Value of Mechanical Closure of Dead Space after Mastectomy in Reducing Postoperative Drainage and Seroma Formation

Essay

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Hany Fouad Ahmed

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List of Abbreviations

BCS	Breast Conserving surgery.
BRCA	Breast Cancer susceptibility gene.
DCIS	Ductal Carcinoma In Situ.
DIEP	Deep Inferior Epigastric Perorator.
FNA	Fine Needle Aspiration.
FSH	Follicular Stimulating Hormone.
HER 2	Human Epidermal growth factor Receptor 2.
HRT	Hormone Replacement Therapy.
IMF	Infra mammary fold.
LAD	Lumpectomy with Axillary Dissection.
LCIS	Lobular Carcinoma In Situ.
LDM	Latissmus Dorsi Muscle
LDMF	Latissmus Dorsi Muscle Flap.
LH	Leutinizing Hormone.
LR	Local Recurrence.
MLH 1,2	MutL homolog 1,2 gene.
NAC	Nipple Areola Comlex.
OCS	Oral Contraceptives.
PTEN	Phosphatase and tensin homolog.

RCT	Randomized controlled trials.
SSM	Skin spairing mastectomy.
STK 11	Serine/Threonine Kinase 11 gene.
TDAP	Thoracodorsal Artery Perforator Flap.
TP53	Tumor protein p53.
TRAM	Transverse Rectus Abdominus Flap.

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Abstract

Seroma formation is the most frequent post opevative complication after mastectomy. Seroma is thought to be caused due to the empty space left under the skin after mastectomy operations.

Suture flap fixation is a surgical technique for mechanical prevention of seroma formation by securing skin flaps to urderlying tissues, thus closing the dead space and decreasing the incidence of seroma formation. The technique of suture flap fixation has been proved to be the most effective method for decreasing seroma formation after mastectomy, as well as proper timing of drain removal after mastectomy.

Key words :

• Seroma.
• Post mastectomy seroma.
• Mechanical closure of dead space after mastectomy.
• Suture flap fixation after mastectomy.

Introduction

The breast is made up of fatty tissue and glandular, milk-producing tissues. The ratio of fatty tissue to glandular tissue varies among individuals. The base of the breast overlies the pectoralis major muscle between the second and sixth ribs in the nonptotic state ***(Gabriel and Maxwell, 2015).***

The gland is anchored to the pectoralis major fascia by the suspensory ligaments first described by **Astley Cooper** in **1840**. They allow for the natural motion of the breast. These ligaments relax with age and time, eventually resulting in breast ptosis. The lower pole of the breast is fuller than the upper pole. The tail of Spence extends obliquely up into the medial wall of the axilla the breast overlies the pectoralis major muscle as well as the uppermost portion of the rectus abdominis muscle inferomedially ***(Gabriel and Maxwell, 2015).***

The nipple should lie above the inframammary crease and is usually level with the fourth rib and just lateral to the midclavicular line. The average nipple–to–sternal notch measurement in a youthful, well-developed breast is 21-22 cm; an equilateral triangle formed between the nipples and sternal notch measures an average of 21 cm per side ***(Gabriel and Maxwell, 2015).***

Many women regard their breasts as important to their sexual attractiveness, as a sign of femininity that is important to their sense of self. Due to this, when a woman considers her breasts deficient in some respect, she might choose to undergo a plastic surgery procedure to enhance them, either to have them augmented or to have them reduced, or to have them reconstructed if she suffered a deformative disease, such as breast cancers (***Cruz-Korchin and Korchin, 2004).***

According to the database of the Centers for Disease Control and Prevention (CDC), breast cancer is the most common cancer and the second most common cause of death after lung cancer among women of all races ***(Jemal et al., 2010)***, In 2010, nearly 1.5 million women were diagnosed with breast cancer. The development of diagnostic techniques and an increased awareness about breast cancer have made the early detection of breast cancer easier ***(Fine and Schierle, 2013).*** In Egypt it is the most common cancer among women, representing 18.9% of total

Cancer cases 35.1% in women and 2.2% in men ***(Salem et al., 2010).***

A mastectomy is surgery to remove one or both breasts, partially or completely. The surgery is most often done to treat breast cancer. Taking in consideration

conservative breast surgeries where only the tumor with safety margin only removed leaving other breast tissue ***(Robinson, 2015).***

Further, the use of breast conservation therapy for the treatment of early-stage breast cancer is becoming increasingly popular. In the 2007 report of the National Cancer Institute breast cancer database, the proportion of breast conservation therapy in breast cancer surgery has increased from 40% in 1991 to 60% in 2002 ***(Losken, 2013).***

Also in Egypt there is increase in performing breast conserving surgeries (6.2%) and skin sparing mastectomies (2.3%) ***(Salem et al., 2010).***

Many points should be considered during breast cancer surgeries as the size and location of the tumor. Number of tumors in the breast, Laterality, the whole size of the breast, the age of the patient, Family history, General health and timing of menopause ***(Hunt and Teshome, 2014).***

In terms of oncological safety, studies comparing breast conserving surgery with radical mastectomy for breast cancer shows a similar survival rate ***(Rainsbury and Paramanathan, 2007).***

The long-term survival of a breast cancer patient depends on the presence of distant metastases at the time of presentation. It is not affected by the type of local operation performed. Studies showed that there is no significant difference in the local recurrence rates between well matched patients undergoing subcutaneous mastectomy and those who have a simple mastectomy for invasive primary breast cancer ***(Iino et al., 1993).***

If breast reconstruction is planned, it can be done at the same time of the mastectomy (immediate reconstruction) or at a later time (delayed reconstruction). During breast reconstruction, the surgeon may use synthetic implants or autologous tissue flaps from another part of the body to create a breast ***(Robinson, 2015).***

Complications of mastectomy can be illusterated as Surgical site infection, lymphedema and seroma, most of the time this seroma absorbed by the body. However, this area may be aspirated, using a needle. Further bleeding or infection might occur on top lead to hematoma or abscess formation ***(Akinci et al., 2010).***

Other complications may include stiffness of the shoulder and possible numbness or altered sensation in the upper arm or armpit ***(Movva, 2014).*** Also, breast surgeries may interfer with breast-feeding and altered

sensation in the nipple-areola complex ***(Cruz-Korchin and Korchin, 2004).***

Seroma is a collection of serous fluid in the dead space of post-mastectomy skin flap or axilla following modified radical mastectomy (MRM) or breast conserving surgery (BCS) and is considered as the commonest early sequel ***(Kumar et al., 1995).***

Seroma formation prolongs recovery or length of hospital stay post mastectomy. The reported incidence of seroma formation varies widely in patients between 15% and 80% ***(Akinci et al., 2010).***

There are several factors implicated in seroma formation like the extent of lymph node clearance, number of positive nodes, the use of postoperative radiation and whether intra operative lymphatic channel ligation was done or not, but theories differs as regards seroma pathogenesis. The main pathophysiology of seroma is still poorly understood and remains controversial ***(Taguchi et al., 2006).***