Brachytherapy Delivery System for Treatment of Lung Cancer

Source Production & Equipment Co., Inc. (SPEC) is developing a new brachytherapy source and delivery system intended for use in the treatment of lung cancer. Brachytherapy has a long history of use in the treatment of lung cancer patients. Intraoperative brachytherapy has been shown to be therapeutically effective for patients unable to undergo surgical lobectomy; it is an alternative to external beam irradiation for patients who cannot tolerate further loss of lung function. Our device is a brachytherapy source that will facilitate the precise placement of brachytherapy sources relative to the surgical margin, assure the seeds remain fixed in their precise position for the duration of the treatment, overcome the technical difficulties of manipulating the seeds through the narrow surgical incision, and reduce the radiation dose to the clinicians. We incorporate the radioactive sources directly into a subset of the surgical staples used in the procedure. The radioactive material is sealed within a titanium tube then capped by titanium wires laser-welded to the tube to serve as legs of a tissue fastening system.

Salient Features*

- Incorporate the radioactive sources directly into a subset of the surgical staples used in the procedure.
- The radioactive material is sealed within a titanium tube then capped by titanium wires laser-welded to the tube to serve as legs of a tissue fastening system. The sources are secured in position directly adjacent to the surgical resection and are immobile.
- The sources will be precisely located relative to the resection, placed by a very convenient method eliminating the difficulties of working through the narrow surgical incision.
- The source position will be rigidly fixed, assuring the dose distribution will not uncontrollably change over the duration of the treatment. This method will permit the dose distribution to be precisely planned prior to the surgery.
- Incorporation of the brachytherapy sources into the staples will also significantly reduce the dose to the clinician.
- The device is designed to be attached to existing commercially available surgical staplers, as a “sidecar” might be attached to a motorcycle.

Market Potential*

The American Cancer Society estimates the number of new lung cancer cases in 2009 to exceed 219,000. Non-small cell lung cancer (NSCLC) is the most commonly diagnosed form of the disease, affecting 4 of 5 patients. In most cases, early stage NSCLC can be treated successfully with surgery if the cancer has not spread beyond the chest. Surgical resection is the definitive treatment and lobectomy, involving removal of an entire lobe of one lung, is the procedure of choice. Unfortunately, some patients with this disease are poor candidates for lobectomy due to poor pulmonary health or other medical issues.

IP Status

US Patent 7,972,260 issued 05 Jul 2011; additional patents pending

*These are the inventors claims and do not necessarily represent the opinions of the Massachusetts Medical Device Development Center.