Quilting Sutures Reduces Seroma in Mastectomy

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Abstract

Occurrence of seroma after mastectomy for breast cancer is a frequent cause of morbidity. A prospective evaluation in 82 mastectomy procedures of quilting systematic sutures was performed. A significant reduction in drainage volume and punction was observed. Quilting sutures after mastectomy is a promising technique to reduce seroma and short- and long-term morbidity.

Background: Drainage duration and seroma formation occurring after mastectomy with or without axillary surgery lengthens hospitalization and delays adjuvant treatment. The aim of the study was to evaluate the effect of quilting in the prevention of seroma after mastectomy for breast cancer. **Patients and Methods:** Eighty-two breast cancer patients about to undergo mastectomy with or without axillary surgery lymphadenectomy were enrolled in the study. We conducted an observational comparison between 41 patients in whom quilting with closed suction drainage was used and 41 patients in whom drainage only was used. **Results:** The mean drained volume was significantly lower in the quilting group compared with the control group on days 1 and 2 (day 1: 107.1 mL vs. 156.5 mL; $P = .02$; day 2: 108.4 mL vs. 162.8 mL; $P = .01$). The mean drainage period was shorter in the quilting group (4.6 vs. 5.3 days; $P = .046$). There were fewer needle aspirations for seroma in the padding group (n = 14, 34.1% vs. n = 24, 58.5%; $P = .03$). **Conclusion:** The use of padding after mastectomy seems to reduce seroma formation, volume drained, and length of drainage time.

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Introduction

The recent development of neoadjuvant chemotherapy regimens, of targeted therapies, and of oncoplastic breast surgeries has contributed to a limited need for mastectomies. Still, some clinical presentations do require those more extensive resections. A study based on the Surveillance, Epidemiology, and End Results database reported that mastectomy represented one-third of initial surgical procedures for stage I to III breast cancer (BC) between 1998 and 2008.[1,2] A recent publication reported that mastectomy rates vary according to study period and country analyzed, with the European Society of Breast Cancer Specialists publishing figures as low as 10% for stage I to II BC,[3] or reaching up to 40%.[4]

Many aspects of the management of mastectomy are studied to optimize care provided to BC-afflicted patients. Many efforts are used to minimize short-term and long-term morbidity. Seroma formation after radical breast surgery is still a significant cause of short-term morbidity. A significant proportion of seromas can be considered clinically significant seromas (CSS) based on the need for fluid aspiration to treat the condition. CSS increases anxiety, nursing care requirements, and risks of surgical site infection (SSI), and lengthens hospital stay, delay of adjuvant therapy, and engagement of supplementary financial resources. The current body of knowledge does not offer many efficient solutions to effectively prevent seroma accumulation or to reduce its incidence. Mechanisms leading to seroma involve inflammatory reactions related to surgery, lymphatic vessels section, and the presence of dead space after removal of the mammary gland.[5-7] The composition of this liquid varies during the postoperative period, adding more confusion on its exact nature (lymph-like fluid or exudate) and the mechanism that cause and maintain it.[8,9] Previously reported techniques include local agents (glue, fibrin), drainage, various types of biological agents, types of cautery, and the use of quilting sutures to limit seroma incidence and severity.

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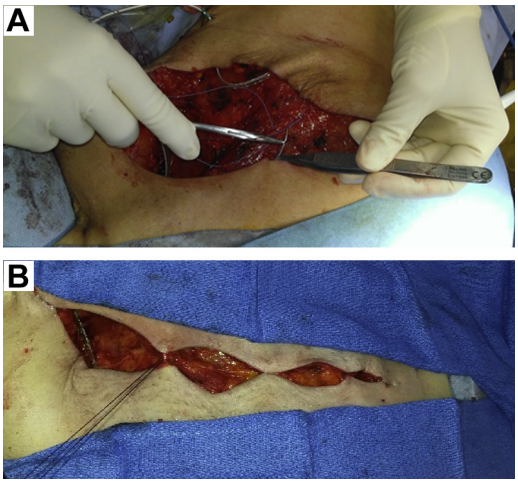
Figure 1 (A) Skin and Subcutaneous Tissue Are Sutured to the Pectoralis Major Muscle. (B) Surgical View of the Quilting Technique. Stitches Are Placed Separately to Approximate the Skin Flap on the Pectoral Muscle



Recent articles on breast reconstruction reported significant improvement using quilting in the latissimus dorsi donor site and deep inferior epigastric perforator (DIEP) flaps.[10,11] Further reports identified the advantage of the padding technique after axillary lymph node dissection (ALND).[12,13] Few reports have studied the benefit in mastectomy for BC.[14] This study aimed to define the benefits of quilting sutures in the context of mastectomy for BC.

Patients and Methods

This prospective monocentric observational nonrandomized study was conducted from January to July 2013 in the breast and plastic surgery division of a tertiary cancer institute (Gustave Roussy Cancer Campus, France). All patients who underwent mastectomy with or without axillary staging (sentinel lymph node dissection [SLND] or ALND) were prospectively recorded. All indications for mastectomy were primary BC or diffuse ductal carcinoma in situ (DCIS). Indications for SLND were extensive DCIS or invasive carcinoma (IC) of $\leq$ 30 mm on imaging or clinical examination. In cases of local relapse, of IC on an area $>$ 30 mm or in cases of positive SLND, ALND was performed. Cases of immediate breast reconstruction were excluded.

Surgical Technique

Patients were all treated using total mastectomy with removal of the nipple-areola complex. Surgeons used a standard electrocautery-based dissection technique. Thin skin flaps were preserved cranially and caudally. The pectoral fascia was left in place as long as negative margins could be obtained, but could be focally resected if required from an oncological standpoint. When required, axillary resection was performed through the mastectomy incision. ALND encompassed lymph nodes from levels I and II. When mastectomy was associated with ALND, 2 suction drains were placed in the axilla and anterior to the pectoralis muscle, respectively. A single drain was used in cases of total mastectomy alone or associated with sentinel lymph node biopsy.

The choice to perform quilting sutures or not was left to the surgeon's discretion. When quilting was performed, 5 to 6 interrupted stitches were placed along the wound. Skin and subcutaneous tissue was sutured to the pectoralis major muscle using a vicryl 2/0 (Figures 1 and 2). The skin incision was closed in a double layer fashion. Inverted 2/0 stitches on the subcutaneous and cutaneous tissues were used to approximate the wound margins. Transdermal running using monocryl 3/0 closed the skin in all patients.

Immediate Postoperative Management

Postoperative management was identical in both cohorts, regardless of the use of quilting sutures after mastectomy. Patients were hospitalized after the surgical procedure. Compressive dressing was applied over the axilla for the first 48 hours. The total drain output was recorded daily. Drains were removed when output

Figure 2 Mean Drainage Volume at Day 1 and Day 2 After Surgery in the Quilting (padding) and Nonquilting (no padding) Group