

Computed tomographic evaluation of the proximity of needles placed for perineural anesthesia of the palmar digital nerves to synovial structures in the foot: an ex vivo study.

Gruyaert et al. (2024), in Frontiers in Veterinary Science

Products

Computed Tomography (CT) for evaluating needle proximity to synovial structures in the equine foot.

Hospital / Authors

Mounia Gruyaert, Maarten Oosterlinck, Maarten Haspeslagh, Annamaria Nagy Ghent University, Belgium; University of Veterinary Medicine, Budapest, Hungary

Clinical Background

Potential synovial penetration during palmar digital nerve blocks has not been thoroughly studied. CT imaging offers precise evaluation of needle placement relative to adjacent synovial structures.

Aim of Study

To assess the proximity of needles used for palmar digital nerve blocks to the navicular bursa (NB), distal interphalangeal joint (DIPJ), and digital flexor tendon sheath (DFTS) using CT imaging.

Cohort Study

Eighteen cadaver forelimbs were injected with diluted contrast medium to distend synovial structures (NB, DIPJ, DFTS). CT was performed to evaluate distances between needle tips and synovial structures after proximal and distal needle placements.

Results

- Synovial penetration was rare (3%), mostly occurring after distal needle placement and repeat synovial distension.
- Distances between needles and NB/DIPJ were significantly reduced after the second distension, increasing the risk of synovial

increasing the risk of synovial penetration.

- Distal needle placement had a higher risk of proximity to NB and DIPJ, while proximal placement increased the risk for DFTS.
- CT imaging provided accurate visualization of needle position and adjacent synovial structures, supporting its role in improving safety during nerve blocks.

Summary

- CT imaging enhances precision in assessing needle placement, reducing the risk of inadvertent synovial penetration.
- Proximal needle placement is safer for NB and DIPJ, while distal placement risks penetration after repeated synovial distension.
- CT offers a valuable diagnostic tool for evaluating and refining techniques for equine nerve blocks.

<u>Link to paper</u>