

The Effect of Post-Surgical Exercise and Therapy on Breast Cancer Related Lymphedema Risk

I am very grateful to Carol Doeringer, lymphedema patient and advocate, who submitted this interesting and very insightful contribution on the risk factors contributing to breast cancer related lymphedema. The material is excerpted from a self-study course Carol has developed with the support of friends and experts in the lymphedema and nursing communities. The course is called Breast Cancer-Related Lymphedema: The Nurse's Role in Care and Prevention, the program will soon be available at no charge to any interested nurse. Those interested can learn more by visiting the [Lymphedema Speaks](#) website

The effect of post-surgical exercise and therapy on breast cancer related lymphedema (BCRL) risk

Immediate post-surgical range-of-motion exercises are shown to increase BCRL risk

Surgeons commonly prescribe shoulder and arm exercises to restore upper limb and shoulder function after mastectomy, radiation therapy, and/or axillary node dissection. Many studies demonstrate the effectiveness of immediate exercise intervention (1) to avoid painful conditions such as the common adhesive capsulitis of the shoulder ('frozen shoulder') after mastectomy.

However, immediate shoulder mobilization has also been shown to increase the incidence of BCRL among women with early breast cancer whose surgery included axillary node dissection. Todd et al (2008) conducted a two-group (delayed vs. early full range shoulder mobilization), single-blind, randomized controlled trial with 116 women. Both groups engaged in immediate post-operative exercise, with one group using a full range of motion, and the other group restricting arm movements to below 90° in all planes of movement for the first week, followed by introduction of full range-of-motion in the second week. Each group continued the prescribed exercise program until full shoulder motion was restored and then once a day for the first post-operative year.

These researchers found that women in the early full-shoulder mobilization group had 2.7 times the incidence of lymphedema, and that limb volume differences (affected compared to unaffected arm) were significantly higher compared to the delayed-exercise group. There were no statistically significant differences in shoulder movement, grip strength, or self-evaluated outcomes between the groups at one year post-surgery (2). Earlier, Shamley et al (2005) found in a systematic review of random controlled trials of early vs. delayed arm exercises that delaying exercises significantly decreases seroma formation (3) (which you will recall from the discussion above, Fu et al have found to be an important risk factor for BCRL).

Post-surgical physical therapy shown to reduce BCRL risk

Torres et al (2010) tested early postsurgical intervention using physical therapy that included [manual lymph drainage](#), massage of scar tissue, and shoulder exercises, beginning the therapy not earlier than three to five days after hospital discharge, and continuing three times per week for three weeks. At one year post surgery, 7% of women in the intervention group had developed lymphedema, compared to 25% of women in the control (education only) group (4).

The Torres study report is not clear on whether any participants began the therapy within the seven-day post-surgical period Todd et al found to be risky for future BCRL development, stating that study subjects were assigned three to five days after discharge to either an education-only group or an education-plus-intervention therapy group. It seems likely that exercise was delayed at least five days.

Key Points

- Early post-surgical arm and/or shoulder exercises seem to increase the likelihood breast cancer patients will develop BCRL and/or seromas, which are associated with increased BCRL risk.
- Delaying shoulder-mobilization exercises by seven days seems to reduce the incidence of BCRL without adding risk of deficit in shoulder movement and related outcomes.

1. [McNeely ML, Campbell K, Ospina M, Rowe BH, et al. \(2010\) Exercise interventions for upper-limb dysfunction due to breast cancer treatment, *Cochrane Database of Systematic Reviews*, Published online Jun 16, 2010; <http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005211.pub2/abstract>.](http://onlinelibrary.wiley.com/doi/10.1002/14651858.CD005211.pub2/abstract)

2. [Todd J, Scally A, et al. \(2008\) A randomized controlled trial of two programmes of shoulder exercise following axillary node dissection for invasive breast cancer, *Physiotherapy*, 94: 265-273.](#)

3. [Shamley DR, Barker K, Simonite V, Beardshaw A. \(2005\) Delayed versus immediate exercises following surgery for breast cancer: a systematic review, *Breast Cancer Research and Treatment*, 90\(3\): 263-71.](#)

4. Torres Lacompa, M, Yuse Sanches, MJ, et al.(2010) Effectiveness of early physiotherapy to prevent lymphedema after surgery for breast cancer: randomized, single blinded, clinical trial, *BMJ*, 340:b5397.