Radio-guided exploration facilitates surgical cytoreduction of neuroendocrine tumors

Yi-Zarn Wang MD., Abby Gandolfi MS, Lowell Anthony MD., Richard Campeau MD., Eugene Woltering MD., and J. Philip Boudreaux MD.
Louisiana State University Health Sciences Center, Department of Surgery, Section of Surgical Oncology and Endocrine Surgery, New Orleans LA 70112

Introduction
Radio-guided exploration can be an essential tool in the successful cytoreduction of neuroendocrine tumors.

Hypothesis
The choice of the proper radioisotope, dose and time interval between injection and exploration are the major factors responsible for attaining a successful outcome.

Methods
244 patients undergoing cytoreduction between November 2006 and July 2009 were reviewed to determine the optimal dose, interval injection, and the impact of radio-guided exploration.

Results
46 patients had gamma probe guided explorations including; 3 patients injected with 99mTc, 3 patients injected with 123I MIBG (3) and 111In pentetreotide in 40 patients with midgut carcinoid. In 37 out of 40 (93%) of the 111In-pentetreotide guided explorations the gamma probe was deemed helpful in localizing and differentiating tumor from normal tissue. In 5 out of 6 neck and mediastinum explorations the gamma probe was essential for completing a quick, safe and minimally invasive procedures. 123I MIBG was not useful in all three patients included in this review. The optimal doses and interval between injection and exploration of 111In pentetreotide is 6 mCi injected 6-7 days prior to surgery.

Conclusion
Radio-guided exploration is a useful adjunct and sometimes an essential tool for resecting neuroendocrine tumors, with the right isotope injected at the optimal dosage and time.