

This paper presents the opinion and clinical experience of Vip Dev, MD. Bovie Medical Corporation's J-Plasma electro-surgical generators and hand pieces are indicated for the delivery of helium gas plasma to cut, coagulate, and ablate soft tissue during open and laparoscopic surgical procedures. Dr. Dev is a paid consultant to Bovie Medical Corporation.

White Paper

UTILIZATION OF J-PLASMA® for Surgical Wound Debridement

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The Challenge

Wound care will affect a large segment of the population during an average lifetime. Effective treatment can be a lengthy proposition – especially when hindered by comorbidities, including diabetes, obesity and cardiovascular or peripheral vascular disease. A study published in the journal *Wounds* (Fife, Carter et al.; Vol 24, Issue 1, January 2012) used 5 years of de-identified data to analyze outcomes as well as other variables. They found, for example, that “almost two thirds of wounds healed (65.8%) with an average time to heal of 15 weeks and 10% of wounds taking 33 weeks or more to heal... Half of wounds that healed did so with only the use of moist wound care (50.8%) and without the need for advanced therapeutics.” Of course, that means that about 34.2% of wounds did not heal during the study period and that nearly half of those that did heal required more advanced (and more expensive) therapeutics.

Infection is a primary cause of delayed healing and a major contributor to increased costs.

The Solution

J-Plasma® from the Bovie Medical Corporation represents a patented approach to electro-surgery whereby a helium gas plasma, fueled by electro-surgical energy, flows into the application site for only a brief interval then disperses out leaving very precise, predictable effects. There is no net flow of electricity around the body, so no return electrode is required. The cold plasma effect is highly localized, minimizing collateral damage to surrounding healthy tissue. This and having no need for a grounding pad, differentiates J-Plasma® from standard electro-surgical devices.

What is ‘plasma’? In its simplest state, plasma is the result of energizing a gas to a level that produces a mixture of neutral atoms, molecules, ions and electrons. Plasma has the unique ability to exist and function in a cold state (room temperature) or extreme temperatures (>800°F). Researchers have found that this unique spectrum of temperatures opens itself to enormous therapeutic possibilities.

J-Plasma® uses non-conductive currents and limits direct injury with its reduced tissue spread, minimizing the risk of direct and capacitive coupling. Additionally, J-Plasma® allows for safe and effective wound care with controlled precision when

ablating diseased tissue and reduced fear of injury to surrounding healthy structures.

The Result

Recently, a device called J-Plasma® has been introduced that ablates soft tissue with plasma. A case series of five patients were treated with the device for different types of ulcers. Decubitus ulcers, venous stasis ulcers and diabetic foot ulcers were treated using surgical debridement with J-Plasma® instead of traditional cautery.

The brief study evaluated 5 patients

- 2 stage III decubitus ulcer patients
 - 1 sacral ulcer
 - 1 ischial ulcer
- 2 Wagner IV diabetic foot patients
 - 1 diabetic heel ulcer
 - 1 diabetic forefoot ulcer
- 1 venous stasis ulcer with concomitant Wagner III diabetic foot ulcer

In all five patients, the following benefits were seen compared to traditional cautery:

- Decreased biologic film
- Improvements in healing time
- Decreased wound size

This experience shows that J-Plasma is a safe and effective tool to be used for surgical wound debridement. While this early experience is promising, additional patients will be studied and biofilm cultures monitored.

“I suggest the use of the J-Plasma® device for management and treatment of wounds for debridement and adjunct to preparation for flap reconstruction. I also believe that the J-Plasma® device may be used in an outpatient setting to minimize trauma to local tissue and provide increased rates of healing.”

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CAUTION: Federal law (USA) restricts this device to sale by or on the order of a physician. For listing of indications for use, precautions and warnings, refer to the instructions for use for all J-Plasma® products and accessories.

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