

## **ACCURACY OF EARLY PHASE <sup>99m</sup>Tc-SESTAMIBI SPECT/CT COMPARED TO DUAL PHASE <sup>99m</sup>Tc-SESTAMIBI SPECT/CT IN THE PREOPERATIVE LOCALIZATION OF PARATHYROID DISEASE.**

Mandal, Rajarsi<sup>1</sup>; de Almeida, John<sup>1</sup>; Muthukrishnan, Ashok<sup>2</sup>; Ferris, Robert<sup>1</sup>; Duvvuri, Umamaheswar<sup>1</sup>  
<sup>1</sup>University of Pittsburgh Medical Center, Department of Otolaryngology-Head and Neck Surgery, Pittsburgh, PA, USA; <sup>2</sup>University of Pittsburgh Medical Center, Department of Radiology, Division of Nuclear Medicine, Pittsburgh, PA, USA

**Background/Purpose:** Preoperative localization has improved in recent years with the advent of Dual Phase <sup>99m</sup>Tc-Sestamibi SPECT/CT imaging. However, dual phase imaging is associated with an increased cost, time, and radiation dose. We investigated the need for late phase imaging when using SPECT/CT for the preoperative localization of parathyroid disease.

**Methods:** Retrospective review of 67 patients who underwent preoperative imaging localization and subsequent surgical resection for parathyroid disease. Of these, 42 patients met study criteria including preoperative SPECT/CT imaging, specific reporting of early and late phase focal radiotracer uptake. Discrete focal uptake and corresponding extrathyroidal CT soft tissue mass per radiology report was used as criteria for accurate localization. Localization accuracy was verified with histological analysis and evidence of biochemical cure.

**Results:** Accurate localization of adenoma was seen in 78.5% of patients using Dual Phase SPECT/CT. Early phase imaging alone localized 76.2% while late phase imaging alone localized 73.8%. Sensitivity and specificity for dual phase imaging was 86.8% and 90.2% respectively. In comparison, early phase localization alone and late phase localization alone were found to have a sensitivity/specificity of 84.2%/90.0% and 81.6%/89.7% respectively.

**Discussion & Conclusion:** Dual phase SPECT/CT scanning did not provide a statistically significant improvement in adenoma localization when compared to early phase scanning alone. Early phase SPECT/CT scanning alone may obviate the need for dual phase SPECT/CT scanning in the initial preoperative localization workup of parathyroid disease. Dual phase scanning may be beneficial however in cases where single phase scanning is equivocal or fails to clearly localize the disease.