Utility of Local Tissue Water Measurements to Assess Breast Cancer Treatment-Related Lymphedema

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**RESULTS (cont)**

- **Main Method Used in this Study**
  Tissue Water via Dielectric Constant

- **Complications**
  - Fluid & Protein
  - Excess - Lymphatics
  - Vasodilation - Increased filtration - Tissue warming
  - Microphages
  - Fibrosis
  - Bacterial/Fungal Infections

- **Postmastectomy Lymphedema**
  - Develops secondary to surgery and/or radiation therapy
  - Occurs in 20-40% of persons treated for breast cancer
  - Onset can be from months to years after surgery
  - If untreated, gets progressively worse

- **Tissue Property Changes**
  - Tonometer
  - TissuPress®
  - Penetration Indentation Recovery
  - Local Tissue Water

- **Available Assessment Methods**
  - Limb Volume or Girth Assessments
  - Mainly for Tracking and Documenting

- **MAIN METHOD**
  - Tissue Water via Dielectric Constant
  - Low power 300 MHz
  - Reflected wave depends on total tissue water (free + bound)
  - Calibrated for each probe from 1 - 80

- **Depth Variation**
  - Dielectric constant of about 80

- **Objective**
  - Detect and document lymphedema
  - For bilateral cases (or with absolute values):
  - Arm TDC ratio > 1.2

- **Results**
  - Arm TDC ratio > 1.2

- **Conclusions**
  - This local tissue water method can rapidly detect and document lymphedema presence
  - May also have utility for early detection

- **Criteria for such early detection**
  - As of now for the limited data set:
  - For at-risk unilateral cases:
    - Arm TDC ratio > 1.2
  - For bilateral cases (or with absolute values):
    - Threshold depends on depth
    - Based on ±3 SD of data, estimates are shown in Table 1

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**Table 1. AVERAGE THRESHOLD ABSOLUT VALUES**

<table>
<thead>
<tr>
<th>Depth</th>
<th>Tissue Volume (ml)</th>
<th>Tissue Water (ml)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.5 mm</td>
<td>Arm</td>
<td>Control</td>
</tr>
<tr>
<td>1.5 mm</td>
<td>Arm</td>
<td>Control</td>
</tr>
<tr>
<td>2.5 mm</td>
<td>Arm</td>
<td>Control</td>
</tr>
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**Dr. Mayrovitz welcomes your comments and feedback!**

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