



"Transmission electron microscopy sections at the cellular level show that the electrosurgical radiofrequency surgical instrument (Ellman, Intl.) produces the least damage to surrounding healthy tissue."

Transmission Electron Microscopy: Evaluation of Damage in Human Oviducts Caused by Different Surgical Instruments August C. Olivar, M.D. et al., University of Conn. Health Center, Farmington, CT *Annals of Clinical and Laboratory Science*, Vol. 29. No 4, 1999

"With the waveform and power output held constant, tissue alterations increased as machine carrier frequency decreased. The machine with the lowest frequency of operation produced the greatest amount of tissue alteration."

Histologic Evaluation of Electrosurgery with Varying Frequency and Waveform, W.L. Maness et al., Tufts University School of Dental Medicine, Boston, MA *Journal of Prosthetic Dentistry*

"The quality of the tissue margins of specimens obtained using a 4.0MHz radiofrequency surgical unit approached the quality of those obtained with the cold knife in their lack of thermal and mechanical artifact."

Analysis of Tissue Margins of Cone Biopsy Specimens obtained with "Cold Knife", CO₂ and Nd : YAG Lasers and a Radiofrequency Surgical Unit Ralph Turner, M.,D. et al., Univ of Texas, Southwestern Med School Dallas, Tx *The Journal of Reproductive Medicine*, Vol.37, No. 7

"Histologic examination showed the average lateral thermal change to be 400-500 microns, with no demonstrated relation to the pulsed level of energy."

Ablation rates of human meniscal tissue with the Ho:YAG laser; the effects of varying fluences Vangsness CT et al; *Journal of Arthroscopy and Related Surgery* -Vol. 12, No. 2, Apr 97 pp148-150

Fresh brain tissue measuring 2.0 x 1.0 x 1.0 cm in largest dimension was submitted for histologic evaluation of surgical incision created using 4.0MHz radiofrequency technology. The area of radiofrequency electrosurgical incision shows minimal superficial changes measuring from 10 – 20 microns thickness.

Pathology report provided by Steven Schneider, M.D.

The Fully Rectified and Filtered current indicated for pure cutting, produces a minimal lateral heat (0-15 microns). It is used for very gentle and delicate cutting, avoiding carbonization and cellular destruction due to the minimum loss of lateral heat. This type of current is ideal when performing cuts near the bone, and it is very useful for obtaining material for biopsy, grafts and flaps, incisions for draining, and surgeries in mucosas.

The use of Radiosurgery in Plastic Surgery and Dermatology Aymar E. Sperli, M.D.

Plastic & Reconstructive Surgery / Surgical Technology International VII

TABLE 1 – Transmission Electron Microscopy Showing Lateral Thermal Damage of Human Oviducts by Different Instruments

Instrument	Extent of Tissue Damage in mm
Electrosurgery	0.650 mm (avg)
CO ₂ Laser	0.500 mm (avg)

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