

2018-140 Wirelessly Powered Radiofrequency Ablation (RFA) Generator and Catheter

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Technology description

This medical device is designed to facilitate efficient radiofrequency ablation (RFA) in patients who could benefit from tissue ablation for conditions such as cancer, chronic pain, cardiac arrhythmias, and other conditions.

Radiofrequency ablation (RFA) is a minimally invasive medical procedure where imaging methods such as computed tomography (CT) imaging or magnetic resonance imaging (MRI) are used to guide a needle electrode or catheter into a specified location in the body. The needle electrode or catheter conducts high frequency electrical currents in the range of radio frequency waves to the tissue site, leading to focused heat that destroys cells surrounding the electrode. RFA is commonly used to destroy tumors in cancer patients when surgery is not a feasible option for tumor removal. However, as a procedure, RFA may benefit any patients who need tissue destroyed in a localized area, such as chronic pain patients, where specific nerves are destroyed to relieve pain.

This RFA generator and catheter system works wirelessly by resonant inductive coupling and is designed to be battery-powered, increasing portability. Resonant inductive coupling does not require close proximity between the power source and device, which will give medical staff more freedom of movement during RFA and facilitate faster completion of the entire medical procedure. Additionally, this RFA system is bipolar, with a single catheter containing 2 electrodes; it does not need grounding pads on a patient and should not interfere with electrical implants, such as pacemakers. During lab scale testing, system was proven to ablate a 5 mm sphere of pig liver tissue within 60 seconds.

Advantages

- Increased freedom of movement for medical staff during the RFA procedure, facilitating faster completion of RFA
- No need for extra technicians to handle the various wires of a RFA system during the medical procedure
- Bipolar RFA with a single catheter containing 2 electrodes, reducing the risk of electrical interference for patients with electrical implants such as pacemakers

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