The next revolution in surgery may come from a small, under-the-radar company

Arthur Frederick

The next revolution in surgery may come from a small medical equipment company which, according to its own executives, has always preferred to fly a bit under the radar.

Bovie Medical Corp [1]., a public company with executive offices in Melville, N.Y. but with labs and manufacturing facilities in Clearwater, Fla., has received permission from the U.S. Food & Drug Administration to begin marketing this summer on a new, non-contact surgical device it calls J-Plasma. Those initial evaluations are expected to take place in several surgical centers around the country.

“We announced the J-Plasma concept several years ago, but the process of getting any new product to market has become increasingly difficult and time-consuming,” said Rob Saron, Bovie Medical’s president. “Because of that, the initial excitement may have waned a bit. But J-Plasma’s time has finally arrived.”

Bovie Medical is known most widely for its cauterizes and other electrosurgical products, but it owns three patents for the J-Plasma technology, the first of which was granted in 1999. The latest patent was granted last November.

Three other patents related to the new technology are pending.

Stated simply, J-Plasma uses Helium flowing over an electrically charged conductive point to ionize the gas and thus create a plasma.. The energized blade, in conjunction with the plasma, results in an enhanced incision, reducing tissue damage when compared to traditional electro-surgical devices.

The plasma flow is adjustable. At high levels (high level of electrical energy, low gas flow), J-Plasma can treat large areas of diseased tissue by cauterizing targeted

tissue as it moves and minimizing collateral damage to surrounding healthy tissue. At low levels (low level of electrical energy, high gas flow), it can perform the most delicate of surgical procedures. The energy required to ionize the gas to a plasma, even at the highest setting, is so minimal that the clinician has the option of using a grounding pad or not. This is beneficial in certain procedures where the surgeon may desire little or no energy passing through the patient, such as with some cardiovascular or neurology procedures.

The J-Plasma Surgical Tool can cut like a standard scalpel; cut with an enhanced plasma-based electrosurgical effect; and coagulate (or provide hemostasis) using the cold plasma beam, all with a single hand piece.

“In an advanced version, the sharp conductive point is actually a retractable surgical blade,” Saron said. “The blade can be extended and used as a standard scalpel for incisions, biopsies, and so on.”

The extended blade can be energized while helium is flowing to provide an enhanced plasma-based electrosurgical effect which speeds the cutting action, but produces virtually no eschar, once again unlike standard electrosurgical devices, Saron said. Eschar is extremely cauterized tissue that sheds from healthy skin.

When the blade is retracted, it serves as the sharp conductive point to produce the plasma beam which can then be used to coagulate, affect hemostasis, desiccation, etc.

FDA’s clearance means Bovie can use the basic plasma technology and the advanced retractable blade plasma applicator in open and laparoscopic procedures on soft tissue. Other test applications may follow.

The company has been around since the 1970s, starting out as a manufacturer of disposable penlights for the medical industry. Later, using the same assembly technologies, the company branched out into battery-operated surgical cauterization products. It took on the Bovie Medical name in 1998, purchasing the brand from Maxxin Medical.

The earlier lines of cauterization products provided the early company DNA which has led to J-Plasma, Saron said.

“Over the years, surgeons have continually asked us to provide better surgical and cauterization tools, and we’ve always risen to that challenge,” Saron said. “While J-Plasma provides a completely new kind of technology, it is in keeping with the products that physicians have always asked us for – products that can provide clean surgical cuts while minimizing blood loss and healthy tissue damage.”

So, why the “under the radar” description?

“We have always sold our products through distributors, some of whom re-brand those products under different names,” Saron explained. “I think that because of that, we’ve always been a little reluctant to beat our own drum too loudly for fear of

interfering with the branding efforts of our partners."

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