Lymphedema in Breast Cancer: Dilemmas and Challenges

Marybeth Singer, MS, APN-BC, AOCN®, ACHPN

Case Study

D.S. is a 40-year-old woman who completed all treatment for stage III breast cancer six months ago. At the time of diagnosis, a 3 cm mass was found in the upper outer quadrant of her left breast, and she had four positive lymph nodes at the time of definitive surgical treatment. She was treated with partial mastectomy and axillary node dissection followed by adjuvant chemotherapy. She did not need a ventricular assist device. Radiation therapy directed to her whole breast and axilla followed completion of chemotherapy. D.S. is married and works part-time as a computer programmer. Her children are ages 4 and 8. Now she presents for an acute care appointment after noting pain in her upper arm for several days followed one week later by swelling in her left hand. Prior to the onset of symptoms, D.S. had been very active with her daughter’s birthday party held outdoors in August during hot, humid weather.

Nursing Assessment

During the clinic visit, the nurse practitioner examines D.S.’s left arm visually and by palpation. The nurse notes that no evidence of erythema or of trauma to the skin or nails is present. Pitting edema is present in the left hand and soft fullness in the forearm and upper arm. Examination of the left breast reveals mild breast edema without significant erythema, and hyperpigmentation and tanning is observed after radiation. D.S. also is noted to have fullness in the left axilla without discrete adenopathy. Examination of her right breast and vital signs reveal normal findings. D.S. reports that her left arm feels heavy and aches when she does household tasks. Today’s visit focuses on assessing D.S. for lymphedema risk factors (i.e., any trauma, injury, or infection), evaluating for deep vein thrombosis or disease recurrence, preventing further compromise, and beginning effective treatment.

The nurse practitioner refers D.S. to the physical therapy department, where her left arm is measured with a tape measure at several points to assess size differences in comparison with her right arm (see Figure 1). A perometer also is used to measure D.S.’s arm volume. A perometer is an infrared optoelectronic device that scans the length of both arms to provide an accurate outline of limbs and allows for calculated volume difference (Armer & Stewart, 2005; Poage, Singer, Armer, Poundall, & Shellabarger, 2008). It is a frequently used measurement tool in lymphedema management and is a quick, accurate, and hygienic option for measurement. At this visit, D.S.’s left arm volume is revealed to be 9% greater than the right arm.

Etiology of the Problem

Lymphedema of an extremity is a chronic condition that requires lifelong attention and management. It results from impairment or blockage of the flow of lymph fluid through lymphatic vessels or lymph nodes; most often it develops secondary to surgery or radiation used in cancer treatment. Injury to the lymphatics results in mechanical insufficiency that diminishes the normal ability of the lymphatic system to transport lymphatic fluid. This leads to an accumulation of lymph fluid in the tissues, resulting in edema. Lymphedema may be present anywhere the lymphatic system is present, including the lymph nodes, posterior mediastinum, inguinal, axillary, and parotid lymph nodes; however, the most common lymphedema presentation is in patients with breast cancer, where the arm or hand can be affected.

Figure 1. Circumferential Measurements of the Arm


Marybeth Singer, MS, APN-BC, AOCN®, ACHPN, is an oncology nurse practitioner in the Gillette Center for Breast Oncology at the Massachusetts General Hospital Cancer Center in Boston.

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lymphatic system to transport interstitial fluid and lymph back into the arteriovenous capillary system and into the systemic circulation (Lawenda, Mondry, & Johnstone, 2009). Lymphatic fluid is rich in protein and other large molecules. Stasis of lymphatic fluid in the affected limb causes swelling and places the skin at risk for injury and infection. Early-stage lymphedema (stage I), manifested by soft pitting edema without fibrosis, may be reversible with early detection and proper management. Lymphedema may progress to irreversible swelling and fibrosis (stage II) or to lymphostatic elephantiasis of the extremity (stage III) (Lawenda et al.).

Ridner (2005) observed that patients with lymphedema had a symptom cluster that included not just sensory change within the limb, but also loss of body confidence, decreased physical activity, fatigue, and increased distress. The patients reported that their body image, coping ability, and quality of life were significantly negatively impacted. Prevention and risk reduction are the best approaches to managing lymphedema associated with breast cancer because if lymphedema has occurred, it cannot be cured.

The natural history and actual incidence of lymphedema in women with breast cancer have not been elucidated fully. In the literature, the occurrence of lymphedema has ranged from 5%-60% (Armer & Stewart, 2005; Petrek & Heelan, 1998). The advent of sentinel lymph node biopsy has reduced the incidence of lymphedema but has not eliminated the problem. Sentinel lymph node biopsy is associated with incidence rates ranging from 2.6%-9.9% (Lawenda et al., 2009). Parbhoo (2006) reported that lymphedema is a particularly devastating complication of breast cancer treatment in young women. Because young women typically are very physically active, they may sustain more trauma to impaired lymphatics. In evaluating new-onset lymphedema, deep vein thrombosis and infection need to be considered as well (Poage et al., 2008). Risk factors for lymphedema are listed in Figure 2. Lymphedema can develop soon after treatment or years later.

Management and Outcomes

D.S. presented with new-onset lymphedema, which occurred in the setting of increased physical activity outdoors during hot, humid weather. By history and physical examination, she did not appear to have any skin trauma, cellulitis, or axillary adenopathy to explain the new-onset edema. A Doppler examination of her upper extremity and chest wall was ordered, which revealed no evidence of clots in internal jugular, brachiocephalic, subclavian, or axillary veins.

D.S. was referred to a physical therapist certified in lymphedema management who began a program of complete decongestive therapy (CDT). CDT has two phases: intensive treatment and maintenance treatment. Intensive treatment consists of skin and nail care, short-stretch compression bandaging, use of compression garments, manual lymphatic drainage, gentle stretch exercises, and patient education in self-management (Poage et al., 2008). At the completion of the intensive phase of CDT, D.S.’s left arm volume had been reduced to 5% difference between both arms. She then entered the maintenance phase of treatment. Adherence to the rigor of nightly wrapping her arm with compression bandages was difficult for her, and D.S. eventually began using the arm compression garment during the day only. Unfortunately, three months after beginning therapy, her left arm again increased in size to 9% greater volume than the right arm and sometimes feels heavy and tight. She currently has mild edema in her left hand and minimal soft edema in the forearm.

D.S. shared with the oncology nurse her distress at the change in her body image and her self-consciousness about her arm edema, causing her to wear clothing that covers her arms. The lymphedema in her arm has become a constant reminder of cancer and its treatment. With her demands at home and at work, D.S. is finding it hard to make time for self-management of her lymphedema or to do fun things. The nurse is aware that the psychological consequences of lymphedema can be daunting; resultant body image changes, fatigue, and depression have a negative impact on quality of life (Grabsch et al., 2006). Listening carefully and engaging in coming up with a plan of action that the patient thinks is feasible are critical in building an effective management strategy. The oncology nurse provided D.S. with written information about how lymphedema develops, its signs and symptoms, and measures to prevent it from

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**Figure 2. Risk Factors for Lymphedema**

Note. Based on information from Lawenda et al., 2009; Poage et al., 2008.

**Figure 3. Lifetime Lymphedema**

Note. Based on information from Lymphedema Framework, 2006; National Lymphedema Network Medical Advisory Committee, 2008.
progressing. Discussion centered around modifiable risk factors, such as maintaining optimal weight, participating in low-resistance exercise, avoiding extremes of temperature, and encouraging D.S. to carve out time for her treatment. Figure 3 illustrates important patient teaching points for patients experiencing lymphedema.

**Conclusions**

Oncology nurses play an important role in educating women about the risks of lymphedema associated with breast cancer and its treatment as well as identifying patients at increased risk. Early identification and prevention of complications are paramount. Teaching patients how to reduce their risk of lymphedema, preventing complications should it occur, providing referrals to specialists in lymphedema management, reinforcing self-care measures, and offering emotional support to patients who experience lymphedema can assist in minimizing the effects of lymphedema on quality of life.

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**Author Contact:** Marybeth Singer, MS, APN-BC, AOCN®, ACHPN, can be reached at msinger@partners.org, with copy to editor at CJONEditor@ons.org.

**References**


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