



ORIGINAL RESEARCH PAPER

General Surgery

STUDY OF FLAP TACKING VS COMPRESSION DRESSING IN POST MASTECTOMY PATIENTS WITH SEROMA FORMATION

KEY WORDS: modified radical mastectomy, seroma, flap tacking

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ABSTRACT

Introduction: Since the risk factors for post-mastectomy seroma production are yet unknown, the condition is still unsolved. After breast surgery, axillary seromas can cause considerable morbidity and postpone the start of adjuvant therapy. Although a number of methods and their variations have been used and documented in English literature, no apparent agreement has been reached. **Aim:** To compare and examine the decrease in seroma production after using flap tacking and compression bandages **Material and methods:** it is a prospective cohort study conducted in 37 patients in Coimbatore medical college hospital between September 2023 – September 2024. **Observation:** On the 3rd, 7th, 14th postoperative days, there is lower seroma accumulation in the flap tacking group compared to the control group. Patients in the flap tacking group had their drains removed earlier than in the control group. **Conclusion:** During a modified radical mastectomy, the use of flap tacking and compressive dressings greatly reduced the formation of seroma.

INTRODUCTION:

Breast cancer is still the second-leading cause of cancer-related deaths in the globe for women, and it accounts for a large portion of the surgical burden for the disease. Breast conservation therapy and mastectomy, with or without axillary dissection, are among the surgical treatments available. The most frequent side effect from a mastectomy is seroma. It occurs between 3% and 8.5% of the time. A serous fluid collection under the skin flaps or in the dead space in the axilla after mastectomy and/or axillary dissection is referred to as a seroma. It affects the course of treatment, resulting in infection and flap necrosis. An accumulation of serous fluid in the dead space of the post-mastectomy skin flap, axilla, or breast is known as a seroma, which is the most common early consequence following modified radical mastectomy (MRM) or breast conserving surgery (BCS). Nonetheless, there are differences in the definition of seroma in the literature. Even while this purported risk is frequently not very concerning, it could lengthen hospital stays, recovery periods, and the amount of money spent on medical care. It has been discovered that seroma formation happens 15%–18% of the time. The precise role that each component plays in the etiology of seromas is a matter of debate. These variables include the number of positive nodes, the extent of lymph node clearance, the use of postoperative radiotherapy, and the presence or absence of intraoperative lymphatic channel ligation. Seroma's basic pathophysiology is still poorly known and is currently up for discussion. It's uncertain which prevention methods will prevent seroma development the most effectively.

AIMS AND OBJECTIVES:

1. To compare and examine the decrease in seroma production after using flap tacking and compression bandages.
2. To evaluate the patients' quality of life after these procedures and how they affect their ability to recover.

REVIEW OF LITERATURE:

The most frequent early consequence, seroma, is a collection of serous fluid in the dead space of the breast, axilla, or post-mastectomy skin flap after modified radical mastectomy (MRM) or breast conserving surgery (BCS) [1]. Nonetheless, the definition of seroma varies throughout published studies. This suspected complication, while often not life-threatening, may increase recovery time, duration of hospital stay, and overall health care costs. There is a large range in the reported incidence of seroma development between 15 and 18% [2]. Opinions regarding each factor's specific contribution to the

pathophysiology of seroma formation vary, but a number of factors, including the degree of lymph node clearance, the number of positive nodes, the use of postoperative radiation, and whether or not intraoperative lymphatic channel ligation was performed, are implicated in its formation [2, 3]. The fundamental pathophysiology of seroma is still unclear and up for debate. We don't know the best approaches to lower the risk of seroma formation.

PATHOGENESIS:

It is still unclear exactly what causes seroma. Acute inflammatory exudates produced during the acute period of wound healing and in reaction to surgical trauma constitute seroma [4]. According to Oertli et al. [5], fibrinolytic activity has a role in the production of seromas. The number and degree of axillary lymph node involvement were found to be the most significant influencing factors in the pathogenesis of seroma, according to Petrek et al.'s prospective randomized trial [6]. Gonzalez et al. [7] and Hashemi et al. [8] on the other hand, found that the type of surgery was the sole statistically significant factor influencing the incidence of seroma formation.

They found that the seroma rate in MRM was higher than the rate after axillary dissection and extensive local excision (BCS). Factors such as age of the patient, obesity, tumor size and neoadjuvant therapy did not influence the incidence of seroma formation in the three mentioned trials. When compared to breast conserving surgery, seroma results from extensive dissection during mastectomy and axillary lymphadenectomy, which destroys multiple blood arteries and lymphatics and causes blood and lymphatic fluid to leak onto a large surface area [9]. Seroma buildup lifts the flaps from the chest wall and axilla there by limiting their adhesion to the tissue bed. Therefore, it may result in serious morbidity including wound hematoma, delayed healing, infection, dehiscence, extended hospital stay, postponed recovery, and adjuvant therapy initiation.

PREVENTING AND REDUCING THE FORMATION OF SEROMAS:

Numerous methods have been claimed to prevent or limit seroma production in practice; however, no single treatment has proven to be consistently and dependably successful. They can be divided into six categories: (1) surgical methods; (2) sclerotherapy and sealants; (3) compression dressings; (4) drain usage; (5) shoulder exercise (delayed vs. early); and (6) the function of ocreotide.

SURGICAL METHODS:

It is thought that the incidence of seroma formation may be

decreased by carefully monitoring breast surgical techniques to minimize leaking from dissected blood arteries and lymphatics and to completely eliminate dead space [10]. In this regard, a number of surgical procedures have been employed, however the results about their ability to lower the incidence and amount of seroma are inconsistent.

CLOSING WOUNDS TO ELIMINATE OR REDUCE DEAD SPACE:

It has been demonstrated that surgical methods to eliminate or drastically minimize dead space after axillary dissection and breast surgery lower the risk of seroma formation. In the past, Halstead recommended eliminating dead space, especially in the axilla, to speed up the healing of wounds [11]. More recently, Chilson et al. [12] found that flap tacking significantly reduced the incidence of post-mastectomy seromas ($p=0.038$) and the number of postoperative clinic visits for seroma aspiration ($p=0.0001$). When comparing the group of patients with skin flaps sutured down to the chest wall muscles to those with only traditional skin flap closure, Coveney et al. [13] saw noticeably less leakage.

Classe et al. [14] demonstrated that after axillary lymphadenectomy with early discharge, axillary padding using axillary aponeurosis provides an alternative to closed suction drain.

They stated that 207 of their patients had a seroma rate of 22.2%.

The longer operating duration and cosmetic consequences of this procedure, where cosmesis is a crucial factor, were not discussed in published papers. Many authors have presented many methods with purportedly comparable effectiveness, but as the studies are non-randomized, varied in their closing methods, and some involve extra steps, it is challenging to make any firm conclusions.

COMPRESSION DRESSING:

It has long been known that applying an external compression dressing to the axilla and chest wall to completely eliminate any dead space can lessen the likelihood of seroma formation. The use of compression dressing following breast cancer surgery has mostly been abandoned because the evidence for its benefits is merely anecdotal. In their randomized study, O'Hea et al. [15] discovered that compression dressings enhanced the incidence of seroma production rather than decreased it. In addition to inconsistent effectiveness, patients' limited tolerance and discomfort are issues with compression dressings.

THE USE OF DRAINS

Of all the methods for preventing or lowering the frequency of seroma formation, the use of drains following breast cancer surgery is arguably the most studied and contentious. Following breast cancer surgery, a drain is frequently utilized with the expectation that it will lessen or eliminate seroma accumulation. Murphy developed suction drainage in 1947 with the goal of eliminating dead space and applying negative pressure following axillary dissection and breast tissue excision [16]. Negative pressure exerted on a skin flap that is opposed to the chest wall may promote wound healing, lower the risk of infection, dehiscence, or flap necrosis, and stop the formation of seroma [17].

MATERIALS AND METHODOLOGY STUDY DESIGN :

Prospective cohort study

STUDY POPULATION :

37-This prospective study of seromas formation post mastectomy was conducted in 37 patients operated from 2023 to 2024

STUDY PERIOD:

September 2023 to September 2024

INCLUSION CRITERIA :

Patients with Carcinoma breast undergoing modified radical mastectomy/ radical mastectomy were all included in this study

EXCLUSION CRITERIA :

Patients undergoing Breast conservation surgery- Breast reconstruction ,previously operated patients

METHODOLOGY

Patients undergoing Modified radical mastectomy for Carcinoma breast in our department from September 2023 to september 2024.

During closure, the skin flaps are tacked to the underlying pectoralis major with uniformly spaced 2-0 Vicryl sutures and wound is closed with a closed-suction drain. Compressive dressings are applied for the wound.

The dressing is changed on the 4th Post-operative day again with compressive dressings unless soaked or patient has unexplained fever which warrants wound inspection earlier.

The amount of seroma is calculated in a standard measuring jar everyday. The volume of seroma are compared to those patients undergoing conventional closure of wound and conventional wound dressings.

Age in years	No. of patients	Percentage
<40	11	29.73%
41-50	8	21.62%
51-60	11	29.73%
>60	7	18.92%

Table 2: Age Distribution In This Study.

OBSERVATION & RESULTS:

1. NUMBER OF CASES:

Out of 37 patients in this study divided into flap tacking group and non flap tacking(control) group. Flap tacking has 19 patients, control group 18 patients.

2. AGE DISTRIBUTION:

11 patients in <40 years, 8 patients in 41-50years, 11 patients in 51-60years, 7 patients in > 60years of age.

3. BREAST CANCER STAGE DISTRIBUTION:

out of 37 patients, 15 patients belong to stage 2A, 10 patients belong to stage 2B, 12 patients in stage 3A disease.

4. POST OP DAY 3 SEROMA COLLECTION:

Day 3 post-op seroma collection in the flap tacking groups averages 88.42 ml, compared to 98.89 ml in the control group's non-flap tacking groups.

On the third postoperative day, there is lower seroma accumulation in the flap tacking group compared to the control group.

5. POST OP DAY 7SEROMA COLLECTION:

Day 7 post-op seroma collection in the flap tacking groups averages 43.15 ml, compared to 54.44 ml in the control group's non-flap tacking groups.

On the 7th postoperative day, there is lower seroma accumulation in the flap tacking group compared to the control group.

6. POST OP DAY 14 SEROMA COLLECTION:

Day 14 post-op seroma collection in the flap tacking groups averages 2.10 ml, compared to 10.55 ml in the control group's non-flap tacking groups.

On the 14th postoperative day, there is lower seroma accumulation in the flap tacking group compared to the control group.

7. DAY OF DRAIN REMOVAL DISTRIBUTION:

Day of drain removal in the flap tacking groups averages 9.47 days, compared to 11.61 days in the control group's non-flap tacking groups.

Patients in the flap tacking group had their drains removed earlier than in the control group.

	No. of patients
Flap tacking done	19
Flap tacking not done(control group)	18
	37

Table 1: Case Distribution In This Study.

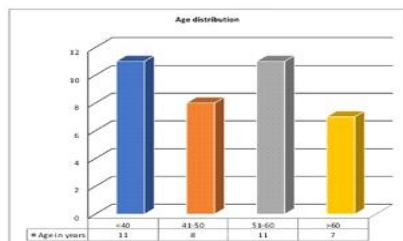


Chart 1: Age Distribution In This Study.

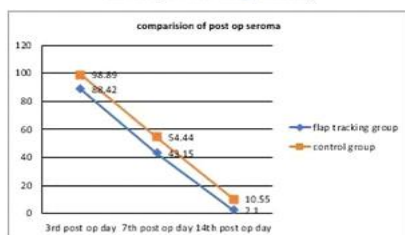


Chart 2: Comparison Of Post Op Seroma.

DISCUSSION

It has been demonstrated that reducing or eliminating dead space during axillary dissection and breast surgery reduces the incidence of seroma development.

Halstead once suggested removing dead space to hasten wound healing, particularly in the axilla. More recently, flap tacking was shown to dramatically lower the number of postoperative clinic visits for seroma aspiration ($p=0.0001$) and the incidence of post-mastectomy seromas ($p=0.038$) by Chilson et al.

Coveney et al.'s study showed much less drainage in the group of patients whose skin flaps were sutured down to the chest wall muscles compared to those who had normal skin flap closure alone. Following an early discharge following axillary lymphadenectomy,

A better option to closed suction drain is axillary padding applied with axillary aponeurosis, as demonstrated by Classe et al. A 22.2% seroma incidence was seen in 207 of their patients. In our study, flap tacking groups averaged 88.42 ml of seroma collection on Day 3 post-op, compared to 98.89 ml in the non-flap tacking groups in the control group. On the third postoperative day, there was reduced seroma accumulation in the flap tacking group compared to the control group.

The flap tacking groups' average seroma collection on day seven after surgery was 43.15 milliliters, compared to 54.44 milliliters in the control group's non-flap tacking groups. On the seventh postoperative day, there was reduced seroma accumulation in the flap tacking group compared to the control group.

On the fourteenth day following surgery, the flap tacking

groups collected an average of 2.10 ml of seroma, whereas the non-flap tacking groups in the control group collected 10.55 ml. On the fourteenth postoperative day, there was reduced seroma accumulation in the flap tacking group compared to the control group.

In the flap tacking groups, the average day of drain removal is 9.47 days, while in the non-flap tacking groups in the control group, it is 11.61 days.

Patients in the flap tacking group had their drains removed earlier than those in the control group.

Historically, seroma generation has been less prevalent; to minimize the dead space and apply an external compression dressing to the axilla and chest wall.

As there is little personal experience to support compression dressing use, it has often been discontinued following breast cancer surgery. O'Hea et al. found in their randomised experiment that compression dressing increased rather than decreased the frequency of seroma formation. Apart from their variable performance, compression garments can cause pain and intolerance in patients.

CONCLUSION:

During a modified radical mastectomy, the use of flap tacking and compressive dressings greatly reduced the formation of seroma. This led to fewer drain removals, the administration of the first cycle of chemotherapy before discharge, and a shorter hospital stay. It has also reduced the occurrence of flap necrosis following surgery.

Nevertheless, more investigation is needed to ascertain which of the two employed strategies is entirely responsible for the seroma's eradication. Researching the potential confounding effects of co-morbid illnesses such as diabetes, hypertension, and neo-adjuvant chemotherapy on seroma development is also crucial.

Numerous exploratory and prospective studies have demonstrated that it is possible to enable a more straightforward recovery by suturing the flaps to the chest wall and removing the dead space. For whatever reason, this flap tacking method is not commonly used at the moment (15 to 20 minutes), most likely because of this. Nonetheless, the additional time is beneficial since it decreases the occurrence of seromas and other issues, shortens hospital stays, and necessitates less nursing care.

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