Esophageal Endoscopic Mucosectomy

Background:

The incidence of Barrett’s esophagus and esophageal adenocarcinoma (EAC) is rising in Western nations, and, according to the National Cancer Institute, EAC is the fastest growing form of cancer in the United States. Esophagectomy is standard treatment for Barrett’s esophagus with high grade dysplasia and malignancy. However, due to high morbidity rates associated with esophageal resection, techniques have been developed that remove only the involved regions in an attempt to preserve the esophagus. Those techniques may include, for example, endoscopic mucosal resection (EMR) and radiofrequency (RF) ablation. In many instances, however, those techniques do not reliably or consistently remove all lesions from the esophagus.

Technology Description: Mayo Clinic investigators have created device designs and methods for en bloc circumferential esophageal mucosal resection which can extend over a selected length of the esophagus. This method could be used to resect the esophageal mucosal layer in order to treat Barrett’s epithelium, dysplasia, and esophageal adenocarcinoma. This design allows for the cautery-facilitated removal of effected mucosal tissue while providing a histological sample for pathological analysis.

Stage of Development: An early stage prototype has been built and studied in a porcine model. Effective circumferential removal of esophageal mucosa has been demonstrated in this model. Design optimization is on-going. This device is being studied in conjunction with cell-based therapies for mucosal replacement.

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