The Clinical Significance for 4.0 MHz High Frequency RF Radiosurgery®

Other studies support the conclusion that the Ellman 4.0 MHz generator produces less thermal damage than conventional electrosurgery or laser generators. In 2004, Dr. Stan compared the histology of incisions made with Ellman versus ValleyLab® Force Fx. Under similar cutting conditions, he found that Ellman had 84% less thermal damage than ValleyLab® Force Fx.

Researchers are finding that Ellman high frequency RF Radiosurgery® products have outstanding patient outcomes when compared to other modalities, such as conventional electrosurgery and lasers. Although the amount of thermal damage will vary based upon the type of tissue and the doctor’s technique, Ellman’s RF consistently produces less thermal damage than conventional electrosurgery under similar conditions.

Clinical Benefits for Ellman 4.0 MHz High Frequency Technology

- Quick Recovery: With less tissue destruction, healing is hastened and your patients will recover quickly.
- Decreased Post-Operative Pain: RF Radiosurgery causes less trauma.
- Decreased Post-Surgical Edema: Low temperature = less tissue destruction.
- Less Burning or Charring of the Tissue: 4.0 MHz RF minimizes burning of tissue, unlike laser or electrosurgery.
- Value: Our patented technology is a high return on investment (ROI) purchase for both the hospital and office environments.
- Expand Your Office Procedures: No other energy-based technology has the surgical versatility of Ellman®

Clinical Citations
1. Dr. Constantin Stan, Data on file.
The Physics of Ellman® Radiowave Technology

There is an inverse relationship between frequency and how deeply RF energy penetrates tissue. (figure 1)

There is also a relationship between the frequency used and tissue’s resistance to the energy. (figure 2) The high frequency of Ellman RF Radiosurgery® encounters less tissue resistance and shallower penetration than lower frequency electrosurgery. This means less heat is generated in the tissue. This generates more heat, which contributes to more cellular destruction along the path of the incision.

A study at the University of Iowa compared Ellman High Frequency RF technology to two leading lower frequency electrosurgery generators. The purpose of the study was to accurately measure the thermal damage between all three generators.

Each generator used the same electrode model, the Ellman Vari-Tip™, with a 0.007 inch diameter wire. Ellman manufactured the Vari-Tip electrode to fit in the Ellman Surgitron® Dual generator along with the Bovie® 1250 and ValleyLab® Force Fx generators. Each generator was set by the research staff to the optimum power setting to minimize drag on the tissue.

All skin incisions were made on a porcine abdomen. All of the incisions from the Ellman, Bovie and ValleyLab generators looked similar with the naked eye.

However, when the tissue samples were histologically examined with Hematoxylin Eosin stain, a dramatic difference was seen.

Conclusions

- The decrease in resistance means that tissue stays cooler with Ellman RF Radiosurgery than with conventional electrosurgery.
- The higher temperature of conventional electrosurgery causes more thermal damage, which can be measured.

73% Less Thermal Damage with Ellman RF Radiosurgery Technology

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Conclusions

The results show a statistically significant advantage for the Ellman Surgitron Dual. There was 73% less thermal spread with Ellman than with the Bovie or ValleyLab lower frequency generators.