Foreword

Lasers in Medicine and Surgery

The quest for possible applications of the very high energy densities achieved using coherent light to problems in clinical medicine and surgery began nearly concurrent with the invention of the laser. In the 1960s, pioneering laser biophysics outlined light–tissue and light–substance interactions. In the 1970s, clinical trials applied lasers to incision, excision, and ablation procedures that were not being well served by sharp steel or electro-surgery. It is from this process that there evolved indications for "the tool in search of a need."

In the 1980s, industrial lasers proliferated, and there was universal adoption of "laser" as a noun. The concept of powerful light was also integrated as an element of popular culture and produced word-associated perceptions of unique proprieties and high capability. During this time, clinical and surgical applications continued to expand. In addition, the clinical pharmacology and light delivery for the initial use of light-activated, photoreactive molecules as selective tumor intoxicants also emerged.

In the 1990s, great improvements were noted in machine reliability, economies of purchase, greater capability and flexibility of light delivery and targeting accessories, and better availability of training. The lowered costs for purchasing equipment facilitated the mainstream use of laser techniques and good momentum toward the use of lasers in the veterinary profession was seen.

As an early user of the carbon dioxide laser in small animal surgery (1970s), it is gratifying to see wider clinical scope and use. It is now fair to say that various surgical lasers have extended the operative precision, range, and morbidity reduction in small animal surgery. Equine upper airway surgery has also been revolutionized, and there are certainly many applications yet to be developed.

As you enjoy the articles that follow, please know that the future is more exciting and diverse than the present. For example, future applications for medical and surgical therapy in animals may include practical tunable lasers to vary light wavelength output; improved endoscopic and endovascular procedures; light–substance ablations beyond lithotripsy; subcellular and
genetic surgery; and light interactions with yet to be developed photoreactive and photointeractive drugs.

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