

Abstract # 2652

TRUNK LYMPHEDEMA FOLLOWING BREAST CANCER SURGERY: AN ANATOMIC AND FUNCTIONAL STUDY

*Elizabeth A. Moroni, MD, MHA, Jordan E. Fishman, MD, MPH, Carolyn De La Cruz, MD
The Department of Plastic Surgery, University of Pittsburgh, Pittsburgh, Pennsylvania*

Background: Despite anecdotal discussion, there is neither an anatomic nor a functional description of trunk and/or breast lymphedema following breast cancer surgery. In other areas of the body, such as the upper and lower extremities, ICG-lymphangiography has proven valuable in characterizing the lymph channel dysfunction (anatomic) and dermal back flow (functional) changes seen in early and late-stage lymphedema. We propose to use ICG-lymphangiography to evaluate if trunk and breast lymphedema occur following breast cancer surgery, and if so, to characterize the regions affected.

Methods: All patients undergoing second stage or revision surgery following breast reconstruction with clinical suspicion of or patient concern for upper extremity lymphedema between 12/2014 and 3/2020 were offered ICG-based lymphangiography screening of upper extremities, chest, or breast. The majority of patients selected upper extremity screening alone; 29 elected chest and breast lymphangiography. For chest and breast lymphangiography, 25 mg of indocyanine green (Akorn, Inc., Illinois) was diluted in 10cc of sterile water. Four intradermal injections (0.1 cc) of the ICG solution, each 3-4 cm apart, were placed at the distal most extent of the axillary drainage territory of each hemi-trunk. 60 minutes following injection the breast, lateral trunk, and anterior trunk were visualized with the PDE Neo II (Hamamatsu, Japan) using the fluorescence mode and the fluorescence mapping mode. The superior breast, inferior breast, lateral trunk, anterior trunk, and IMF of each patient were evaluated using the previously described Koshima patterns of dermal backflow by a blinded reviewer.

Results: 52 sides (29 patients) were included in the study. 8 sides underwent neither surgery nor radiation and were considered controls. No lymphedema in any site was identified within this cohort. 1 patient (2 sides) had no transit of ICG from the injection site due to dermal backflow. A total of 35 sides (76%) of the non-control population had some form of dermal backflow abnormality. Of the 42 non-control/functional transit sides, ICG-lymphedema/dermal backflow was seen in 67% of anterior trunks, 50% of lateral trunks, 50% of IMFs, 43% of inferior breasts, and 5% of superior breasts. Severe dermal backflow (diffuse pattern) was seen most commonly in the anterior trunk (37%), lateral trunk (24%), and inferior breast (22%).

Conclusions: We report clear evidence that following breast cancer surgery, lymphedema occurs throughout the trunk and breast. Furthermore, severe dysfunction appears to be located around the inferior-lateral aspect of the breast and chest wall – this may help explain patient reports of breast/chest wall heaviness and dysesthesia.