

Comparison of the Outcome of Gentamycin Lavage Versus Normal Saline Lavage for Axillary Dissection in Modified Radical Mastectomy

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ABSTRACT

Aim: To compare the gentamycin lavage with normal saline lavage after axillary dissection in modified radical mastectomy in terms of mean postoperative wound drainage was the objective of this study.

Material: This Randomized controlled trial was conducted at Department of Surgery, Jinnah Hospital Lahore from July, 2018 to June, 2019. Total 100 female patients with 30 to 60 years of age, who underwent modified radical mastectomy for breast cancer. The patients were divided into two groups; group A (operative wound washed with 500ml normal saline) and B (wound washed with 500ml of gentamycin solution (240mg) in addition to the 500ml of normal saline).

Results: Mean age and BMI of patients were 49.60±5.83 vs. 49.50±6.723 years ($p=0.937$) and 27.02±2.90 vs. 27.12±3.33 kg/m² ($p=0.873$), in group A and B, respectively. Mean wound drainage were 356.46 ± 59.11 vs. 317.42 ± 51.92 ml ($p=0.001$), in group A and B, respectively.

Conclusions: Gentamycin lavage reduces the postoperative axillary wound drainage after modified radical mastectomy as compared to normal saline lavage.

Keywords: Gentamycin Lavage; Axillary Dissection; Modified Radical Mastectomy

INTRODUCTION

Being the top most common cancer, the breast cancer management always remains in lime light^{1,2}. Among cancer patients, surgery for breast cancer is a common form of treatment³. Wide local excision and modified radical mastectomy with axillary lymph node clearing are two surgical options⁴. The most frequent early postoperative consequence of modified radical mastectomy is wound dehiscence, wound collection (hematoma/seroma), and surgical site infection (MRM)^{5,6}.

According to studies, over the past few years, the epidemiology of breast cancer has changed. Around 72000 incident cases were reported, an increase from 2009⁷. Breast cancer remains the most frequently occurring cancer among Pakistani women accounting for one of every nine women⁸. Breast tumours are diagnosed using a triple approach, which involves taking a patient's medical history, performing a physical examination, and utilising the right imaging techniques, such as mammography, breast ultrasound, or magnetic resonance imaging, followed by cytological or histological confirmation⁹. A mastectomy may be performed with or without axillary clearance and adjuvant therapy, depending on the kind and size of tumour¹⁰.

In order to prevent hematoma and seroma formation, MRM is still followed by the placement of drains in the axilla and behind skin flaps. Different methods have been developed to decrease the formation of wound collections. The use of harmonic scalpels, fibrin sealants, compression dressings, flap suture fixation, and sapylin are some of these approaches (OK-432)^{11,12}. Ruiz-Tovar J¹³ et al. discovered that gentamycin lavage, performed after axillary lymph node dissection, reduced postoperative drainage, 169102.2 ml vs. 465250.9ml (P value 0.003). Another study found that gentamycin lavage is more effective for axillary lymph node dissection than clindamycin and plain saline¹⁴.

In Pakistan, there are no such published study findings that can be used to evaluate gentamycin lavage. The hospital stay and complication rates are directly associated with wound drainage. Regarding postoperative axillary wound drainage, I wanted to test and find which lavage method, normal saline or gentamycin, was better. It would help us to manage the patients of breast cancer more effectively in the postoperative period.

METHODOLOGY

This Randomized controlled trial was conducted at Department of Surgery, Jinnah Hospital Lahore after IRB permission, from July, 2018 to June, 2019 and included 100 female patients. Females with 30 to 60 years of age, who underwent modified radical

mastectomy for breast cancer. Patient who are allergic to gentamycin, with history of use of NSAIDs in last 07 days before surgery, previous history of breast or axillary surgery, IHD, COPD/asthma, chronic liver failure, chronic renal failure and bleeding disorders (Deranged coagulation profile) were excluded from the study. The study was approved from Ethical Review committee as per institutional guidelines. All surgical procedures were carried out under standard general anaesthesia. The patients were divided into two groups. In Group A, after the MRM wound was washed with 500ml normal saline while in group B patients, the wound was washed with 500ml of gentamycin solution (240mg) in addition to the 500ml of normal saline. Two drains were placed after surgery i.e. one in the breast site and one in the axillary dissection area. After the operation all patients received antibiotics for 5 days. Axillary wound drain output was measured in ml and axillary drain was removed when the output was less than 30 ml/day.

Data was analyzed using SPSS version 24. Age, body mass index and drain output was presented as mean and SD. Diabetes, hypertension and hepatitis c infection was presented as frequency and percentage. Both groups were compared by independent sample t test for axillary wound drainage. Effect modifiers like age and BMI were controlled by stratification. Post stratification independent sample t test was applied. A p value ≤ 0.05 was considered as significant.

RESULTS

Total 100 patients included. In Group A, the mean age was 49.60 ± 5.83 and in Group B 49.50± 6.72 years. In Group A, the mean BMI, duration of surgery, hospital stay, axillary drain output and duration of drain was 27.02±2.90 kg/m², 149.33±28.10, 9.05± 1.01, 356.46±59.11 and 8.63±4.03 or in Group B, 27.12±3.33 kg/m², 149.33±28.10, 7.02±1.90, 317.42±51.92 and 6.91±2.86 respectively. Only mean Axillary drain output and duration of drain were significant difference between the groups (Table 1).

With respect to Comorbidity, there were 21(42%) diabetes in Group A and 41(82%) in Group B. There were 39(78%) hypertension and 11(22%) hepatitis C infection in Group A, 41(68%) hypertensive and 19(38%) hepatitis C infection in Group B. There were no significant difference between groups (Table 2).

In patients with <50 years of age group the mean axillary wound drainage in Group A was 360.10 ± 58.26 and in Group B 323.53 ± 51.57. In patients with greater than 50 years of age group, the mean axillary wound drainage in Group A was 351.43 ± 61.33 and in Group B was 308.25 ± 52.39 characteristics of patients and axillary wound drainage with BMI (Table 3).

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Table 1: Descriptive of Age, BMI, duration of surgery. Etc....

Parameters	Group A (n=50)	Group B (n=50)	p-value*
Age (Mean±SD)	49.60 ± 5.83 years	49.50 ± 6.72 years	0.937**
BMI (Mean±SD)	27.02 ± 2.90 kg/m ²	27.12 ± 3.33 kg/m ²	0.873**
Mean duration of surgery (min.)	149.33±28.10	149.33±28.10	1.046**
Mean hospital stay (days)	9.05± 1.01	7.02± 1.90	0.581**
Mean axillary Drain output (ml)	356.46 ± 59.11	317.42 ± 51.92	0.001***
Mean Duration of drain (days)	8.63±4.03	6.91±2.86	0.004***

Table 2: Frequency Distribution of Diabetes, Hypertension & Hepatitis C infection

Parameters	Group A (n=50)	Group B (n=50)	p-value*	
Co-morbidity	Diabetes mellitus	21 (42.0%)	41 (82.0%)	1.842**
	Hypertension	39 (78.0%)	34 (68.0%)	0.589**
	Hepatitis C infection	11 (22.0%)	19 (38.0%)	1.350**

Table 3: Characteristics of patients and axillary wound drainage

Parameters	Group A (n=50)	Group B (n=50)	p-value*	
Axillary wound drainage (ml)	In patients <50 years Age	360.10 ± 58.26	323.53 ± 51.57	0.013***
	In patients >50 years Age	351.43 ± 61.33	308.25 ± 52.39	0.020***
	In patients with BMI <27 kg/m ²	361.33 ± 57.88	301.54 ± 51.51	0.000***
	In patients with BMI >27 kg/m ²	349.15 ± 61.68	332.08 ± 48.75	0.300**

DISCUSSION

Modified radical mastectomy is not well known for surgical site infection because it is a clean technique, although the production of seroma is well known in this procedure. The risk of seroma production is significant, and this increases the risk of wound infection. In our study, we compared antibiotic lavage with simple saline lavage to see which would result in less postoperative fluid collection in MRM wound.

Several antibacterial agents were taken to lessen postoperative wound drainage in literature. Gentamicin lavage is helpful in reducing bacterial load and reducing surgical site infection at the site of a modified radical mastectomy. Gentamicin with surgical wound lavage has been utilized in numerous different surgeries to reduce wound infection rate & postoperative wound site drainage.

It is now known that administering Gentamicin-Clindamycin Lavage (GCL) during elective colorectal operations can increase patients' chances of surviving the procedure. In comparison to saline lavage, gentamicin lavage and clindamycin lavage both had the potential to lessen daily lymph drainage in patients undergoing axillary lymph node dissection. Additionally, 50% of patients in the saline lavage group obtained positive bacterial culture results, which was much higher than the gentamicin group's 5% rate⁶. On study that highlights the significance of antibiotic lavage in cases of acute peritonitis reported death rates of 48.9% in saline lavage cases and 16.4% in antibiotic cases.

In our study the mean drainage in normal saline lavage after MRM was 356.46±59.113ml and in gentamicin lavage was 317.42±51.924ml (P=0.001). A study by Ruiz-Tovar J et al, showed that total drainage volume before drain removal was 465 ± 250.9 ml in normal saline group and 169±102.2 ml in gentamicin group (p= 0.003)¹³. In contrast to my study, which included 100 patients, this one had a sample size of 40. The disadvantage in my study was that it did not address many other factors of wound infection, such as cultures, drain days, etc.

In a randomized study showed that total wound drainage volume was 435.3 ± 220.1 ml in saline group and 155.2 ± 82.4 ml in gentamicin group (p=0.03). As compared to study by Oller I. et al, mean Duration of wound drainage was found higher i.e. 8.63±4.03 days and 6.91±2.86 days (p=0.004) vs. 7.1±3 days and 4.1±1.2 days (p<0.001) in saline and gentamicin groups, respectively in our study. In our study the data was stratified in terms of age and BMI. The results showed that there was no effect of age stratification as p values remained significant. The BMI group >27 kg/m² showed no significant difference among groups

(p value 0.300). Single center study and on limited population is the limitations of this study.

CONCLUSION

The conclusion of the study that Gentamicin lavage reduces the postoperative axillary wound drainage after modified radical mastectomy as compared to normal saline lavage. The larger sample studies would validate the results

Conflict of interest: None

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