

UPPER EXTREMITY AND CHEST WALL EDEMA MEASURES FOLLOWING BREAST CANCER SURGERY

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BACKGROUND AND PURPOSE: Following breast cancer surgery in which lymphatics are disrupted, patients are at increased risk for developing lymphedema, which negatively impacts function and quality of life. The current standard for measuring lymphedema, girth measurement, cannot capture trunk swelling and is not sensitive enough to detect subclinical lymphedema (Stage 0), when it is still reversible. The LymphScanner, a new device that measures local tissue water content, is more portable than its precursor, the MoistureMeterD. Our hypotheses were twofold: [1] average LymphScanner and Moisture Meter D data will correlate positively with each other and inversely with girth measurements in the upper extremity, and [2] that trunk measurements taken with the LymphScanner will be significantly higher in the affected vs. unaffected side.

SUBJECTS: 16 females with history of breast cancer surgery.

METHODS AND MATERIALS: Measurements were obtained starting at the ulnar styloid of each wrist and progressing proximally up the arm in 8cm increments using the LymphScanner, MoistureMeterD, and Gullick tape measure. Additional measurements were taken at the lateral chest wall with the LymphScanner. The affected side was defined as the surgical side.

ANALYSES: Pearson's correlational statistics compared upper extremity measurements between the LymphScanner, MoistureMeterD and Gullick tape measure. A pooled T-test compared lateral chest wall measurements for the affected vs. unaffected side taken with the LymphScanner. **RESULTS:** Preliminary analysis shows a positive correlation between the Lymph Scanner and MoistureMeterD, and an inverse correlation between girth measurement and tissue water content. LymphScanner measurements at the lateral chest wall were significantly higher on the affected side.

CONCLUSIONS: The LymphScanner is a valid measure of tissue water content in comparison to the MoistureMeter D and can potentially quantify trunk swelling.

IMPLICATIONS: This device is portable, user-friendly, and potentially sensitive enough to detect lymphedema when it is still reversible and quantify trunk swelling, which the current clinical standard of girth measurements is unable to do.