Principles for Nursing Practice in the Management of Post-Surgical Seroma for Breast Cancer

Developed by the Cancer Nurses Society of Australia Breast Care Nurse Special Interest Group

Background

Breast cancer is the most common invasive cancer diagnosed in Australian females and the risk of being diagnosed before the age of 85 is 1 in 8 (Australian Institute of Health and Welfare and National Breast Cancer Centre (AIHW & NBCC, 2006). In Australia, the role of the Breast Care Nurse (BCN) is considered to be integral in the care and management of these patients (NHMRC, 1999 & 2000).

Surgery is associated as the primary treatment for early breast cancer and is considered to be a low-morbidity procedure. However, there can be complications arising from such surgery including the formation of seroma (Pogson, et al, 2003). Seroma formation is common and the incidence has been reported as high as 80% (Vitug & Newman, 2007).

Risk factors and possible prevention of seromas have been researched, but little evidence has been reported to strongly support these (Kuroi, et al, 2006, Vitug & Newman, 2007). Percutaneous aspiration remains the most effective management of seroma (Gardner, et al, 2005) and is often performed by the Breast Care Nurse (BCN).

Definition of the BCN role

In Australia there is significant role diversity and lack of clarity in defining scope and levels of practice of the BCN. In practice however, the terms breast care nurse (BCN) and specialist breast nurse (SBN) are considered to be interchangeable and as such these principles for practice are aimed to assist *all* nurses who are involved in the care of women diagnosed with breast cancer. For consistency, the term used in this document that relates to *all* nurses who care for patients with breast cancer, will be BCN.

The National Breast and Ovarian Cancer Centre (NBOCC - formerly known as the National Breast Cancer Centre/NBCC) has described the role of a specialist breast nurse as a nurse working at an advanced level of competence and has recommended that the following definition be adopted in Australia:

“a registered nurse who applies advanced knowledge of the health needs, preferences and circumstances of women with breast cancer to optimise the individual’s health and well-being at various phases across the continuum of care, including diagnosis, treatment, rehabilitation, follow-up and palliative care” (NBCC, 2005).

The scope of practice for a breast nurse therefore includes implementation of procedures including percutaneous aspiration of seromas. This requires that the BCN has demonstrated competence in the performance of such procedures.

Purpose of this document

Scientific evidence for specific nursing management for percutaneous aspiration of seroma is lacking and therefore these recommended principles for specialist nurse practice will provide guidance to the nurse to facilitate safe and effective performance of this procedure. The Cancer Nurses Society of Australia (CNSA) Breast Special Interest Group expects and recommends that local protocols for the procedure be developed and implemented according to local/surgeon practice and direction.

Objectives

BCN related:

- To enhance understanding of the anatomy and physiology of the normal breast and to provide the nurse with educational information (refer to Appendix 1) as to the basis of the patient problem and procedure
- To promote assessment for, and safe and effective nursing management of seroma in breast cancer patients post breast surgery
- To provide a consensus-based approach for the development of local protocols for the BCN

Patient related:

- To facilitate patient involvement and informed consent regarding management of seroma
- To enhance patient physical and psychosocial well being

Definition of seroma

A seroma is defined as "a clinically identifiable collection of serous fluid within a surgical cavity" (Woodworth, 2000).

Types/location of seroma – in order of most common site

- Axilla
- Chest wall
- Latissimus Dorsi donor site (back)
- Breast

Patient signs and symptoms

- Swelling around surgical site
- Discomfort / pain
- Psychological distress / anxiety associated with the formation of seroma

Principles for nursing practice

The BCN will be able to:

- Accurately assess for a seroma
- Provide relevant information, reassurance and support to patient regarding cause/response to surgery, principles of treatment and management and follow up care
- Explain potential complications/risks to the patient
- Identify potential co-morbidities such as infection and refer to medical staff as necessary
- Identify appropriate seroma drainage site and perform procedure by percutaneous aspiration using safe and effective technique according to local protocol

Benefits and indications of seroma aspiration

- Enhancement of patient physical comfort and mobility post breast surgery
- Diagnosis of swelling in the breast/axilla

Risks and contraindications of seroma aspiration

The BCN should refer to the treating clinician for potential risks and contraindications for specific patients.

Risks associated with aspiration

- Infection (characterised by inflammation and erythema)
- Suspected pneumothorax on insertion of needle (characterised by respiratory distress and pain on breathing)
- Bleeding from traumatic insertion into a vessel

Contraindications to performing aspiration

- Tissue expander or implant is insitu
- Infection - if fluid aspirated contains frank blood or pus (normal serous fluid may be blood stained)
- Cellulitis characterised most commonly by local redness, swelling and pain
- If seroma is recurrent and not resolved by manual aspiration

Recommendations

- Local policy and procedure documents be developed and implemented (refer to Appendix 2 for an example only)
- The BCN to be trained, assessed and recognised as competent and supported to undertake this procedure by local surgeons/clinicians
- The BCN is able to demonstrate appropriate level of skills and competency necessary for seroma aspiration

References

Australian Institute of Health and Welfare & National Breast Cancer Centre, 2006. Breast cancer in Australia: an overview, 2006. Cancer Series no. 34. cat. no. CAN 29. Canberra.

Breastcancer.Org: Breast Anatomy (2008) Retrieved 24.7.08 from: http://www.breastcancer.org/pictures/breast_anatomy/

Dougherty, L. & Lister, S., *The Royal Marsden Hospital Manual of Clinical Nursing Procedures*, 6th Ed., 2004.

Daly, L., Rovelli, S. & Farmer, F. *Breast Cancer.* The College Of Nursing, 2003.

Dixon, M. *ABC of Breast Diseases*, 2nd Ed. 2000.

Gardner, A., Pass, H.A., & Prance, S.: *Techniques in the prevention and management of breast seroma: An evaluation of current practice.* The Women's Oncology Review, Sept. 2005, 5(3):135 – 143.

Hashemi, E., Kaviani, A., Najafi, M., et al.: *Seroma formation after surgery for breast cancer.* World Journal of Surgical Oncology, 2004, 2:44.

Kuroi, K., Shimozuma, K., Taguchi, T., et al.: *Evidence-Based Risk Factors for Seroma Formation in Breast Surgery.* Japanese Journal of Clinical Oncology, 2006, 36(4): 197 – 206.

National Health & Medical Research Council (NHMRC) 2001. *Clinical Practice Guidelines for the management of early breast cancer.*

National Health & Medical Research Council (NHMRC) 1999. *Psychosocial clinical practice guidelines: providing information, support and counselling for women with breast cancer*.

National Breast Cancer Centre (NBCC) 2005. *Specialist Breast Nurse Competency Standards and Associated Educational Requirements.*

Pogson, C. J., Adwani, A., & Ebbs, S. R.: *Seroma following breast cancer surgery.* European Journal of Surgical Oncology, 2003; 29: 711 – 717.

Royal College of Nursing, *Clinical standards for working in a breast specialty. RCN guidance for nursing staff,* 2007.

Romrell, L. J. & Bland, K. I. *Anatomy of the breast, axilla, chest wall and related metasatic sites.* In Bland, K.I. & Copeland, E.M. (eds.) The Breast: Comprehensive management of benign and malignant diseases. 2nd edn 1998.

Shamley, D. R., Barker, K., Simonite, V. & Beardshaw, A. *Delayed versus immediate exercises following surgery for breast cancer: a systematic review.* Breast Cancer Research and Treatment, 2005, 90; 263 – 271.

Soon, P. S. H., Clark, J., & Magarey, C. J. *Seroma formation after axillary lymphadenectomy with and without the use of drains.* The Breast 2005, 14:103 – 107.

Suami, H., Pan, W. R., Mann, G. B., & Taylor, G. I. *The Lymphatic Anatomy of the Breast and Its implication for Sentinel Lymph Node Biopsy: A Human Cadaver Study*. Annals of Surgical Oncology. 2007.

Vitug, A. F., & Newman, L.A. *Complications in Breast Surgery.* Surgical Clinics of North America 2007, 87: 431 – 451.

Woodworth, P., McBoyle, H., Helmer, S., & Beamer, L. *Seroma Formation after breast cancer surgery: Incidence and predicting factors.* The American Surgeon, May 2000, 66 (5): 444 – 451.

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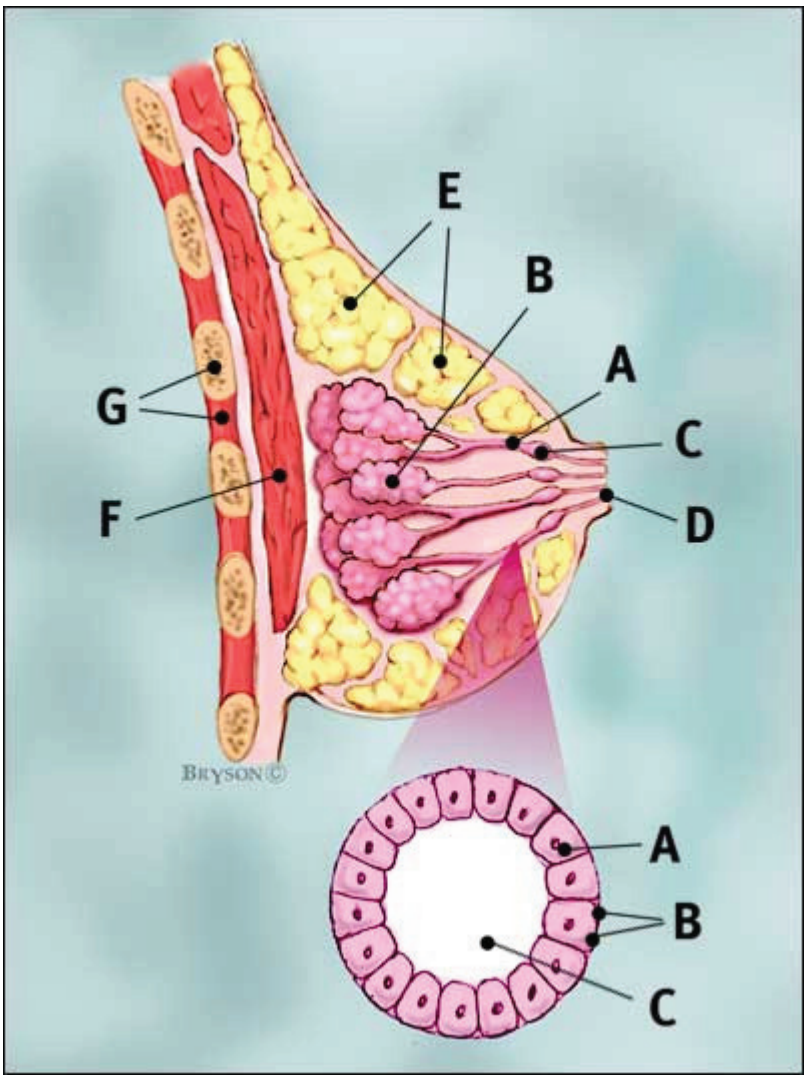
Disclaimer

Appendix 1

Diagram 1: Anatomy of the breast



A- Ducts

B- Lobule

C- Dilated section to hold milk

D- Nipple

E- Fat

F- Pectoralis major muscle

G- Chest wall/rib cage

Enlargement:

A- Normal duct cells

B- Basement membrane

C- Lumen

(BreastCancer.org, 2008)

The breast tissue is made up of a combination of ducts and lobules surrounded by fatty tissue (diagram 1). There are 15-20 lobes in the female breast and these are supported by Cooper's ligaments. The lobes are divided into 20-40 lobules that are further divided into acini functioning units made up of singular acinus lined with epithelial cells. The terminal duct lobular unit is the basic functioning unit of the breast (Daly, Rovelli & Farmer 2003). The epithelial cells in the acini structural units secrete milk and this then passes from the acini into the lobular collecting ducts. These ducts then lead to ejaculatory ducts in the nipple (Daly, Rovelli & Farmer 2003).

The breast tissue lies over the pectoralis major muscle, chest wall and ribcage. The breast sits on the anterior ribcage between the 2nd and 6th rib vertically and between the sternal edge and the mid-axillary line horizontally. The posterior surface of the breast sits deep on the pectoralis major muscle, serratus anterior and external oblique muscles. The axillary Tail of Spence extends into the anterior axillary fold at the top of the latissimus muscle (Daly, Rovelli & Farmer 2003).

Breast lymphatics

The lymphatics start as an avalvular lymph capillary network. In the skin they commence in the superficial dermis. They drain to pre-collectors that contain valves and have some smooth muscle cells in their wall (Suami, Pan, Mann & Taylor 2007). These then drain into subcutaneous lymph collecting vessels (lymph collectors) which have a smooth muscle layer and are the vessels commonly identified as lymphatics (Suami, et al, 2007).

Breast lymphatics are separate from those of the underlying torso with a sub-areolar plexus of lymphatics and a small number of large lymphatic vessels draining into the axillary nodes (Suami, et al, 2007).

The axillary nodes which lie below the axillary vein can be divided into 3 groups in relation to the pectoralis minor muscle (diagram 2).

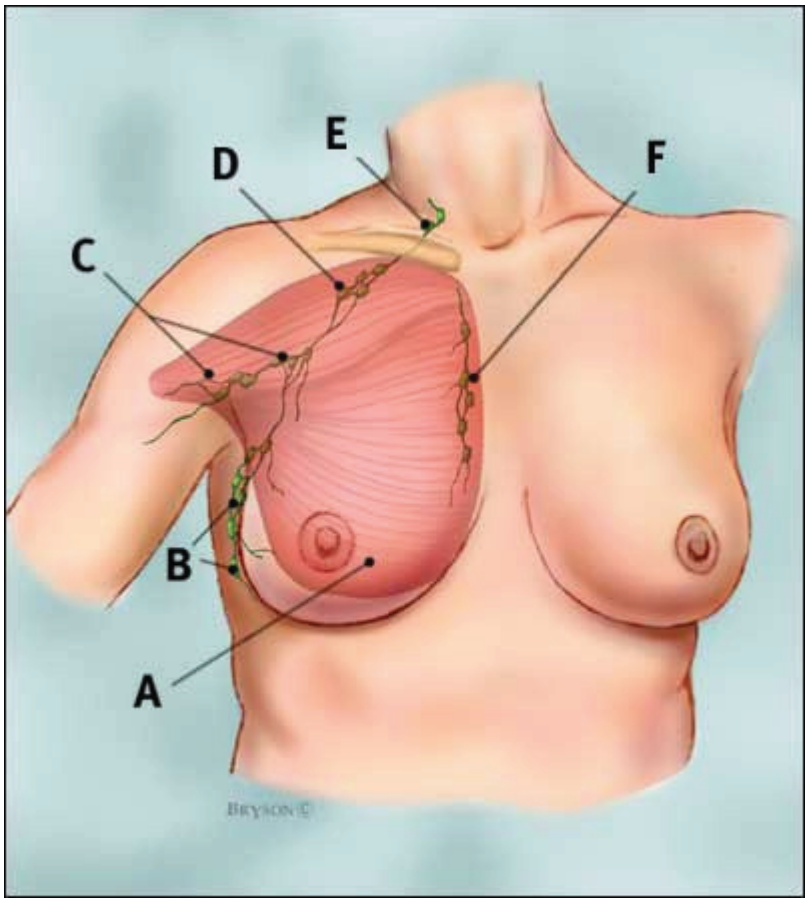
Level 1 - nodes lie lateral to the muscle

Level 2 - (central) nodes lie behind the muscle

Level 3 - (apical) nodes lie between the muscle's medial border, the first rib and the axillary vein (Dixon, 2000).

The number of lymph nodes varies with an average of approximately 20 nodes. Drainage from level 1 nodes passes into the central nodes and onto the apical nodes. An alternative route by which lymph fluid can get to level 3 without passing through nodes at level 1 is through the lymph nodes on the under surface of the pectoralis major muscle, the interpectoral nodes (Rotter nodes) (Dixon, 2000).

Diagram 2: Lymph node areas adjacent to breast area



A- Pectoralis major muscle

B- Axillary lymph nodes: level I

C- Axillary lymph nodes: level II

D- Axillary lymph nodes: level III

E- Supraclavicular lymph nodes

F- Internal mammary lymph nodes

(BreastCancer.org, 2008)

Appendix 2

Procedure guidelines: Seroma drainage (example only)

Equipment

- Sterile dressing pack containing indented plastic tray, low-linting gauze swabs, disposable gloves, sterile field and disposable bag
- Sterile syringes (30 and 50ml)
- Sterile needles (21G)
- Chlorhexidine in 70% alcohol solution (or equivalent)
- Sterile dressing (non-adherent, 5 - 7cm) or hypo-allergenic tape and gauze
- Sharps container
- Universal container

Procedure

Action	Rationale
Place the patient lying down on a couch in a position that facilitates access to the seroma.	To ensure the patient is comfortable and the seroma is visible and accessible.
Explain and discuss the procedure with the patient.	To ensure that the patient understands the procedure and gives valid consent and co-operation.
Open dressing pack on a clean trolley and lay out equipment, adhering to an aseptic technique.	To ensure no equipment is missing and to maintain asepsis.
Clean identified puncture site for drainage of seroma with chlorhexidine-soaked gauze and allow to dry.	To prevent infection and minimise 'stinging' when the needle is inserted.
Insert needle at a 45°angle towards seroma fluid.	To minimise discomfort and optimise the seroma drainage.
Gently draw back on the syringe. If the syringe becomes full, disconnect and discard in a yellow waste bag. Connect a new syringe and repeat.	To drain the fluid from the seroma and to ensure safe disposal of waste products.
When fluid ceases to flow, remove both the needle and the syringe together (do not disconnect them). Dispose both immediately in a sharps container.	To ensure the safe disposal of sharps and to minimise the risk of needle-stick injury.
Apply pressure with gauze over the puncture site for at least one minute, after removal of the needle.	To reduce the risk of leakage and to allow the puncture site to close.
If infection is suspected, expel 10–20ml of aspirated fluid gently into the universal container. Send to microbiology with the appropriate form.	To identify infection present and to enable appropriate intervention.
Apply a non-adherent dressing or non-allergenic tape and gauze over the puncture site. Instruct the patient to remove this 24 hours from the time of drainage.	To protect the patient's clothing and the puncture site, and to reduce the risk of infection.
Ensure the patient understands what to do in the event of re-accumulation of the seroma.	To maximise patient education and to ensure the safe discharge of the patient.
Complete the appropriate paperwork.	To ensure accurate record keeping and to promote continuity of patient care.

Ref: Dougherty, L. & Lister, S., The Royal Marsden Hospital Manual of Clinical Nursing Procedures, 6th Ed., 2004.

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