Sonoscanner T-Lite:
Use of Portable Ultrasound for Vascular Access and Regional Anaesthesia in a 1.2 kg Dog Undergoing Ureterotomy

Case overview

A 9-year-old, 1.2 kg dog presented with a right ureteral obstruction and underwent coeliotomy for ureterotomy and ureterolith removal. Due to the patient's very small size and the complexity of the planned procedure, key considerations included reliable vascular access, accurate peri-operative monitoring, and effective multimodal analgesia.

In addition to the surgical procedure, central venous catheter placement was planned to facilitate ongoing blood sampling and peri-operative management. Placement of an oesophageal feeding tube was also planned to support nutritional management as the patient had been inappetant for a number of days.

Anaesthesia was induced using midazolam, fentanyl, and propofol, and maintained with sevoflurane in oxygen. A fentanyl constant rate infusion was used as part of the intra-operative analgesic and anaesthesia maintenance plan.

Clinical challenge

The patient's small size created several technical challenges. In very small dogs, vascular access can be difficult due to the small diameter of peripheral and central vessels, limited working space, and reduced tolerance for repeated attempts. Similarly, locoregional anaesthetic techniques can be more technically demanding, as accurate needle placement is essential while the margin for error is reduced. For this reason, ultrasound guidance was used to improve procedural accuracy and confidence during both central venous catheter placement and locoregional anaesthesia.

Use of ultrasound

The ultrasound machine was used with a 10-18 mHz hockey stick probe. Firstly, it was used to assist placement of a 4.5 Fr, 8cm, 3-lumen central venous catheter in the right jugular vein. The procedure was completed successfully on the first attempt. Ultrasound was used to confirm successful catheter placement.
Ultrasound was also used with the hockey stick probe to perform an ultrasound-guided quadratus lumborum block bilaterally, with 0.2ml/kg bupivacaine 0.5% per side, aiming to provide effective analgesia for coeliotomy, ureterotomy, and the immediate post-operative period.

The hockey stick probe was selected for both procedures because of the patient's small size and the need for high-resolution imaging in a confined anatomical area. The small footprint of the probe was particularly useful, allowing easier positioning around the patient.

Performance of the ultrasound machine

The image quality obtained with the hockey stick probe was excellent. The probe provided clear visualisation of small anatomical structures, which was particularly valuable in this 1.2 kg patient. Needle visualisation was especially impressive and

was clearer than many machines at a higher price point. This was clinically important for both central venous access and the quadratus lumborum block, where accurate needle tracking is essential.

The machine was also responsive during scanning, with no appreciable lag or delay in image acquisition while moving the probe. This is a relevant advantage compared with some handheld or wireless ultrasound systems, where latency can make real-time needle guidance more difficult.

The interface was simple and intuitive, while still allowing adjustment of the relevant imaging settings. The ability to switch probes easily is also beneficial, particularly in a clinical environment where different applications require different transducers. Colour Doppler functionality added further value, particularly for vascular identification and confirmation.

Other practical advantages included the portability of the machine, the quality and size of the screen, the lightweight nature of the probes, rapid boot-up and shut-down times, good battery life, and the ability to continue using the machine while connected to mains power. The robust carry case was also a useful feature, helping to protect the machine and probes when not in use.

Additional clinical use

The machine was also assessed by a diagnostic imager, who was impressed by the image quality and considered it suitable for performing full abdominal ultrasound examinations. This suggests that, in addition to its usefulness for anaesthesia-related procedures such as vascular access and locoregional anaesthesia, the system may also have broader diagnostic applications within the hospital.

Summary

This case demonstrated the value of a portable ultrasound system for veterinary patients. The machine supported successful right jugular central venous catheter placement and ultrasound-guided quadratus lumborum block in a 1.2 kg dog undergoing ureterotomy.

The hockey stick probe was particularly well suited to this case, providing a small footprint, excellent image quality, and impressive needle visualisation. These features were especially valuable given the patient’s size and the technical demands of the procedures performed.

Overall, the machine performed very well in a clinically challenging setting and appeared highly suitable for point-of-care anaesthesia applications, including vascular access and locoregional anaesthesia.

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This summary reflects personal clinical experience with the machine during a limited trial and should not be interpreted as a formal validation, endorsement, or purchasing recommendation on behalf of any institution.