Case-Control Study to Evaluate Predictors of Lymphedema After Breast Cancer Surgery

Karen K. Swenson, RN, PhD, AOCN®, Mary Jo Nissen, PhD, MPH, Joseph W. Leach, MD, and Janice Post-White, RN, PhD, FAAN

In 2008, more than 182,000 women were diagnosed with breast cancer, and 88% of those women will survive at least five years (Jemal et al., 2008). Lymphedema is a common problem for patients diagnosed with breast cancer, with an estimated 6%–35% developing it sometime after breast cancer treatment (Goffman, Laronga, Wilson, & Elkins, 2004; Hinrichs et al., 2004; Kwan et al., 2002; Lee, Kilbreath, Refshauge, Herbert, & Beith, 2007; Paskett, Naughton, McCoy, Case, & Abbott, 2007; Schrenk, Rieger, Shamiyeh, & Wayand, 2000; Thomas-MacLean et al., 2008).

The reported prevalence of lymphedema varies with the length of follow-up, measurement techniques, and other patient- and treatment-related factors (Armer & Stewart, 2005; Brown, 2004; Hayes, Cornish, & Newman, 2005). Lymphedema can range from mild to severe and can be a chronic condition that affects patients’ quality of life for years after cancer surgery (Carter, 1997; Maunsell, Brisson, & Deschênes, 1993; Passik & McDonald, 1998; Thomas-MacLean, Miedema, & Tatemichi, 2005; Tobin, Lacey, Meyer, & Mortimer, 1993; Velanovich & Szymanski, 1999). Patients are concerned about how to prevent lymphedema because it is a common side effect associated with breast cancer treatment (Muscari, 2004).

Axillary lymph node dissection (ALND) for breast cancer causes disruption in the lymphatic vessels in the axilla. Radiation therapy to the axillary bed can cause further edema and fibrosis. The treatments may lead to accumulation of protein-rich fluid in the soft tissues of the hand, arm, breast tissue, and chest wall on the affected side. Oncotic pressure increases, causing progression of lymphedema (Petrek, Pressman, & Smith, 2000).

Sentinel lymph node biopsy (SLNB), a less invasive procedure than ALND, has been associated with lower rates of lymphedema and other arm symptoms (Baron et al., 2002; Burak et al., 2002; Golshan, Martin, & Dowlathahi, 2003; Lucci et al., 2007; Mansel et al., 2006;