The use of indocyanine green for intraoperative sentinel lymph node mapping in dogs

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Abstract:

Introduction: The sentinel lymph node (SLN) is the first lymph node draining a primary tumour. Various techniques have been described with the standard of care consisting of the combination of a radioactive tracer and blue dye; however, their use comes with many limitations. Recently, near-infrared fluorescence imaging (NIRF) using a fluorescent contrast agent, indocyanine green (ICG), has resulted in high rates of intraoperative SLN detection with low false negative rates in humans. This technology has gained increasing interest in veterinary medicine; however, experience in clinical practice is minimal.

Materials and methods: Peritumoral injections of ICG +/- MB were performed in all cases and lymph nodes imaged using NIRF (Karl Storz VITOM ICGII camera). Expected or suspected SLN were observed for evidence of fluorescence (Figure 1) and/or blue staining and all regional lymph nodes extirpated as per standard protocols. Each lymph node was evaluated ex vivo and degree of fluorescence (0-3) and MB staining (0-2) was recorded.

Results: Fourteen cases have been performed to date. Primary mass sites include oral (n=6), mammary (n=2), cutaneous (n=5), and subcutaneous (n=2). One dog had 2 masses at separate sites. A SLN was identified in every case with a mean of 2 SLN per patient. The overall SLN identification rate was 100%. Mean time to SLN fluorescence and extirpation was 23.5 minutes

Conclusions: The use of ICG for SLN mapping in dogs is feasible and results in a high rate of SLN detection; however further investigation is warranted
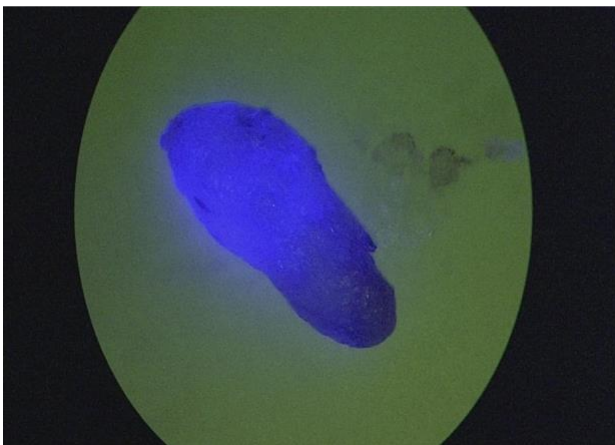
Figure 1: Retropharyngeal lymph node imaged under near infrared light demonstrating fluorescence stain uptake