus and hypertension) and nutritional status (serum albumin) in the development of seroma post-Modified Radical Mastectomy (MRM). **Methods:** This prospective study involved 100 patients undergoing MRM at a tertiary care hospital in North India. Comorbidities (diabetes, hypertension), hematological parameters (hemoglobin, leukocyte count), and serum albumin levels were recorded. Patients were monitored postoperatively for seroma formation over a 3-week period. **Results:** Of the 100 patients, 26% developed seroma. The incidence of seroma was significantly higher among diabetics (58.33%) and hypertensives (60.71%) compared to non-diabetics and normotensives ($p<0.001$). Serum albumin <3.5 g/dL was associated with a seroma rate of 73.08%, also statistically significant. No correlation was found with hemoglobin or leukocyte count. **Conclusion:** Diabetes, hypertension, and hypoalbuminemia are significant predictors of seroma formation post-MRM. Optimizing systemic and nutritional status may reduce postoperative morbidity and enhance recovery.

INTRODUCTION

Seroma, the accumulation of serous fluid in surgical dead space, is a frequent complication of MRM. Though not life-threatening, it can prolong hospital stay, delay adjuvant therapy, and increase infection risk. Patient-related risk factors, particularly systemic comorbidities and nutritional deficiencies, may significantly influence seroma development. This study focuses on the association of comorbidities and serum albumin levels with postoperative seroma.

MATERIALS AND METHODS

STUDY DESIGN: Prospective observational study
 Location: Department of General Surgery, Sri Guru Ram Das Institute of Medical Sciences and Research, Amritsar

DURATION: August 2023 to February 2025
SAMPLE SIZE: 100 patients undergoing MRM

INCLUSION CRITERIA: Patients undergoing MRM for breast carcinoma

EXCLUSION CRITERIA: Patients with fungating tumors
 Data recorded included comorbidities (diabetes, hypertension), hemoglobin, total leukocyte count, and serum albumin. Seroma was identified by clinical examination and managed by aspiration if needed.

RESULTS

Table 1: Association of Comorbidities and Seroma Formation

Comorbidity	Seroma (%)	No Seroma (%)	p-value
Diabetes Mellitus	58.33	41.67	<0.001
Hypertension	60.71	39.29	<0.001

Table 2: Albumin Level and Seroma Formation

Albumin Level (g/dL)	Seroma (%)	No Seroma (%)	p-value
<3.5	73.08	20.27	<0.001
≥ 3.5	26.92	79.73	

Table 3: Hemoglobin and Leukocyte Count vs Seroma

Parameter	Association with Seroma	p-value
Hemoglobin	Not Significant	>0.05
Total Leukocyte Count	Not Significant	>0.05

Figure 1: Seroma Incidence by Diabetes

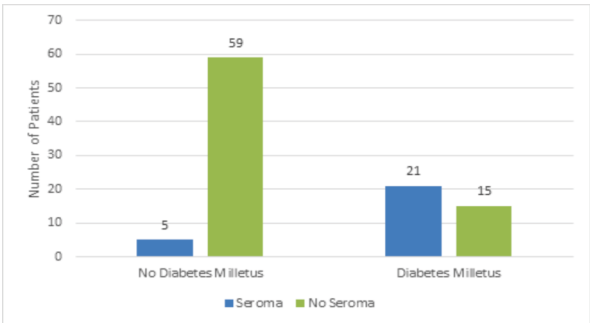


Figure 2: Seroma Rate Based on Albumin Levels (Pie chart or bar chart comparing <3.5 vs ≥ 3.5 g/dL)

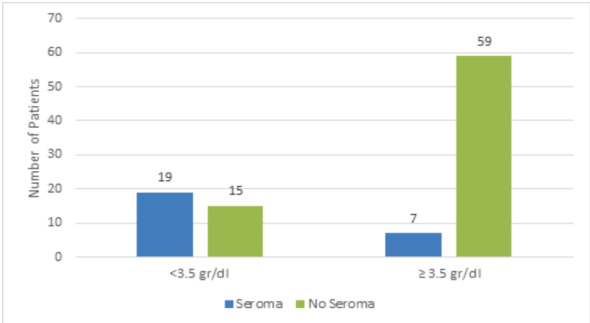
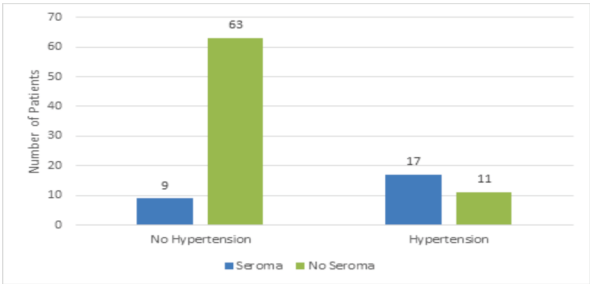


Figure 1: Seroma Incidence by Diabetes

Figure 3: Seroma Incidence by Diabetes



DISCUSSION

The findings affirm that diabetes and hypertension significantly impair postoperative wound healing, possibly due to microvascular changes and delayed immune responses. Hypoalbuminemia, a marker of poor nutritional status, contributes to impaired tissue repair and increased dead space fluid accumulation. These associations have also been reported by Pan et al. and Chaudhary et al.

Routine evaluation of serum albumin and stringent management of comorbidities should be part of preoperative planning. Hemoglobin and leukocyte count were not useful predictors in this study.

CONCLUSION

Comorbidities and hypoalbuminemia are strong, independent predictors of seroma post-MRM. Their correction before surgery may enhance patient outcomes and reduce hospital burden.

CONFLICT OF INTEREST

None declared.

FUNDING

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AUTHOR CONTRIBUTIONS

K.S.: Data collection, analysis, writing

A.K.G.: Supervision, review

R.S.: Concept and final approval

AI DISCLOSURE

No AI-assisted technologies were used in manuscript preparation.