

Esophageal Temperature Monitor

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Technology description

Atrial Fibrillation (AF or AFib) is a medical condition that is a significant cause of stroke, heart failure, disability and death. It is estimated that more than 640,000 people develop AFib each year in the US alone. Currently, up to 5 million people are affected by AFib in the US; that number is expected to reach 12-16M people in the US by 2050. Although several procedures and related devices are available for performing AFib ablation surgery, the least invasive procedure is performed using catheter ablation. Catheter-based ablation of AFib, which delivers ablation to the endocardial tissue (inside the heart) results in 80-85% success following first time ablation surgery, and 95% success with a second ablation. An estimated 110,000 AFib catheter ablation surgeries were performed worldwide in 2010, with an anticipated growth rate of 12 - 15%. This represents only a small fraction of the 35% of AFib patients who meet the criteria for surgical intervention using catheter ablation surgery. With improvements in surgical devices and methods, the potential market is significant. One of the complications from this surgery, as shown in a number of studies, is that esophageal injury can occur during the procedure. These studies report that visible esophageal ulcers may be occurring in more than 50% of cardiac ablation procedures, and review of outcomes from these procedures also revealed permanent morphological changes to the esophageal structures in a significant number of cases. A leading electrophysiologist at Intermountain Healthcare has invented a novel esophageal temperature monitor device that will improve patient safety and comfort while reducing complications from injuries related to ablation surgery. Although several esophageal temperature monitor sensors are commercially available, each has certain limitations in sensing esophageal hot spots that can occur during the ablation procedure. Additionally, the current sensors can negatively affect the anatomical structure of the esophageal wall. The device invented at Intermountain Healthcare conforms to the natural structure of the esophagus, without distortion, while providing uniform thermal sensing. An initial prototype has been made and a patent has been filed.

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