

Forearm Lymphatic Drainage to the Deltopectoral Lymph Nodes is Correlated with a Long-Bundle Lateral Upper Arm Pathway

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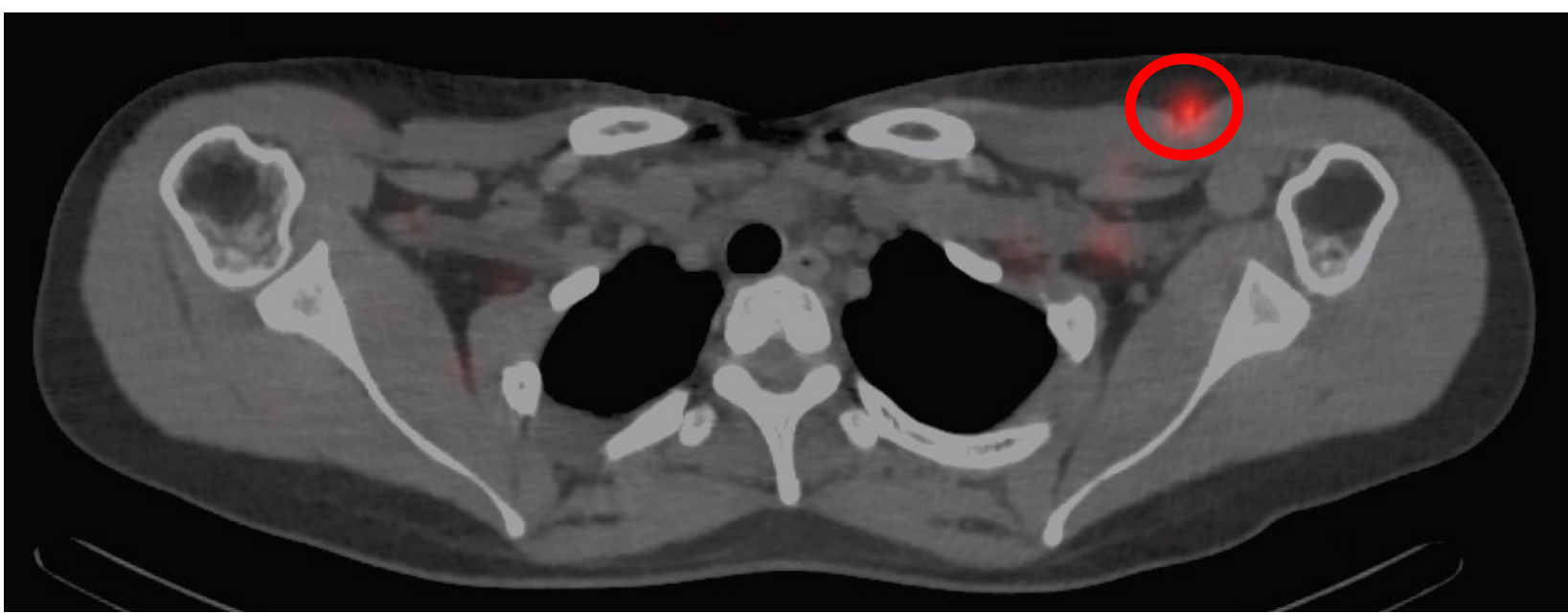
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Background

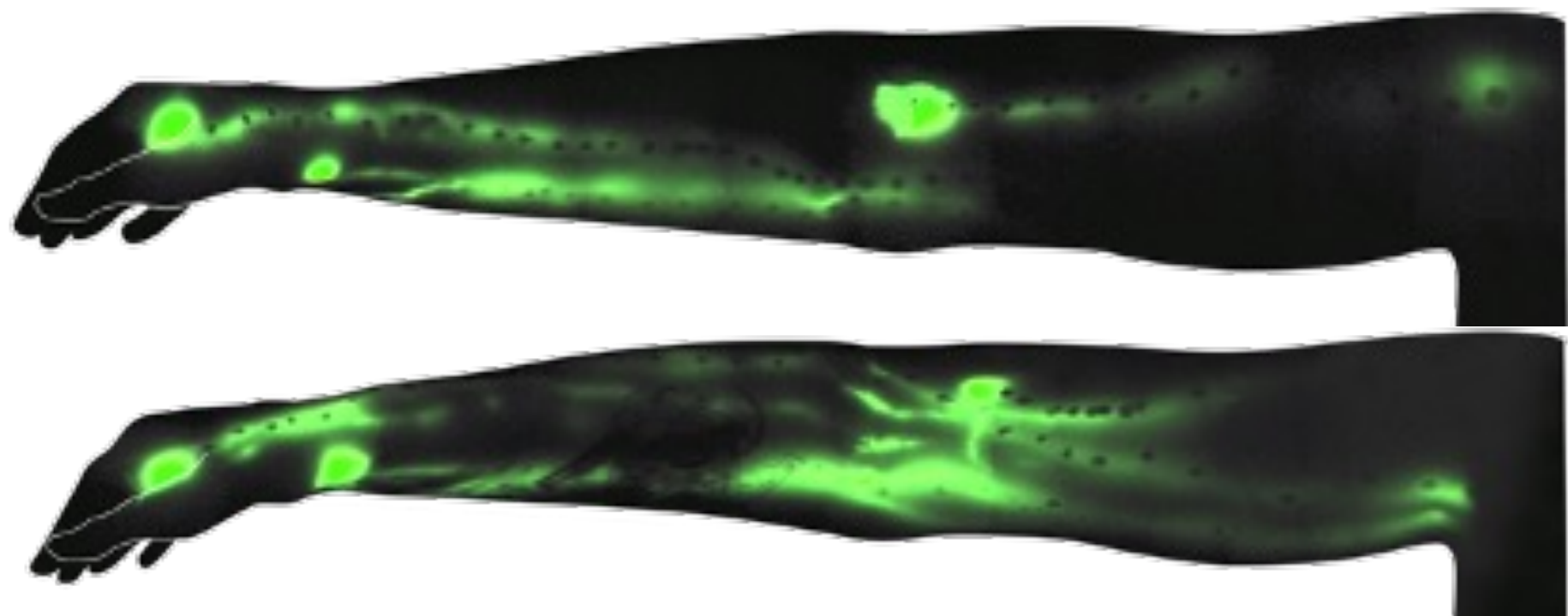
- Variations of upper extremity lymphatic anatomy may explain an individual’s predisposition for developing breast cancer-related lymphedema (BCRL) after axillary lymph node dissection (ALND)
- The lateral upper arm pathway is hypothesized to be a protective drainage route avoiding the axilla
- Drainage to deltopectoral lymph nodes suggests a path of lymphatic drainage that may avoid the axillary regions commonly subject to ALND
- We correlated deltopectoral lymph node drainage with ICG pattern of the lateral upper arm pathway

Methods

- Thirty-two (32) healthy female volunteers underwent bilateral SPECT/CT lymphoscintigraphy of the upper extremities with hand and wrist injections
- Volunteers were included if they demonstrated deltopectoral lymph node drainage (tracer uptake)
- We then analyzed the lateral upper arm pathway channel on ICG lymphography in these volunteers
- ICG patterns were recorded as short-bundle (present in upper arm only), long-bundle (present in forearm and upper arm), or absent

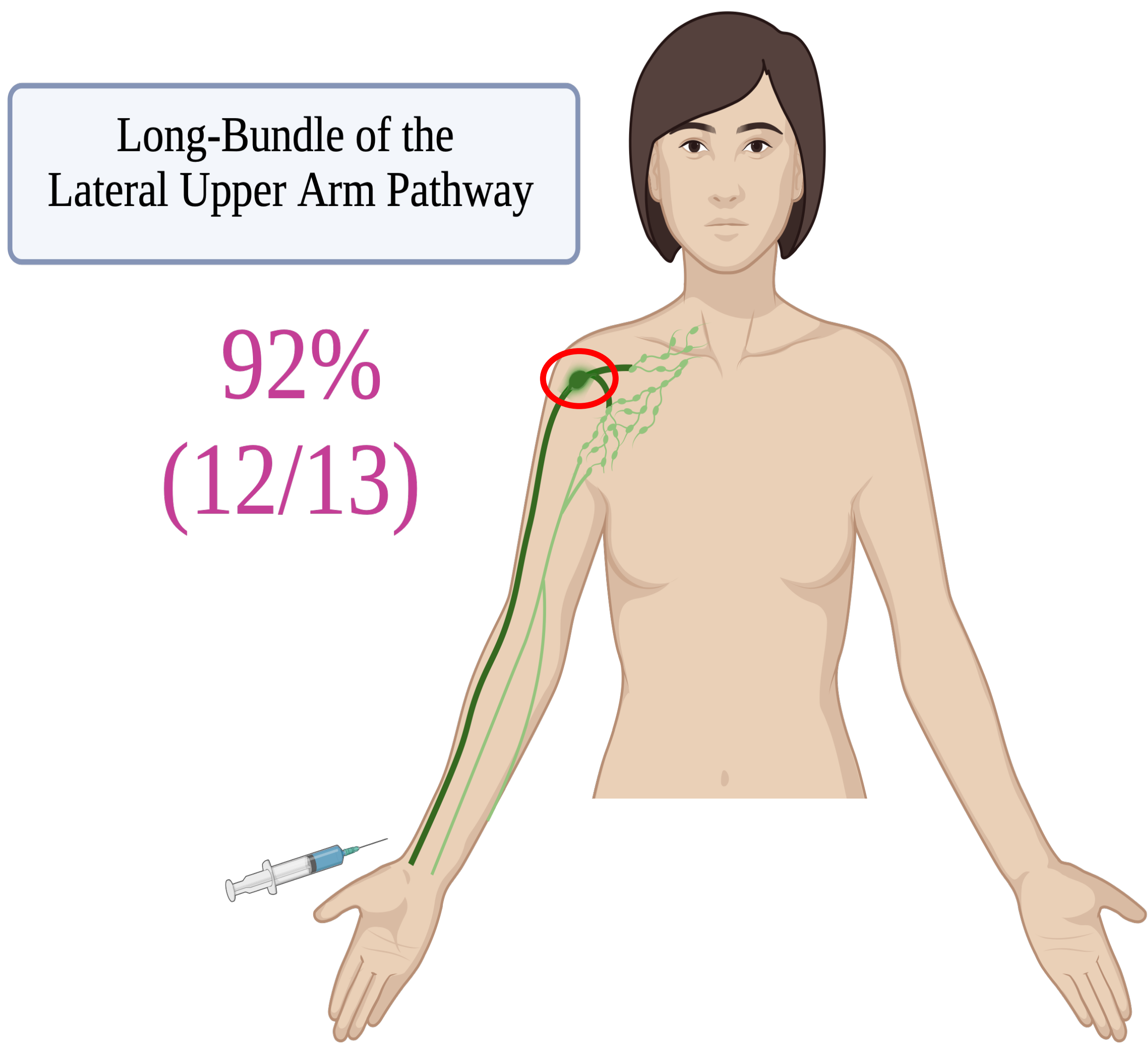


Deltopectoral lymph node drainage (circled) visualized with SPECT/CT lymphoscintigraphy



Short-bundle (top row) and long-bundle (bottom row) of the lateral upper arm pathway visualized with ICG lymphography

Results



- Functional drainage to the deltopectoral lymph nodes was seen in 20% (13/64) of arms
- Of these 13 arms, 12 (92%) demonstrated a long-bundle of the lateral upper pathway in comparison to 73% (47/64) of the cohort

Discussion and Conclusion

- A long-bundle lateral upper arm pathway enables protective drainage from the hand and forearm to the deltopectoral lymph nodes
- Future investigation of lymphatic anatomy and drainage may help predict BCRL risk after ALND