A Pilot Randomized Trial Evaluating Low-Level Laser Therapy as an Alternative Treatment to Manual Lymphatic Drainage for Breast Cancer-Related Lymphedema

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Decreases in breast cancer mortality rates, combined with the relatively high five-year survival rates for local and regional tumors, suggest that the estimated 2.6 million breast cancer survivors living in the United States (American Cancer Society, 2011; Herdman et al., 2005; Siegel, Naishadham, & Jemal, 2013) represent a significant and growing population. Lymphedema swelling in the affected arm is a serious problem for many breast cancer survivors, with documented rates of 6%–40% (Armer, Fu, Wainstock, Zagar, & Jacobs, 2004; Ball, Waters, Fish, & Thomas, 1992; Ivens et al., 1992; Kissin, Querci Della Rovere, Easton, & Westburry, 1986; Petrek & Heelan, 1998; Wilke et al., 2006). This range includes the 7%–22% of women with lymphedema following sentinel node biopsies (Armer et al., 2004; Wilke et al., 2006). Lymphedema can occur during treatment or many years later (Coward, 1999; Ramos, O’Donnell, & Knight, 1999; Stanton, Levick, & Mortimer, 1997). Lymphedema is a progressive disease. Initially, the limb will swell and pit with pressure (stage I). Over time, the limb may become firmer, not pit with pressure, and skin changes may be noted (stage II). In its most severe form (stage III), impaired lymph flow causes very thick skin and large skin folds, and invasive treatments may be needed to reduce bulk (Pain & Purushotham, 2000). Many problematic symptoms such as fatigue and altered sensations in the limb can occur with lymphedema (Ridner, 2005), and some breast cancer survivors with lymphedema experience poor quality of life (QOL) (Park, Jang, & Seo, 2012; Ridner, 2005). To improve health outcomes, access to effective therapeutic modalities is necessary.

**Literature Review**

Manual lymphatic drainage (MLD) with compression is the primary therapeutic component of complete decongestive therapy, the standard for volume-reduction treatment for breast cancer-related lymphedema. Reduction treatment for breast cancer-related lymphedema, complete decongestive therapy, the standard for volume-reduction treatment for breast cancer-related lymphedema.