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**PUBLICATION INFORMATION**

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**FINANCIAL & CONTENT DISCLOSURE:** Dr. Gutierrez is a paid consultant with Apyx Medical Corporation, previously Bovie Medical Corporation. All other authors have no conflicts of interest to disclose. The opinions contained herein are those of the authors(s) and do not necessarily represent the official position or policies of Apyx Medical, Inc.

**MANUFACTURING DISCLOSURE:** Apyx Medical manufactures and owns the J-Plasma technology discussed in this article.

**INDICATIONS FOR USE & INTENDED USE DISCLOSURES**

- The Renuvion Precise, Precise Open, and J-Plasma Handpieces are intended to be used with compatible electrosurgical generators for the delivery of radiofrequency energy and/or helium plasma for cutting, coagulation, and ablation of soft tissue during open surgical procedures.
- Apyx Medical wants to present to you with current scientific discourse.

**RISKS:**

- Risk associated with the use of the device may include: Helium embolism into the surgical site due to inadvertent introduction into the venous or arterial blood supply system, unintended burns (deep or superficial), pneumothorax, temporary or permanent nerve injury, ischemia, fibrosis, infection, pain, discomfort, gas buildup resulting in temporary and transient crepitus or pain, bleeding, hematoma, seroma, subcutaneous induration, pigmentation changes, increased healing time, and/or unsatisfactory scarring. There may be additional risks associated with the use of other devices along with Renuvion/J-Plasma and there may be an increased risk for patients who have undergone prior surgical or aesthetic procedures in the treatment area.

As with any procedure, individual results may vary. As with all energy devices there are inherent risks associated with its use, refer to the IFU for further information.

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# Thermal Effect of J-Plasma® Energy in a Porcine Tissue Model: Implications for Minimally Invasive Surgery

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## Abstract

**Objective:** To evaluate tissue effect of J-Plasma® (Bovie Medical Corporation, Clearwater, Florida) in porcine liver, kidney, muscle, ovarian, and uterine tissue blocks.

**Design:** Prospective study utilizing porcine tissue blocks to evaluate the thermal spread of J-Plasma® device on liver, kidney, muscle, ovarian, and uterine tissue at various power settings, gas flow, and exposure times.

**Materials and methods:** J-Plasma® helium was used in porcine liver, kidney, and muscle tissue at 20%, 50%, and 100% power, and 1 L/min, 3 L/min, and 5 L/min gas flow at one, five, and 10-second intervals. J-Plasma® was then used in ovarian and uterine tissue at maximum power and gas flow settings in intervals of one, five, 10, and 30 seconds. Histologic evaluation of each tissue was then performed to measure thermal spread.

**Results:** Regardless of tissue type, increased power setting, gas flow rate, and exposure time correlated with greater depth of thermal spread in liver, kidney, and muscle tissue. J-Plasma® did not exceed 2 mm thermal spread on liver, kidney, muscle, ovarian, and uterine tissue, even at a maximum setting of 100% power and 5 L/min gas flow after five seconds. Prolonged exposure to J-Plasma® of up to 30 seconds resulted in increased length and width of thermal spread of up to 12 mm, but did not result in significantly increased depth at 2.84 mm.

**Conclusions:** The J-Plasma® helium device has minimal lateral and depth of thermal spread in a variety of tissue types and can likely be used for a multitude of gynecologic surgical procedures. However, further studies are needed to demonstrate device safety in a clinical setting.