Lasers in Medicine and Surgery

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Guest Editor

The use of lasers in veterinary medicine is not new. In fact, over the past 15 years, small groups of veterinary clinical scientists at various universities and veterinary practices have periodically met to discuss the use of surgical lasers in our profession. The cost of laser technology was an obvious limitation and prevented widespread use in general practice. In addition, lasers available for use in veterinary medicine were usually obtained from the secondary human medical market, were quite cumbersome, and required significant maintenance to ensure safe and reliable use. Two important factors opened the door for clinical use of lasers in veterinary medicine: (1) technological advancements in laser engineering, which resulted in smaller, more reliable devices; and (2) recognition by laser manufacturers that veterinary medicine is a viable market for technology transfer. Even with increased availability, however, education should be the deciding factor on whether surgical lasers should be integrated into a clinical program or practice. To successfully move into this new and exciting modality of laser surgery, it is essential that “we learn before we burn.” A cavalier attitude toward laser surgery can be disastrous for both the operator and the patient.

Although learning to use a surgical laser is not difficult, there is a learning curve that must be considered before becoming a competent and knowledgeable laser surgeon. Educational venues offered at regional and national veterinary meetings usually provide objective exposure to the technology and provide the “beginning” of the learning process. In addition, most conventions provide an exhibit hall where different laser devices can be viewed and investigated. Some manufacturers also provide sponsored educational

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venues with both didactic and “hands-on” workshops where beginning and advanced laser users can work with colleagues and technical representatives from those companies. Finally, a few organized groups offer both scientific and practical knowledge that can be shared during annual meetings (American Society of Laser Medicine and Surgery; International Society of Optical Engineers—BiOs; Veterinary Surgical Laser Society). It is imperative that, as experience using lasers increases, so will the contributions to peer-reviewed literature. Promotional materials and articles in magazines certainly serve their purpose; however, universal acceptance of lasers in veterinary medicine by the entire profession will not occur until their use meets appropriate criteria of scientific review.

In considering any new technology, it is important to first understand the fundamentals. In giving lectures to both students and colleagues, I am often asked to shorten the theoretical and basic information and get to the “practical” stuff that is important for passing examinations or for making money. As Dr. Fuller Albright, the preeminent clinical and investigative endocrinologist, said in his article “Good Doctors and Bad”:

“By ‘practical’ is usually meant ‘therapeutic’; by ‘theoretical’ is usually meant ‘fundamental.’ The author has no patience with such a philosophy. One cannot possibly practice good medicine and not understand the fundamentals underlying therapy. Few if any rules for therapy are more than 90% correct. If one does not understand the fundamentals, one does more harm in 10% of the instances to which the rules do not apply than one does good in the 90% to which they do apply. The same policy carries over to medical education. There are those who advocate medical schools turning out practical physicians rather than ‘theorists.’ But they end by turning out a poorer grade of doctor. As with eggs, there is no such thing as a poor doctor; doctors are either good or bad.” [1]

To that end, this issue of Veterinary Clinics of North America: Small Animal Practice is an effort to assemble a number of experts from both academia and clinical practice. Discussions range from the “fundamentals” to “practical” applications where authors have tried to discuss objectively the use of lasers in veterinary medicine. Although the articles are directed primarily to small animal practitioners, most of the information is fundamental knowledge that can be appreciated by every veterinarian interested in this exciting technology. From the basics of laser–tissue interaction and safety to advanced clinical applications, an attempt was made to discuss the surgical lasers commonly used in practices today. Although some article authors place significance on use of one particular manufacturer’s laser, it should be realized that information provided is of a general nature. Procedures and guidelines reviewed should apply to other devices of the same wavelength, taking into account differences in energy and delivery parameters as well as tissue interaction.

Finally, it is crucial that objective clinical application of lasers—both economically and technologically—blend smoothly into veterinary medicine. Our
goal with this issue has been to use both the science and art of veterinary medi-
cine to describe how this has been done in the past few years. More impor-
tantly, we hope it will serve as a reference for the future!

My heartfelt thanks goes to the contributing authors who took the time
to make this issue complete, from the basics to the practical. I am also very
grateful to my wife, Jan, and my daughter, Elizabeth, for their patience, and
to my parents, who would have enjoyed seeing this issue in print.

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