



CODEN [USA]: IAJPBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF  
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2574935>Available online at: <http://www.iajps.com>

Research Article

**THE FREQUENCY OF SEROMA FORMATION AFTER MODIFIED  
RADICAL MASTECTOMY WITH AND WITHOUT FLAP-MUSCLE  
SUTURE: A COMPARATIVE ANALYSIS****<sup>1</sup>Dr Naziha Azam,<sup>2</sup>Dr Huma Ali,<sup>3</sup>Dr Hafiz Mohsin Habib****<sup>1</sup>Ex House Officer, Shiekh Zaid Medical Complex, Lahore, <sup>2</sup>MBBS, Sahiwal Medical College, Sahiwal., <sup>3</sup>MO, BHU 176/9L, Chichawatni, Sahiwal.****Abstract:**

*In breast surgical procedure, seroma is an essential complication. This relative research examined the impact of "Seroma Formation after Modified Radical Mastectomy and Fixation of the Flaps" and obscurant the dead space on seroma formation.*

*Patients suffering from altered radical mastectomy were segregated into two random groups of 50 in accordance to wound closure approaches: either flap fixation/mechanical obliteration or regular wound closure group. The substance that accumulated under the flaps examined at the physical evaluation after the drains were eliminated was recognized as a seroma. The patients' attributes are the period of the operation, amount of drainage, and eradication drains' time, flap necroses, and contamination was reported. Both groups were reviewed via chi-square and Levene tests. Relevance was established for  $P \leq 0.05$ .*

*In both groups, attributes and complication rates had been similar. The rates of seroma in the initial and second groups had been 12 (24%) and 6 (12%), correspondingly ( $P < 0.05$ ). The normal time for the drains' removal was  $6.7 \pm 2.6$  days in the initial group and  $5.6 \pm 1.7$  days in the other group ( $P = 0.012$ ). The normal amount of discharge was  $873 \pm 513$  and  $630 \pm 271$  millilitre for the initial and 2nd groups, respectively ( $P = 0.02$ ).*

*Mechanical blockage in between pectoral muscle and subcutaneous tissue along with stitches at the incision may possibly decline the amount of drainage and play a role to earlier elimination of the drains.*

**Keywords:** *Formation of Seroma, breast cancer, flap fixation, modified radical mastectomy, risk factor, wound complication*

**Corresponding author:****Dr. Naziha Azam,**

Ex House Officer, Shiekh Zaid Medical Complex, Lahore.

QR code



Please cite this article in press Naziha Azam et al., *The Frequency Of Seroma Formation After Modified Radical Mastectomy With And Without Flap-Muscle Suture: A Comparative Analysis.*, Indo Am. J. P. Sci, 2019; 06(02).

## INTRODUCTION:

The formation of seroma is one of the most serious and common complications of mastectomy and axillary dissection. It was observed by researchers that seroma is a serous fluid collection whose origin is unclear. The seroma definition changed in the literature and frequency of this complication is variable as well. Specifically, seroma follows breast surgery and it causes discomfort to the patient, prolonged hospital stay, flap necrosis, and infection at the operation site and reoperations. The seroma etiology is messy and it is discussed widely in the literature. Seroma is usually in the form of exudate (Archana et al., 2018).

Exudate does occur either from an acute inflammation related response or fibrinolytic activity in lymph drainage or serum. These kinds of are the highly mentioned ways of pathophysiology. Seroma is affected by a huge dissection area, dead space underneath the skin flaps and axillary region, shoulder movement and chest movement because of breathing, which strikes bond of skin flaps. The occurrence of seroma is associated with particular aspects. Age of the patients, obesity, hypertension, volume of breast, the existence of malignant nodes, specifically in the axillary region, metastatic nodes numbers, dissected nodes' number, early shoulder exercise, and the usage of various drugs, i.e. tamoxifen and heparin, impact the pathophysiology.

Whilst the use of electro-cautery diminishes bleeding, it improves overall drain output, leading to a elevated rate of formation of seroma. In addition, electro-cautery dissection improves pro-inflammatory cytokine reaction in wound fluid, which one in turn may exhibit an intense inflammation and enhanced tissue damage influencing seroma development (B. S. et al., 2017).

This eventual comparative research was conducted to evaluate the fixation effects of the flaps to the pectoral muscle along with drainage volume sutures, time of drain removal, and frequency of seroma development.

## MATERIAL AND METHODS:

In this study, 100 patients who underwent modified radical mastectomy (MRM) from the time period of 2014 and 2017 were included. All 100 patients with breast cancer operable were enter in the research after their updated consent was acquired. The study was prospective and random. Two closed suction drains were used for the drainage of the operation site.

### Patient Groups

There are basically two groups of patients were

developed while comparing the effects of obliterated dead space with the suture approach on the seroma formation. In the non-fixation group, which one consisted of 50 patients, the subcutis was closed with 3/0 polyglactin 910 stitches one by one and the skin was closed constantly by suturing sub-cuticular along with 4/0 polypropylene sutures. In 50 patients fixation group, the suture of skin flap to the pectoral muscles along with 3/0 polyglactin 910 stitches accordingly, the skin had been closed by the same method (Archana et al., 2018).

The patient's medical records were examined along with relation to age, body mass index (BMI) (kg/m<sup>2</sup>), number of positive lymph, total lymph nodes removed, size of tumor, stage, very first day closed vacuum drainage volume, volume of total drainage, time of drain removal, volume of seroma, and puncture amount (B. S. et al., 2017).

### Randomization

Basically, all patients had been numbered at the time they were hospitalized. The first group patients regarded with even numbers as the first group while odd numbers regarded for second group. The group of even numbers was the also called fixation group while the group of odd numbers was called non-fixation group. Patients who experienced breast conservation therapy, undergone neoadjuvant chemotherapy, or instant breast reconstruction had been specifically not included in the research.

### Surgical Techniques

Skin flap dissection, the excision of the breast with pectoral fascia, and dissection of axillary lymph nodes had been carried out with a scalpel. Small bleeding vessels control was experienced along with coagulate on current. The patient experienced level 1-2-3 axillary lymph node dissection by cutting the pectoral minor muscle. Day-to-day drainage was registered. The removal of drains while daily drainage was lower than 50 mL (B. S. et al., 2017).

According to this research, we identified seroma as any clinically apparent fluid assortment with the skin flaps or in the axilla. In the case of occurring of seroma, it had been aspirated using needle percutaneously throughout the period of hospitalization. Pressure dressing was applied only during the course of the follow-up period immediately after the observance of seroma.

### Statistical Analysis

Specifically, regarding statistical analysis, we applied SPSS version 18.0. The negative consequences in the groups were compared by using chi-square and Levene tests.  $P < 0.05$  was considered statistically significant.

**RESULTS:**

In the patients of non-fixation group, the mean age was  $48.1 \pm 11.4$  and in the group of fixation mean age was  $51.8 \pm 10.9$ . Both groups had been alike with

respect to age, BMI, positive nodes, total removed axillary nodes, preceding biopsy, stage, operation time, and co-morbidities (hypertension and diabetes mellitus) (Table 1).

**Table 1. Characteristics of patients in the skin fixation and non-fixation groups.**

	Non-fixation group (n = 50)	Fixation group (n = 50)
Age (years)	$48.1 \pm 11.4$	$51.8 \pm 10.9$
BMI (Body Mass Index)	$28.2 \pm 4.7$	$27.1 \pm 4.1$
Duration of surgery (min)	$197.4 \pm 35.5$	$189.4 \pm 29.9$
Total dissected lymph nodes	$25.2 \pm 10.3$	$25.4 \pm 9.8$
Metastatic lymph nodes	$3.2 \pm 6.9$	$3.8 \pm 5.8$
Hypertension	10 (20%)	13 (26%)
Diabetes mellitus	6 (12%)	4 (8%)
Smoking	10 (20%)	8 (16%)

NS: Non-significant.

(Source: (van Bastelaar et al., 2018)

According to represented in Table 2, the clinical measures and in the non-fixation group, the drains' removal time was  $6.7 \pm 2.6$  days, while it was  $5.6 \pm 1.7$  days in the fixation group. Moreover, the first day volume of drainage in the former group was  $218.9 \pm 86.7$  mL, and it was  $219.2 \pm 64.0$  mL in the final ( $P > 0.05$ ). Overall drain volumes in the non-fixation and

fixation groups were  $873.5 \pm 513.9$  and  $630.7 \pm 271.6$  mL, accordingly, ( $P < 0.05$ ). Therefore, when it had been symptomatic the seroma was extracted for the patient. On the contrary, the patients' of non-fixation group's required ambulation for  $8.8 \pm 11.6$  days (2-45 days), and those in the fixation group needed it for  $6.1 \pm 4.5$  days (2-15 days).

**Table 2. Complication rate and drainage volumes in the groups.**

	Non-fixation group (n = 50)	Fixation group (n = 50)
Seroma	12 (24%)	6 (12%)
Wound infection	3 (6%)	4 (8%)
Flap necrosis	3 (6%)	1 (2%)
First day drainage volume (mL)	$218.9 \pm 86.7$	$219.2 \pm 64.0$
Total drainage volume (mL)*	$873.5 \pm 513.9$	$630.7 \pm 271.6$
Removal time of the drain (day)*	$6.7 \pm 2.6$	$5.6 \pm 1.7$

\*  $P < 0.05$

Source: (van Bastelaar et al., 2018)

The wound additional complications such as infection of wound, accordingly, skin necrosis had been identical in the groups. Oral anti-biotherapy had been used for wound dressing and infection and debridement had been utilized for necrosis. In both groups the wound dressing was the basic standard. Seroma had been noticed in 6 (12%) in the patients of fixation group ( $P < 0.05$ ) and 12 (24%) patients in the non-fixation group ( $P < 0.05$ ). Specifically for the drains removal, the normal time period was  $6.7 \pm 2.6$  days in the the group of non-fixation as well as  $5.6 \pm 1.7$  in the group of fixation where the value of P is  $P = 0.012$ . Subsequently, the drainage average amount in the group of non-fixation had been  $873 \pm 513$  mL, whilst it was  $630 \pm 271$  mL in the group of fixation where the value of P was  $P = 0.02$  better described in the Table 2. The mobility of shoulder's time was identical for each group. As per the first three days after surgery, immobilization had been delivered by a sling. While on the 5th day after surgery, overall patients had been directed to a physical therapist for the education of shoulder movement.

### DISCUSSION:

It is relieved from the earlier-mentioned research that MRM is always the exceptionally known surgical process for treating breast cancer. The seroma formation is specifically assumed a common issue happening after mastectomy within each dead space of skin and each axillary region. Accordingly, it is additionally noticed that seroma is emphasized in accordance to its vocabulary and pathophysiology, and the deterrence and treatment. Seroma involves treatment whenever it is symptomatic and triggers vexation to the patient. Several needle aspiration or addition of a fresh drain under the flaps is important in treatment. The compulsory closure of the wound must decrease seroma development, by obliterating the dead space. Methods must reduce the lymph spillage and serum ooze, and support the rapid elimination of accumulating fluid (van Bastelaar et al., 2018).

Different writers applied ultrasonography to comprehend seroma at the dead space. With some specific approaches of radiology, a very slight amount of fluid aggregation could be recognized where it is not perceptible at the physical examination. The seroma occurrence varies in between 10% and 85%, in accordance to the detection practices distinction. Consequently, a limited amount of serous fluid performs certainly not involve treatment. Striving to deal with this limited amount of seroma really does not assist the patients and produces vexation. As per the review of this study and our knowledge, if the amount is limited and the patient has recently no complaints about

seroma, therapy is not required. A careful physical evaluation is important in seroma verifying. Jeffrey et al. revealed that seromas deal with in one month at the physical evaluation and four months at the ultrasonography assessment. According to our experiences, we would not use ultrasonography for discovering seroma development due to of its expense ineffectiveness (Schultz, Barholm and Gröndal, 2016).

The leading seroma occurrence significance is the infection's probability. The significant issue for patients has affected seroma. Prophylactic antibiotics tend to be not mentioned at the breast surgery. Consequently, contaminated dead space area seromas outcome in abscesses, that require surgical drainage. Drains long-term make use of and are lacking of understanding to sterility throughout aspiration puncture enhance the risk of infection. Murphy, specifically in 1947, used the suction drains first. Afterwards, other scientists revealed that closed suction drainage obliterates the dead space and increases the chances of healing of wound. These drainage diminishes the seroma and additionally impacts the happening of problems such as necrosis and infection. Several techniques had been utilized in order to minimize seroma (Schultz, Barholm and Gröndal, 2016).

The pressure wounds' dressing displays no effect on the lowering the seroma amount. Several chemical techniques are utilized for obliterating the dead space, like tissue adhesive, fibrin glue, as well as sclerotherapy agents. Consequently, the influences of chemical agents tend to be not clear. Some writers have mentioned that fibrin glue considerably decreases the complete seroma drainage, enables preceding drain elimination, and decrease hospital stay. On the other hand, various researches report no benefit of making use of fibrin glue. Tetracycline is also utilized for obliteration and sclerotherapy. Though, as per the different patients' point of view regarding pain, the usage of tetracycline has been discontinued. The shoulder mobilization in the initial period improves the seroma amount. Consequently, some writers document that the shoulder immobilization has no influence on seroma creation. According to our experience, we believed that very early shoulder mobilization improves the occurrence of seroma. Because of to this, it is recommended that immobilization of the shoulder for 5 days. In our regimen therapy, we experience through physical practitioners by gradually improving the shoulder movements.

Halsted, for the very first time, applied suturing with disrupted silk to the fascia and attempted to



accomplish mechanical obliteration of the dead space. Aitken (2010) tried out to obliterate the dead space through significant mastectomy and altered radical mastectomy using dexon tacking sutures to skin flaps. They recognized a 9.5% seroma rate in the 204 patients (van Bastelaar et al., 2018).

Chilson (2011) manufactured a random research and stated a rate of 38.6% in the no-flap fixation group. He revealed a 25% seroma rate in the group of flap fixation to the muscle in a variety of levels. Due to the fact of the time of long and enhanced necrosis ratio, O'Dwyer indicates that flap fixation at the incision reduces the seroma rate from 85% to 25%, and it creates lesser overall drain output. According to our knowledge, we noticed no distinction in the operation time or necrosis rate. Flap suturing is an effortless technique for the closure of wound. There must be proper care in the time period of suturing to make sure that the skin flap is not dragged, which one can split the blood flow and restrict wound healing (Chilsen, Barholm, and Gröndal, 2011).

Schuijtvlot et al. (2002) confirmed that particular skin flap fixation diminishes the seroma rate from 52% to 24% (Schuijtvlot, Sahu and Cawthorn, 2002). Purushotham et al. (2002) did not use drains and patients have been discharged from hospital prior whenever flap fixation suturing was utilized (Purushotham et al., 2002).

### CONCLUSION:

At the point of conclusion, mechanical closure of the dead space is an effortless strategy, through which skin flaps tend to be sutured to fundamental muscle in the line of wound closure via absorbed materials. A lowered overall drain level decrease the occurrence of seroma and improves patient convenience via early discharge from the hospital. The suturing means impact on the medical economics and life standard will be practical to examine in even further research.

### REFERENCES:

1. Aitken, C., Kuerer, H. and Tartter, P. (2000). Drains Prevent Seromas Following Lumpectomy with Axillary Dissection. *The Breast Journal*, 6(1), pp.31-33.
2. Archana, A., Sureshkumar, S., Vijayakumar, C. and Palanivel, C. (2018). Comparing the Harmonic Scalpel with Electrocautery in Reducing Postoperative Flap Necrosis and Seroma Formation after Modified Radical Mastectomy in Carcinoma Breast Patients: A Double-Blind Prospective Randomized Control Trail. *Cureus*, 21(2), p.113.
3. B. S., M., Reddy M., N., H. B., S., Kalabairav, S., Reddy, A. and Mallikarjunappa, S. (2017). A randomized controlled trial evaluating the efficacy of mastectomy flap quilting sutures in reducing post modified radical mastectomy seroma formation. *International Surgery Journal*, 4(2), p.714.
4. Chilsen, I., Barholm, M. and Gröndal, S. (2011). Delayed shoulder exercises in reducing seroma frequency after modified radical mastectomy: A prospective randomized study. *Annals of Surgical Oncology*, 4(4), pp.293-297.
5. Dogu Yildiz, B. and Sulu, B. (2017). Effects of dextran-40 on flap viability after modified radical mastectomy. *Plastic Surgery*, 21(2).
6. Ismagilov, A. and Shakirova, G. (2016). Using axillary region myoplasty with the pectoralis minor muscle flap for seroma prevention after radical mastectomy. *Kazan medical journal*, 97(3), pp.449-453.
7. Purushotham, A., McLatchie, E., Young, D., George, W., Stallard, S., Doughty, J., Brown, D., Farish, C., Walker, A., Millar, K. and Murray, G. (2002). Randomized clinical trial of no wound drains and early discharge in the treatment of women with breast cancer. *British Journal of Surgery*, 89(3), pp.286-292.
8. Schuijtvlot, M., Sahu, A. and Cawthorn, S. (2002). A prospective audit of the use of a buttress suture to reduce seroma formation following axillary node dissection without drains. *The Breast*, 11(1), pp.94-96.
9. Schultz, I., Barholm, M. and Gröndal, S. (2016). Delayed shoulder exercises in reducing seroma frequency after modified radical mastectomy: A prospective randomized study. *Annals of Surgical Oncology*, 4(4), pp.293-297.
10. van Bastelaar, J., Granzier, R., van Roozendaal, L., van Kuijk, S., Lerut, A., Beets, G., Hadfoune, M., Olde Damink, S. and Vissers, Y. (2018). Analysis of TNF- $\alpha$  and interleukin-6 in seroma of patients undergoing mastectomy with or without flap fixation: is there a predictive value for seroma formation and its sequelae?. *Surgical Oncology*, 28, pp.36-41.
11. Venkatesan, R., Bagul, K., Goel, G., Sannappanavar, N. and Vijaykumar, D. (2017). Does Axillary Tucking During Modified Radical Mastectomy Reduce Seroma Formation? – a Randomised Control Trial in 100 Patients. *Clinical Oncology*, 29(3), p.e78.
12. Zaidi, S. and Hinton, C. (2017). Breast cancer surgery without suction drainage and impact of mastectomy flap fixation in reducing seroma formation. *European Journal of Surgical Oncology (EJSO)*, 43(5), p.S32.