



## QUILTING IN MODIFIED RADICAL MASTECTOMY

### Breast Surgery

**Dr. M. Krishna Abhishek** Postgraduate, Department of General Surgery, Chettinad Hospital & Research Institute, OMR, Kelambakkam, Chennai, Tamil Nadu, India.

**Dr. Ajay Gokul. B** Postgraduate, Department of General Surgery, Chettinad Hospital & Research Institute, OMR, Kelambakkam, Chennai, Tamil Nadu, India.

**Dr. A. Prabakar\*** Professor, Department of General Surgery, Chettinad Hospital & Research Institute, OMR, Kelambakkam, Chennai, Tamil Nadu, India. \*Corresponding Author

### ABSTRACT

**Background:** Seroma formation is one of the most frequently encountered complications following MRM. It may cause delayed wound healing, infection and it needs frequent seroma aspiration. Aim of current study was to evaluate the effect of surgical quilting after Modified radical mastectomy to prevent postoperative seroma. **Materials and Methods:** It is a prospective cohort study was conducted on 30 patients over a 1-year period. All patients who underwent MRM during this period were included in this study. Group 1 includes patients for whom quilting was done in which flaps were sutured to pectoral muscle using interrupted absorbable sutures. Total volume of drain, POD at which drain tube is removed, formation of seroma which needs aspiration were recorded postoperatively. **Results:** During the study period, 30 patients were recruited, with 15 patients in group 1 (quilting) and 15 patients in group 2 (non-quilting). Mean volume of drain in quilting group is 65 ml and non-quilting group is 230 ml. In postoperative period drain was removed earlier (mean-10) in quilting group compare to non quilting (Mean POD-25). The proportion of patients who developed seroma requiring aspiration was 13.3% (n=2) in the quilting group and 46.6% (n=7) in the non-quilting group. **Conclusion:** Postoperative seroma is a frequent problem after modified radical mastectomy (MRM). Quilting significantly reduces seroma formation. Minimal volume of drain and early removal of drain in quilting group compare to non quilting group and need of seroma requiring aspiration was significantly reduced using this technique. We would recommend that quilting reduce the incidence of postoperative seroma.

### KEYWORDS

Modified radical mastectomy, Quilting, Drain, Seroma

### INTRODUCTION

Carcinoma breast remains one of the leading causes of cancer deaths among women [1]. Modified radical mastectomy is a common surgical procedure that is used in the management of breast cancer. Seroma is one of the most frequently encountered complications following MRM and it may cause significant morbidity, including delayed wound healing, and can result in frequent outpatient attendance for seroma aspiration. Repeat aspirations may in turn increase the risk of wound infection and impact on adjuvant treatment. The incidence of seroma formation after MRM has been reported in the literature to vary from 15 to 81%. [2-5] Quilting is a simple surgical procedure that eliminates the anatomical dead space remaining after mastectomy. It involves placing interrupted absorbable sutures between the mastectomy flap and pectoral muscle prior to wound closure. The objective of this prospective study is to evaluate the effect of surgical quilting in MRM during postoperative period and prevention of postoperative seroma and also to investigate which factors influence seroma formation.

### MATERIALS AND METHODS :

It is a prospective cohort study was conducted on 30 patients who underwent modified radical mastectomy in the Department of General Surgery for the period of 12 months were prospectively recorded in Chettinad hospital and research institute. Group 1 includes patients for whom quilting was done in which flaps were sutured to pectoral muscle using interrupted absorbable sutures. Total volume of drain, POD at which drain tube is removed, formation of seroma which needs aspiration were recorded postoperatively.

### RESULTS

During the study period, 30 patients were recruited from JAN 2021 to JAN 2022. There were 15 patients in group 1 (quilting) and 15 patients in group 2 (non-quilting).

Baseline characteristics of mean age (standard deviation (SD)) in the quilting and non-quilting groups were 56 (13.8) years and 61 (13.2) years. Age was also not significantly associated with seroma formation across both groups ( $p=0.08$ )

Within the group 2, 7 (40.4%) patients had a BMI < 25, 5 (35.1%) patient had a BMI between 25 and 29.9 and 3 patient had a BMI >30. There were proportionally more overweight patients in group 1, where 2 (25.9%) patients had a BMI <25, 6 patient had a BMI between 25

and 29.9, and 7 (40.7%) patient had a BMI > 30. The mean (SD) BMI in group 1 was 29 (5.0) and in group 2 was 27 (5.8). There was no statistical significance between BMI and seroma formation across both groups.

Median tumor size was similar (40 mm) in both groups, and no significant difference was observed. The mean duration of surgical procedure was not statistically different in the quilting versus non quilting group (respectively, 78 minutes vs. 85 minutes). In the total population, no factors related to patient characteristics or tumor findings were significantly linked to CSS

**Table 1. Patient characteristics**

	Group 1 (Quilting)	Group 2 (Non-quilting)
Number of patients (n)	15	15
Mean age (years)	56	61
BMI (mean)	29	27
Median Pathological Tumor Size (Range), mm	40	40

The mean drainage volume was significantly lower in the quilting group on day 1 (107.1 mL vs. 156.5 mL and on day 2 (108.4 mL vs. 162.8 mL) The total mean volume of drain in group 1 was 63 mL (standard error (SE) 21) compared with 250 mL in group 2.

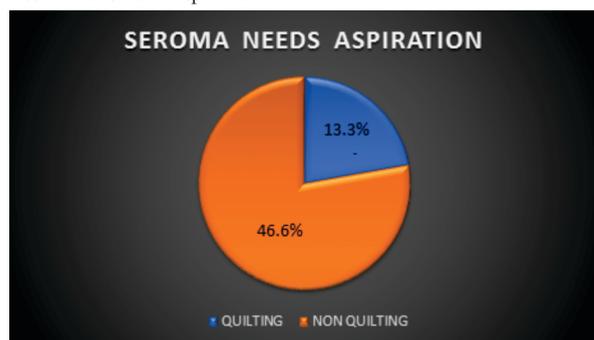
The mean drainage period was 12 days in the quilting group and 28 days in the non quilting group. No difference in postoperative pain evaluation was observed. The mean hospital stay was less in quilting compared to non quilting groups (1.5 vs. 2.6 days).

**Table 2. Results of quilting on the number of seroma aspirations and the volume of seroma aspirated**

	Group 1 (Quilting)	Group 2 (Non-quilting)
Mean volume of fluid in drain	63	250
The mean drainage period	12	28
Seroma requiring aspiration, n (%)	2	7

The proportion of patients who developed seroma requiring aspiration was 13.3% (n=2) in group 1 and 46.6% (n=7) in group. Group 1 had

statistically reduced volumes of seroma, early removal of drain and less need of seroma aspiration



## DISCUSSION

This study is to assess quilting reducing seroma formation following modified radical mastectomy. Seroma is a much discussed topic for which preventive measures have extensively been studied.(6,7).

Mechanical closure of the death space was reported to be one of the key factors in seroma prevention. Coveney et al.(7) reported quilting sutures as a method to obliterate dead space after mastectomy, finding seroma incidences of 25% in the quilted cohort versus 85% in the nonquilted cohort ( $p < 0.001$ ). This has been compared with my study, seroma incidence was 13.3% in the quilted cohort and 46.6% in the nonquilted cohort.

Ouldamer et al.(8), Sakkary (9,10) reported similar results, quilting led to a seroma reduction from 21.7% to 6.8% ( $p = 0.03$ ).

Traditionally, drains have been used to reduce seroma formation after MRM. Many different types of drain, such as low-pressure suction, highpressure suction, closed tube, corrugated drains and multiple numbers of drains have been used in an attempt to find the best technique to prevent seroma formation. However, studies have shown that the presence or absence of suction drains does not make any significant difference to seroma formation,[11,12] nor is any one type of drain superior to another in preventing seromas.[13,14).

Seroma can prolong hospital stay, increases risk of infection, delays wound healing, thereby delaying adjuvant treatment of carcinoma breast. The role of age, BMI, tumour size and, number of positive lymph nodes remains controversial (15,16,17,18). In our study none of these factors emerged as significant predictors of seroma in the total group

In our study mean duration of hospital stay is significantly reduced in quilting compared with conventional wound closure, (mean duration was 1.5 vs. 2.6 days). Our findings are in line with those reported by Ouldamer et al.(22) mean duration of stay was 5.4 nights in the nonquilted cohort and 4.2 nights in the quilted cohort ( $p < 0.001$ ). In our study mean duration of post op drain in quilting group was 10 and non quilting group 25. A study done by javid et al demonstrated that mean duration of drain was shorter in quilting group compare to non quilting group

## CONCLUSION

Quilting or tacking mastectomy flap to the underlying muscles and fascia to obliterate the surgical dead space is effectiveness in prevention and reduction of seroma formation. Quilting sutures after modified radical mastectomy tend to shorten suction drainage duration, minimal volume of drain, and reduces seroma formation, and the need for seroma aspiration punctures. We would therefore recommend quilting of mastectomy flaps to reduce the incidence of postoperative seromas

## REFERENCES

1. Jemal A, Siegel R, Ward E, Hao Y, Xu J, Murray T, et al. Cancer statistics, 2008. *CA Cancer J Clin* 2008;58(2):71-96. [http://dx.doi.org/10.3322/CA.2007.0010]
2. Woodworth PA, McBoyle MF, Helmer SD, Beamer RL. Seroma formation after breast cancer surgery: Incidence and predicting factors. *Am Surg* 2000;66(5):444-450
3. Roses DF, Brooks AD, Harris MN, Shapiro RL, Mitnick J. Complications of level I and II axillary dissection in the treatment of carcinoma of the breast. *Ann Surg* 1999;230(2):194-201.
4. Abe M, Iwase T, Takeuchi T, Murai H, Miura S. A randomized controlled trial on the prevention of seroma after partial or total mastectomy and axillary lymph node dissection. *Breast Cancer* 1998;30;5(1):67-69.
5. Say CC, Donegan W. A biostatistical evaluation of complications from mastectomy.

6. Surg Gynecol Obstet 1974;138(3):370-376.
7. van Bommel AJ, van de Velde CJ, Schmitz RF, Liefers GJ. Prevention of seroma formation after axillary dissection in breast cancer: a systematic review. *Eur J Surg Oncol*. 2011;37(10):829-835.
8. Coveney EC, O'Dwyer PJ, Geraghty JG, O'Higgins NJ. Effect of closing dead space on seroma formation after mastectomy—a prospective randomized clinical trial. *Eur J Surg Oncol*. 1993;19(2): 143-146.
9. Ouldamer L, Caille A, Giraudeau B, Body G. Quilting suture of mastectomy dead space compared with conventional closure with drain. *Ann Surg Oncol*. 2015;22(13): 4233-4240.
10. Srivastava V, Basu S, Shukla VK. Seroma formation after breast cancer surgery: What we have learned in the last two decades. *J Breast Cancer* 2012;15(4):373-380. [http://dx.doi.org/10.4048/jbc.2012.15.4.373]
11. Sakkary MA. The value of mastectomy flap fixation in reducing fluid drainage and seroma formation in breast cancer patients. *World J Surg Oncol*. 2012;10:8.
12. Abe M, Iwase T, Takeuchi T, Murai H, Miura S. A randomized controlled trial on the prevention of seroma after partial or total mastectomy and axillary lymph node dissection. *Breast Cancer* 1998;30;5(1):67-69.
13. Kuroi K, Shimozuma K, Taguchi T, et al. Evidence-based risk factors for seroma formation in breast surgery. *Jpn J Clin Oncol* 2006;36(4):197-206. [http://dx.doi.org/10.1093/jjco/hyl019]
14. Bonnema J, van Geel AN, Ligtenstein DA, Schmitz PI, Wiggers T. A prospective randomized trial of high versus low vacuum drainage after axillary dissection for breast cancer. *Am J Surg* 1997;173(2):76-79. [http://dx.doi.org/10.1016/S0002-9610(96)00416-3]
15. Taylor JC, Rai S, Hoar F, Brown H, Vishwanath L. Breast cancer surgery without suction drainage: The impact of adopting a 'no drains' policy on symptomatic seroma formation rates. *Eur J Surg Oncol* 2013;39(4):334-338. [http://dx.doi.org/10.1016/j.ejso.2012.12.022]
16. Woodworth PA, et al. Seroma formation after breast cancer surgery: incidence and predicting factors. *Am Surg*. 2000;66(5): 444-50, discussion 450-1.
17. van Bommel AJ, et al. Prevention of seroma formation after axillary dissection in breast cancer: a systematic review. *Eur J Surg Oncol*. 2011;37(10):829-35.
18. Burak WE Jr, et al. Seroma formation following axillary dissection for breast cancer: risk factors and lack of influence of bovine thrombin. *J Surg Oncol*. 1997;64(1): 27
19. Agrawal A, Ayantunde AA, Cheung KL. Concepts of seroma formation and prevention in breast cancer surgery. *ANZ J Surg*. 2006;76(12):1088-95.