

Low-temperature electrocautery reduces lead-related complications: insights from the WRAP-IT study

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Background: Patients with an existing cardiovascular implantable electronic device (CIED) often require a generator replacement or system upgrade/revision, during which some degree of dissection is usually necessary to free the existing lead(s). Commonly used techniques include blunt dissection, standard surgical electrocautery, or newer forms of electrocautery such as the low-temperature electrocautery device (PlasmaBlade Soft Tissue Dissection Device) designed to minimize inadvertent thermal injury to leads.

Objective: Determine whether the dissection technique impacts the likelihood of developing a lead-related complication.

Methods: The WRAP-IT trial enrolled patients undergoing CIED replacement, upgrade, revision or de novo CRT-D implant. This analysis excluded patients undergoing a de novo procedure. All adverse events were adjudicated by an independent physician committee. Data were analyzed using Cox proportional hazard regression modeling, controlling for capsulectomies and lead dissections.

Results: 5639 patients (mean [±SD] age: 70.6±12.7 years; 28.8% female) underwent a replacement/upgrade/revision. Electrocautery was used in 5203 (92.3%) patients and among these, low-temperature electrocautery was used in 1866 (35.9%) patients. Compared to standard electrocautery, low-temperature electrocautery was used more often when leads were dissected or mobilized ($P < 0.001$) or when a partial or complete capsulectomy was performed ($P < 0.001$). Use of low-temperature electrocautery was associated with a 31% reduction in lead-related complications (HR: 0.69, 95% CI: 0.49–0.98, $P = 0.037$) (Figure).

Conclusion: The low-temperature electrocautery device (PlasmaBlade) uses precise pulses of radiofrequency energy to dissect tissue with only minimal thermal damage. In this large cohort of replacement, revision, and upgrade procedures, use of low-temperature electrocautery led to significantly fewer lead-related complications.

