

RADIOSURGERY: Incision to Closure *Not Just for Exotic Species*

Thomas N. Tully, Jr., DVM, MS, Louisiana State University

OVERVIEW

WITH THE NUMBER OF NEW PRODUCTS

AVAILABLE, clinicians may find it almost impossible to become knowledgeable consumers on all options when contemplating new equipment purchases. In this cost-conscious profession, veterinarians cannot afford to make miscalculations when it comes to this type of investment. At the same time, they also cannot afford to lag behind their colleagues in state-of-the-art patient care.

WHAT IT IS

Radiosurgery is the passage of fully filtered, high-frequency radiowaves through tissue. When these waveforms are amplified and directed to an electrode that is applied to tissue, an electromagnetic field is created. This electromagnetic field heats up the intracellular fluid and volatilizes the cell.¹

This description may sound familiar. It is essentially the same process that a laser uses, but instead of light stimulating the intracellular fluid it is radiowaves. There have been many anecdotal testimonials describing the benefits of radiosurgery over the past 25 years, during which it has been a mainstay in veterinary medical hospitals, especially those that treat avian and exotic species.² Recent advances, however, require us to revisit this technology and consider a broader application to other veterinary species.

Traditional electrosurgery units emit low-frequency/high-temperature energy that results in deep absorption and unwanted tissue injury. Earlier radiosurgery units operated at 3.8 MHz, a high-frequency, but not the optimal 4.0 MHz. Technological advances have enabled the development of a fully digital, patented, 4.0-MHz dual-frequency device known as the Surgitron (<http://www.ellman.com/medical/>). Several comparative investigations using different methods of incision have been conducted with the 4.0-MHz radiosurgery unit. In these scientific investigations, the 4.0-MHz radiosurgery unit was equal or superior to the laser or scalpel blade.³⁻⁵

continues



HOW TO USE IT

Holding the electrode in a manner similar to that of a scalpel blade, the surgeon touches the tissue with the electrode (as you would with a scalpel), so the surgeon knows what is being incised. To properly use the Surgitron, the veterinarian needs to follow a few specific recommendations from the manufacturer. These recommendations help protect the unit and allow for maximum effectiveness with minimal tissue trauma.

- Use the finest radiofrequency microfiber electrode applicable when making incisions.
- Keep the electrode tip clean and free of debris.
- Activate power to the radiofrequency fiber before tissue contact.
- Keep the electrode perpendicular to the tissue surface.
- Make a smooth incision stroke at a minimum rate of 7 mm/sec.
- Adjust power on a case-by-case basis so that no drag is experienced as the incision is made.
- Use only nonflammable products to prepare the surgical site.

WHY CONSIDER IT

One of the biggest advantages for veterinarians is that the equipment can be obtained for slightly less than half of the cost of a laser. Veterinary laser units currently cost about \$40,000, whereas the 4.0-MHz Surgitron is listed at \$17,000 and the 3.8-MHz unit at \$4000. The 4.0-MHz energy source is applicable for larger patients in addition to small avian/exotic patients (e.g., those < 100 grams body weight). The technology is safe, versatile, and precise for all procedures in which a scalpel is used and/or hemostasis is required. The unit performs like a scalpel while reducing the amount of blood entering the surgical field and providing the versatility of different wavelengths and electrode tips for cutting, cutting and coagulation, and cauterization. With the bipolar forceps, small vessels can be cauterized before incision, eliminating the need for hemostats that can clutter the surgical field. In addition, the minimal tissue trauma and maximal tissue preservation translate into superior application in all procedures from incision to closure.

Physicians continue to use radiosurgery technology, not only for basic surgical procedures (e.g., cesarean section) but also for highly visible facial surgery.³⁻⁵ To fully appreciate the benefits of the radiosurgery unit, it must be easy to access and used regularly. Having the unit within comfortable reach is therefore very important.

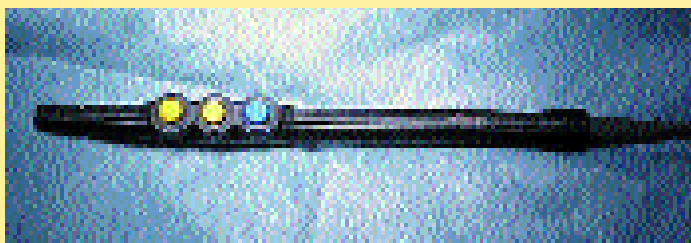
See Aids & Resources, back page, for references, contacts, and appendices.

RADIOSURGERY: Features



1

The Ellman 4.0 MHz Dual-Frequency Surgitron is fully digital and allows the veterinarian to change wavelengths with a touch of a button on the handpiece.



2

The three-button handpiece that comes with the 4.0 Dual Frequency Surgitron allows the operator to change radio-frequency "on the fly" during a surgical procedure.

INDICATIONS FOR RADIOSURGERY

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|----------------------------|----------------------------|
| Skin incisions | Nasal polyps |
| Tumor removal | Papillomas |
| Amputations | Soft palate surgery |
| Reproductive tract surgery | Tail amputation |
| Biopsies | Ingrown feathers |
| Castration | Cloacal surgery |
| Bumblefoot | Abscess removal |
| Aural resection | Plastic surgery procedures |
| Ear cropping | Soft tissue surgery |
| Ectropion/entropion | |

and Advantages



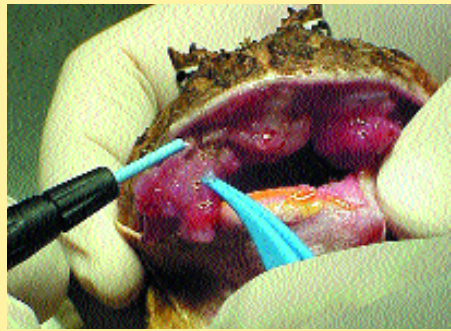
Procedure Pearl
Radiosurgery units are slightly less than half the cost of a laser.



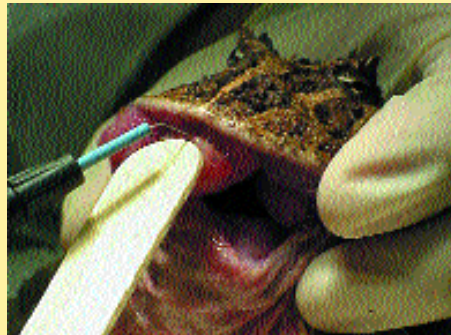
3 Different electrode tips can be attached to the handpiece depending on the procedure, such as skin incision, hemostasis, and biopsy. The various electrode tips allow the practitioner to choose among techniques when taking a sample depending on location and patient.



4 Bipolar forceps give better hemostasis ability to the veterinarian when vessels need to be coagulated within fat and mesentery.



5a Removal of oral myxoma lesion from Argentine horned frog using both Ellman bipolar forceps and the three button handpiece with incising electrode.



5b Three-button hand piece with incising electrode removing oral lesion from frog.



6a 4.0 MHz radiosurgical skin incisions may be needed for abscess removal in iguanas. In this case a fine wire-tipped electrode is being used to incise the skin.



6b Note the minimal trauma after the abscess has been removed.