COMPARATIVE STUDY BETWEEN LIGASURE (BIPOLAR) CAUTERY VERSUS CONVENTIONAL METHOD FOR AXILLARY DISSECTION IN MODIFIED RADICAL MASTECTOMY-A SINGLE CENTRED EXPERIENCE IN TERTIARY CARE SETTINGS

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ABSTRACT

Background: There are significant concerns regarding the rising trends of mortality and morbidity due to breast cancer all over the globe. It is impossible to overestimate the significance of precise staging, especially the evaluation of axillary lymph node involvement by axillary lymph node biopsy. The investigation of cutting-edge methods like Liga Sure has become necessary due to post-operative issues such as seroma formation.

Objectives: To evaluate and compare the outcomes of axillary dissection using Liga Sure Bipolar cautery and conventional monopolar electrocautery.

Results: A total of 120 female patients with breast cancer were selected and equally divided into two groups one with conventional cautery and the other with a Liga Sure device. The mean age of patients was 54.2 ± 8.9 yr. Seroma formed in 97 (80.8%) patients in conventional cautery while in 23 (19.2%) patients in the Liga Sure group. Mean blood loss was more in the conventional group 355.15 ± 30.6 ml compared with 256 ± 25.8 ml with a p-value of 0.000. The drain could be removed earlier in the Liga Sure group at 3.4 ± 0.6 days compared with the conventional group at 7.7 ± 1.8 days. Total drain output was less in the Liga Sure group 223.2 ± 34.1 ml compared with the conventional group 268.75 ± 25.7 with a p-value of 0.000.

Conclusion: Liga Sure Bipolar cautery shows promise as an axillary dissection technique for Modified Radical Mastectomy. When Liga Sure is used instead of traditional cautery, better results are seen in terms of less blood loss during surgery, less overall drain output, and a shorter hospital stay. The results suggest that Liga Sure Bipolar cautery holds promise as a technique for axillary dissection in Modified Radical Mastectomy. A better outcome is observed with Liga Sure usage as compared with conventional cautery in terms of reduced per-op blood loss, lesser total drain output, and shortened hospital stay.

Keywords: (Bipolar) cautery, (monopolar) electrocautery, Seroma, Drain, radical mastectomy, Axillary Dissection.

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INTRODUCTION

The breasts have long been associated with femininity and beauty. Throughout history, their illnesses have continuously posed a significant obstacle for physicians. Even though surgery is considered vital to treat cancer, the integrity of the breast is compromised when the scalpel is used. Breast cancer has been portrayed for thousands of years. The groundwork for different excision techniques was laid by the complex Cooper's ligaments and Sappey's subareolar lymphatic network,

which highlighted the idea that breast cancer moves through lymphatic systems to reach the sentinel axillary node. Novel and improved therapeutic techniques were required as a result of the various metastatic patterns that resulted in clinical presentations such as carcinoma en cuirasse, peau d'orange, and Paget's disease[1].

The mainstay of treatment for breast cancer is still surgery. Breast-conserving surgery (BCS), modified radical mastectomy (MRM), and total mastectomy are the three main methods used for neoplastic lesion excision. [1] Different postoperative results in breast cancer surgery are caused by several factors. Tumor-related factors include tumor size and status of afflicted lymph nodes; patient-related factors include age, weight, and comorbidities such as diabetes, hypertension, and smoking; and surgery-related factors include electrocautery use and duration of operation. Wound healing complications may cause patients to put off receiving adjuvant chemotherapy and radiation, which could cause them distress and have negative financial and aesthetic effects[2].

With an incidence rate ranging from 15 to 85 percent, seroma development is the most common and well-documented side effect that occurs after breast cancer surgery. [3] A common location for seroma growth is the axilla, which can cause discomfort and limited arm movement. [4]Blood vessels up to 7 mm in diameter can be sealed with LigaSure, a bipolar electrothermal vascular sealing technique used in laparoscopic and surgical operations, including MRM. According to reports, the results are satisfactory. [5]

We want to find a more appropriate and adequate technique for axillary dissection during MRM that avoids problems and improves patient outcomes by conducting more thorough research.

METHODS

120 female patients over 20 years old with biopsy-proven breast cancer up to Stage III with node-positive disease, including post-neoadjuvant down-staged patients, were chosen for this randomized controlled experiment. Exclusion criteria included diabetes, infection, anticoagulation, bleeding tendency, recurrence, post-radiation, metastatic disease, and those receiving neoadjuvant therapy. Two equal groups of chosen patients were assigned to either the Liga Sure bipolar vascular sealing modality or the traditional electrocautery technique (monopolar cautery) for a modified radical mastectomy followed by axillary dissection. With the agreement of the Post Graduate Medical Institute's/Lahore General Hospital's ethics committee, a 12-month study was carried out in Surgical Unit-I. The method of non-probability purposive sampling was applied. after obtaining informed permission. Information about the patient was noted, including age, body mass index (BMI), ASA status, and preoperative treatment. Under general anesthesia, lymphadenectomy was carried out in each of these patients using standard level I and II node dissection based on lymph node involvement. Before drain installation and closure, hemostasis was established. Software called SPSS version 25 was used to examine the data. To address effect modifiers, the data was stratified by age and tumor size. The t-test will be used after stratification. Fisher's exact test and chi-square test were also employed.

RESULTS

Table 1 shows that there is significant difference between Liga Sure and Conventional Method. It means that Liga Sure and Conventional Methods both are giving better results for blood loss, total drain output and days drain removal. However, the performance of Liga Sure is much better than conventional methods because the mean score of blood loss, total drain output and days drain removal is less in Liga Sure than Conventional Methods.

Table 1.

Group	N	Mean	STD	P=Value
Blood Loss (ml) Liga Sure	60	256.0	25.8	
Conv Cautery	60	355.1	30.6	0.000
Tot Drain Output (ml) Liga Sure	60	223.1	34.1	
Conv Cautery	60	268.7	25.7	0.000
Days Drain Removal Liga Sure	60	3.41	0.67	
Conv Cautery	60	7.78	1.89	0.000

Table 2. Seroma Formation

		Frequency	Percent
Seroma Formation	No	97	80.8
	Yes	23	19.2
	Total	120	100.0

Table 3. Wound Infection

		Frequency	Percent
Wound Infection	No	106	88.3
	Yes	14	11.7
	Total	120	100.0

DISCUSSION

Breast cancer is a major cause of cancer-related death and morbidity, making it a formidable worldwide health concern. This study expands on a strong body of research that emphasizes the vital significance of successful surgical procedures, particularly in cases of

axillary dissection and modified radical mastectomy (MRM). The literature study highlights how common breast cancer is, especially in nations like Pakistan, and how urgently early identification and treatments are needed to improve patient outcomes[6]. One of the main concerns raised in the literature is that many impacted women put off getting medical help, frequently as a result of cultural norms and ignorance. The need to improve surgical methods to maximize therapy and reduce consequences is highlighted by this delay in diagnosis. The study's findings offer a thorough understanding of how Liga Sure Bipolar cautery and traditional monopolar electrocautery compare in terms of axillary dissection during MRM. The notable variations seen in many measures highlight Liga Sure's potential benefits and ability to improve patient outcomes[7].

Table 4. Stages According to Group Wise

Group		Frequency	Percent
Liga Sure	2a	10	16.7
	2b	12	20.0
	2c	9	15.0
	3a	10	16.7
	3b	13	21.7
	3c	6	10.0
	Total	60	100.0
Conventional Method	2a	9	15.0
	2b	13	21.7
	2c	9	15.0
	3a	10	16.7
	3b	13	21.7
	3c	6	10.0
	Total	60	100.0

Wound Infection

Group			Frequency	Percent
Liga Sure	Valid	No	56	93.3
		Yes	4	6.7
		Total	60	100.0
Conv Cautery	Valid	No	50	83.3
		Yes	10	16.7
		Total	60	100.0

Seroma Formation

Group			Frequency	Percent
Liga Sure	Valid	No	55	91.7
		Yes	5	8.3
		Total	60	100.0
Conv Cautery	Valid	No	42	70.0
		Yes	18	30.0
		Total	60	100.0

The study shows that the difference in blood loss between Liga Sure and the traditional approach is statistically significant. Because less blood loss can lead to better patient safety, fewer transfusion needs, and possibly a quicker recovery, this finding has important therapeutic ramifications. Liga Sure may provide a better way to achieve hemostasis during axillary dissection, as evidenced by the decreased mean blood loss in the Liga Sure group[8]. In a similar vein, the study finds that the two approaches' overall drain output differs significantly. Reduced post-operative fluid accumulation is shown by a decreased total drain output in the Liga Sure group, which may result in fewer problems including seroma formation. This result is consistent with the overall objective of reducing post-operative complications and maximizing patient recuperation[9]. The Liga Sure group's observed shorter drain removal time in the study adds credence to the technique's possible advantages. Reduced hospital stays, more patient comfort, and maybe a quicker return to regular activities can all result from a shorter drain removal period[10].

In the case of axillary dissection during MRM, Liga Sure Bipolar cautery shows promise in reducing post-operative problems and enhancing patient recovery[11]. This implies that Liga Sure might provide a more successful and efficient method of preventing fluid buildup and attaining hemostasis, which would ultimately improve patient satisfaction and treatment results. Even while the results are encouraging, it's crucial to recognize some limits[12]. The study's exclusive emphasis on a particular patient demographic and surgical method may restrict how broadly the results can be applied in other clinical settings.

CONCLUSION

To sum up, this study supports further attempts to improve surgical methods for the treatment of breast cancer. Liga Sure Bipolar cautery has the potential to minimize post-operative problems and improve patient recovery by lowering blood loss, total drain output, and days till drain removal after axillary dissection during MRM. This study improves our knowledge of how to best treat breast cancer by addressing important facets of surgical procedures.

ETHICAL APPROVAL

Ethical approval was granted by the Ethical Review Committee of Post Graduate Medical Institute/ Ameer-ud-Din/ Lahore General Hospital, Lahore vide reference No 331/24 dated: 26/07/2024

CONFLICT OF INTEREST:

Authors declare no conflict of interest.

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AUTHOR'S CONTRIBUTIONS

MSA: Data collection and data analysis
FSM: manuscript writing and data analysis
AJ: Supervision, critical analysis and manuscript writing
QF: Data collection and manuscript writing
HMI, MAA: Data analysis and critical review
ALL AUTHORS: Approval of the final version of the manuscript to be published

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