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Comparison of Total Volume Drain Post-Modified Radical Mastectomy with Songket Technique Using Full Negative Pressure Suction Drain with Half Negative Pressure Suction Drain in Dr. Mohammad Hoesin General Hospital Palembang

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A B S T R A C T

Background: Breast cancer is the most common malignancy in women, with a mortality rate of 13.0 cases per 100,000 women worldwide. Modified Radical Mastectomy (MRM) is the treatment of breast malignancy that is still operable. After MRM surgery, a suction drain is routinely used to drain the serous fluid that builds up, with a high negative pressure which is expected to drain accumulated fluid and reduce dead space, but this drain also causes obstruction of closure of injured lymph vessels and causes an increase in the amount of fluid coming out of the wound. This study aims to provide an overview of the comparison of the total drain volume in post-MRM breast cancer patients using a full negative pressure Songket suction drain incision design with suction at Dr. Mohammad Hoesin General Hospital Palembang. **Methods:** The characteristics of the sample will be presented in tabular form and narrated. Dichotomous variables will be analyzed by Chi-square test, while continuous variables will be analyzed by T-test if the data is normally distributed and Mann-Whitney if the data is not normally distributed. All analyzes used the SPSS version 23 computer program. Significance was determined based on the p-value < 0.05. **Results:** The Mann-Whitney test statistic found a significant difference in the total amount of fluid collected in the two groups (p=0.010), while there was no significant difference in length of stay between the two groups (p=1,000). **Conclusion:** there was a difference in the length of stay of patients after surgery between full and half negative pressure, with a p-value = 0.001.

1. Introduction

Based on WHO data in 2018, breast cancer was the most common malignancy in women, with 2,088 million cases (11.6% of all malignancies) with an incidence rate of 46.3 cases per 100,000 women with a mortality rate of 13.0 cases per 100,000 women in Indonesia. The whole world. The number of breast cancer cases in Asia was 911,014 cases, with a mortality rate of 310 577 cases.[1-4]

Surgery is the treatment of choice for stage 3 and 4 breast malignancies, and Modified Radical Mastectomy (MRM) is the treatment of choice for breast malignancies that are still operable. Post MRM surgery, the suction drain is routinely used and is one of the important factors that contribute to the length of hospital stay. Installation of a postoperative MRM drain is performed to drain the serous fluid that has formed with a high negative pressure which is expected to remove accumulated fluid and reduce dead space, but this drain also causes obstruction of the closure of injured lymph vessels and causes an increase in the amount of fluid that comes out of the wound.[5-9]

A study stated that the advantages of MRM surgery

with the songket technique over the steward were less total drain volume and shorter hospital stay, while another study stated that there was a significant difference in the occurrence of seroma between full negative and pressure and half negative pressure after MRM surgery. Meanwhile, another study stated that there was a significant difference in patients undergoing MRM with axillary exclusion so that it could reduce the total number of drains and length of stay.[10-13]

From the three studies above, a study was conducted to assess the amount of drain volume between the MRM and the songket design that uses a full negative pressure suction drain with a half negative pressure suction drain in the surgical ward of the hospital. Dr. Mohammad Hoesin (RSMH) Palembang.

2. Methods

The design of this study is a clinical randomized control trial (cRCT) which is the most robust design to evaluate the intervention used to show that the intervention used is really feasible. The study was conducted in the Surgical Oncology Division of RSMH Palembang from February to June 2022. The population and sample of the study included breast cancer patients who underwent modified radical mastectomy (MRM) with songket design at RSMH Palembang. The number of research samples was 26 patients. The inclusion criteria in this study were patients with a diagnosis of breast carcinoma who were treated with MRM and were willing to participate in the study. The exclusion criteria in this study were post MRM wounds that could not be closed or treated open, post MRM without documented drain, and patients who had surgery on the axillary lymphatic system.

Sampling was carried out at simple randomness with each patient undergoing MRM given a serial number, patients with odd serial numbers on the suction drain with the full negative pressure method, while those with an even number on the suction drain with the half negative pressure method so that there were two groups, namely the full negative pressure method and the full negative pressure method. Negative half. In this study, 26 samples of post-mastectomy Ca mammary patients were collected with a songket design using a block randomization method into 2 groups of 13 patients each; the first group received treatment in the form of installing a drain with a half vacuum pressure (half vacuum) and the second group received a full vacuum pressure (full vacuum). There are 2 outcome indicators in this study, namely 1) length of stay (in days) and 2 the) total amount of drain fluid (in ml).

All numerical data were tested for normality using the Shapiro-Wilk test. The data was declared to be normally distributed if $p > 0.05$. To distinguish the outcome indicators between the two groups, chi-square test analysis, and Mann-Whitney test were performed because all of the output data were not normally distributed.

3. Results

Overall, the average age of patients was 53.46 years with a mean age of 49.46 years in the half-vacuum group and 52.46 years in the half-vacuum group, nutritional status with an average BMI of 23.39 with a mean of 23.30 in the half-vacuum group and in full vacuum the mean BMI of 23.30, the tumor weight had a media value of 948gr with a minimum weight of 95gr and a maximum of 1856gr with a tumor weight in the half vacuum group 691gr (95-1285) respectively, and in the full vacuum group, it weighed 1021 (311-1856). The results of the character analysis between the vacuum group found that age and body mass index did not have a statistically significant difference in the two groups, while tumor weight had a statistically significant difference in both groups.

Table 1. Baseline characteristic

Characteristic	Half vacuum (n=13)		Full vacuum (n=13)		Total		*p-value*
	Mean± SD	Median (min-max)	Mean± SD	Median (min-max)	Mean± SD	Median (min-max)	
Age	49,46 ± 9,92	-	52,46 ± 7,82	-	50,96 ± 8,88	-	0,401*
BMI	23,49 ± 2,98	-	23,30 ± 2,67	-	23,39 ± 2,7	-	0,865*
Tumor weight(gr)	-	691 (95 - 1285)		1021 (311-1856)		948 (95 -1856)	0,014**

The total volume of fluid collected in the half-vacuum pressure group had a median of 60 cc (min. 20 cc, max. 510 cc). Meanwhile, in the group with full vacuum pressure, the amount of fluid collected was a median of 140 cc (min 90, max 320 cc). In the statistical results of the Mann-Whitney test found a significant difference in terms of the total amount of fluid collected in the two groups (p = 0.010).

Table 2. Vacuum drain and volume of fluid collected

Vacuum pressure	N	The total volume of drain fluid					*p-value**
		Median	Sd	Median	Min	Max	
Half vacuum pressure	13	116.15	139.95	60.0	20	510	0.010
Full vacuum pressure	13	165.00	73.25	140.0	90	320	
Total	26	140.58	112.24	117.50	20	510	

The relationship between vacuum drain pressure and length of stay in the hospital can be seen in Table 3 The length of stay in the half vacuum pressure group was a median of 3 days (minimum 3 days – maximum 5 days), while for the group with full vacuum pressure the median length of stay was also 3 days. days (min. 5 days, max. 4 days). In the results of the Mann-Whitney statistical test, it was found that there was no significant difference in terms of length of stay between the two groups (p=1,000).

Table 3. Vacuum drain pressure and stay in hospital

Vacuum pressure	N	Length of stay					*p value **
		Median	SD	Median	Min	Max	
Half vacuum pressure	13	3.54	0.776	3.00	3	5	1,000
Full vacuum pressure	13	3.46	0.519	3.00	3	4	
Total	26	3.50	0.648	3.00	3	5	

4. Discussion

The total volume of fluid collected in the half-vacuum pressure group had a median of 60 cc (min. 20 cc, maximum. 510 cc). Meanwhile, in the group with full vacuum pressure, the amount of fluid collected was a median of 140 cc (minimum.90, maximum. 320 cc). this is almost the same as study which found that the total liquid collected in full vacuum with a median of 590 cc (minimum 200 maximum 3170) and half vacuum had a median of 340 cc (minimum 340 – minimum 920). Another study also found almost the same thing where the total liquid collected at full vacuum with a mean of 525± S.D 66,282 and at half vacuum 325± S.D 39,612.[14-18]

Other study found that the total liquid collected in the half vacuum pressure group had a median of 340 cc (min. 340 ccl, maximum. 650 cc). Meanwhile, in the group with full vacuum pressure, the amount of fluid collected was a median of 550 cc (minimum.360, maximum. 1150 cc). The length of stay in the half vacuum pressure group was a median of 3 days (min. 3 days – maximum 5 days), while for the full vacuum pressure group the median length of stay was also 3 days (min. 4 days, max. 5 days). There was no significant difference between the length of stay in the semi-vacuum pressure group and the full pressure group in this study. Several other studies found different things, the half vacuum group had faster and more effective treatment.[19-21] Meanwhile, other research also explained that there was no significant difference in length of stay.

In this study, it was found that there was a difference in the length of stay of patients after surgery between full and half negative pressure, with a p-value = 0.001. But the research conducted in India with a total of 85 patients, reported that reducing negative pressure on drain suction along with external compression splints for 48 hours significantly reduced drainage from the axilla after MRM without increasing the incidence of seroma formation ($p < 0.001$) without any additional morbidity. Length of stay was reduced in the negative pressure group by half compared to the full negative pressure group.[10]

5. Conclusion

There was a difference in the length of stay of patients after surgery between full and half negative pressure, with P-value = 0.001.

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