

# Electrochemotherapy and lasers in surgical battle with tumors in dogs and cats

Joanna Tunikowska

*Department of Surgery, Faculty of Veterinary Medicine, Wrocław University of Environmental and Life Sciences, Wrocław, Poland*

A successful treatment of patients with solid tumors consists of three components: complete tumor removal with tumor-free margins, identification and removal of tumor-positive lymph nodes, and removal of any local satellite tumor deposits (*Holt et al., 2015*). Therefore the vast majority of both human and veterinary oncologic patients require combination therapy: surgery and additional oncologic treatment. While the method of tumor excision depends mainly from surgeon the decision on additional oncologic treatment relies on patient general health status and tumor characteristics.

Ten privately owned dogs and four cats presented to the Department of Surgery, Faculty of Veterinary Medicine WUELES with confirmed malignant tumors, were treated both laser surgery and electrochemotherapy. Laser CO<sub>2</sub> is one of the most universal surgical lasers, allowing for precise excision and ablation of soft tissue with simultaneous sealing of small blood vessels, lymph vessels and nociceptors (*Bartels, 2002*). In addition to surgical treatment, local electrochemotherapy (ECT) was implemented before, during or after surgery. ECT is a local tumor treatment modality facilitating intracellular delivery of non-permeant chemotherapeutic drugs followed by the delivery of electrical pulses to the tumor. The advantages of ECT therapy are its simplicity, short duration of treatment sessions, low chemotherapeutic doses, and insignificant side effects with excellent functional and cosmetic effects (*Tozon, Tamzali, & Cemažar, 2017*). The combination of both laser CO<sub>2</sub> and ECT therapy can be successfully applied as a curative or palliative treatment also in animals with poor health status.

## References:

- Bartels, K. E. (2002). Lasers in veterinary medicine - Where have we been, and where are we going? *Veterinary Clinics of North America - Small Animal Practice*, 32(3), 495–515. [https://doi.org/10.1016/S0195-5616\(02\)00002-5](https://doi.org/10.1016/S0195-5616(02)00002-5)
- Holt, D., Parthasarathy, A. B., Okusanya, O., Keating, J., Venegas, O., Deshpande, C., ... Singhal, S. (2015). Intraoperative near-infrared fluorescence imaging and spectroscopy identifies residual tumor cells in wounds. *Journal of Biomedical Optics*, 20(7), 076002. <https://doi.org/10.1117/1.jbo.20.7.076002>
- Tozon, N., Tamzali, Y., & Cemažar, M. (2017). Electrochemotherapy in veterinary oncology. *Handbook of Electroporation*, 3, 1953–1967. [https://doi.org/10.1007/978-3-319-32886-7\\_107](https://doi.org/10.1007/978-3-319-32886-7_107)