

Title: Lipidomic Profiling of Neoplastic, Pre-Neoplastic, and Healthy Tissues Using Electrocautery Paired with Mass Spectrometric Equipment

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Electrocautery is a common tool used in the operating rooms of today's hospitals. Given the increasing rate of cancer incidence in the U.S. and abroad as the average age of populations continue to increase, it is becoming more important for surgeons to more clearly excise tumors and pre-cancerous tissues from both biopsies and resections. The pairing of electrocautery with mass spectroscopic equipment could allow intra-operative analysis of phospholipids that define the cell membranes of both cancerous and non-cancerous tissues (Waters Corp., 2015). More investigation is required to confirm the validity of this radical concept; however, if successful it will revolutionize the practice of surgical oncology. Rapid analysis of phospholipid content could eliminate the need for sample preparation, reducing the operative time for both patient and clinicians. However, further characterization of phospholipid content between neoplastic, pre-neoplastic, and normal tissues is required. Of course, use of electrocautery in hepatic surgery inhibits wound healing in normal hepatocytes with some of the peroxidation byproducts (von Schonfels et al., 2013). Future research could identify compounds, which would be given pre-operatively, to neutralize these toxic byproducts, promoting wound healing. Electrocautery is essential to prevent excess bleeding in resection of hepatic neoplasms, but the impaired wound healing is problematic, even with the liver's inherent ability to regenerate.