RELIABILITY OF LOCALIZED EDEMA MEASUREMENT FOLLOWING BREAST CANCER SURGERY

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BACKGROUND AND PURPOSE: Current clinical standards for measuring the extent of lymphedema rely on visual, textural, and girth changes, which only manifest in post-latent lymphedema. Tissue dielectric constant (TDC) is a measurement of local tissue water and may aid in the detection of incipient or latent lymphedema in breast cancer patients. The MoistureMeter D ® handheld unit is a noninvasive probe that measures TDC. This study aims to determine the interrater reliability of the MoistureMeter D ® TDC unit in novice testers for assessing local tissue water content on the trunk and arm of patients following breast cancer surgery.

SUBJECT(S): 16 female subjects between the ages of 18 and 65 years old who had breast cancer surgery with the removal > 1 lymph node.

METHODS AND MATERIALS: Subjects were recruited via volunteer sampling and were subjected to exclusion criteria (heart, kidney, or liver failure, chronic venous insufficiency). Included subjects filled out the Lymphedema Breast Cancer Questionnaire. TDC measurements were taken on all subjects, bilaterally on the trunk and arms by 3 testers. The order of the 3 testers was randomly assigned. The first tester marked pre-designated sites on the arms and trunk and then used the TDC device, followed by the 2nd and 3rd tester.

ANALYSES: ICC (Model 2,1) was calculated to determine the inter-rater reliability. Statistical significance in TDC ratios (upper arm) between lymphedema and non-lymphedema women was tested using a two sample t-test.

RESULTS: 12/17 locations tested had an interrater reliability >.80. TDC ratio of the upper arm was statistically higher in the group with lymphedema compared to non-lymphedema.

CONCLUSIONS: TDC as a measurement of local tissue water content in certain locations is clinically reliable for patients following breast cancer surgery.

IMPLICATIONS: The device can be used by novice clinicians to reliably measure localized edema on the arm and trunk in women following breast cancer treatment.