

Histological analysis of thermal damage caused by vessel sealing during open ovariectomy in dogs

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Objective: To compare the extent of thermal damage caused by a 5 mm (LS5) vs. a 10 mm (LS10) LigaSure in dogs undergoing open ovariectomy. To compare the time required for ovariectomy using LS5 vs. LS10.

Study design: Prospective, randomized, clinical trial.

Animals: 40 client-owned sexually intact female dogs (20 dogs <20 kg, 20 dogs >20 kg).

Methods: In dogs, undergoing open ovariectomy, one ovary was at random removed using LS5 and the other using LS10. The time required for removal of each individual ovary was recorded. The amount of thermal damage was measured on the excised tissue sample using histopathology.

Results: Significantly more thermal damage was caused by LS10 ($1,368 \pm 188 \mu\text{m}$, range: 1,063–1,718 μm) than by LS5 ($805 \pm 83 \mu\text{m}$, range: 642–961 μm). Mean ovariectomy time was 155 ± 79 seconds (range: 35–363 seconds) using LS5 and 125 ± 76 seconds (range: 27–408 seconds) using LS10. Removal of ovaries was significantly faster when using LS10 compared to LS5 ($P = .0024$). A positive correlation was found between body weight and time required to remove ovaries with LS5 (CI: 0.1965–0.6976), but no correlation was found between body weight and use of LS10 (CI: -0.02347–0.5649).

Conclusion: A 5 mm LigaSure caused significantly less thermal damage than a 10 mm instrument. Time required for ovariectomy is significantly less when using LS10, and with increasing body weight, it takes significantly more time to remove ovaries using LS5.