Assessment of Head and Neck Lymphedema with Ultrasonography - Work in Progress

Jie Deng, PhD, RN, OCN, FAAN
Assistant Professor
Vanderbilt University School of Nursing

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Outline

• Background
• Methods
• Preliminary Results
Head and Neck Cancer Statistics

• **63,030** new cases in the U.S.A. in 2017

• Epidemic of **HPV-associated** head and neck cancer

• Over **half a million** survivors in the U.S.A.

• The **sixth** most common cancer worldwide
Lymphedema in Patients with Head and Neck Cancer

- Extensive lymphatic structures in the head and neck

- At high risk for lymphedema
  - Tumor
  - Surgery
  - Radiation

patient permission obtained
Symptom Burden

• Physical:
  – Swallowing difficulty
  – Breathing difficulty
  – Voice-related issue

• Psychological:
  – Altered appearance
  – Anxiety
Measurement Issues: Lessons Learned

• No “Gold Standard” available
• Multiple methods explored
• Limitations to all measurement tools

Methods

• Ultrasound Measure:
  – using an EPIC scanner (Phillips Healthcare Bothell, WA) and a standoff gel pad
  – 5 anatomical sites on each side of the face and neck
Ultrasound Measure
- Anatomical Sites and Measurement Distances

Methods: Ultrasound Measure

• The sites: maxillary prominence, mid-mandible, superior and middle sternocleidomastoid muscles (SCM), and submental regions

• Measurement variables for each site: distance and stiffness of soft tissues
Results: Thickness changes

- Based on 5 sites: skin-to-bone, skin-to-muscle thickness
- Trend showing increased thickness relative to severity of lymphedema
Results: Stiffness

• Allows quantification of soft tissue stiffness

• Preliminary data:
  – Increased stiffness comparing radiated sites and controls
Questions

- Please contact Dr. Jie Deng for any questions
  - email: jie.deng@vanderbilt.edu
  - phone: 1-615-875-7713