

Cross-sectional anatomy and comparative computed tomography of the equine tarsus

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Introduction: The equine tarsal joint is an anatomically complex region and has already been thoroughly described with radiography and ultrasonography. However in some cases these techniques are inconclusive and computed tomography (CT) is recommended. This study was established to describe a detailed CT reference of the normal equine tarsal joint.

Methods: CT was performed on 3 normal equine limbs from patients euthanized for reasons unrelated to this study. In all limbs CT was also achieved after intra-articular injection of the tarsocrural, centrodistal and tarsometatarsal joints with 60 mL, 3 mL and 3 mL respectively contrast (30 mg iodine/mL). 1,3 mm and 0.6 mm slices were made (120 kV and 352 mAs), dorsal and sagittal planes were reformatted. The CT images were compared with the corresponding anatomical slices.

Results: The tibia, talus, calcaneus, central, fused first and second, third and fourth tarsal bones could be clearly visualized. The long digital extensor (with tarsal extensor retinaculum), superficial digital flexor, deep digital flexor (with tarsal flexor retinaculum), gastrocnemius, peroneus tertius and tibialis cranialis tendons and long plantar ligament could be clearly identified. The lateral digital extensor, medial digital flexor, splitted peroneus tertius and tibialis cranialis tendons and collateral ligaments could be localized but not always clearly identified. Some of the numerous small tarsal ligaments could be identified: the plantar, lateral and interosseus talocalcaneal ligaments, interosseus talocentral - centrodistal - and tarsometatarsal ligaments, proximal and distal plantar ligaments and talometatarsal ligament. The cartilage at the talar ridges could be assessed on the post-contrast images.

Conclusions: CT of the tarsal joint can be of great value when radiography and ultrasound are inconclusive and in pre-operative planning of complex fractures. With CT having a superior anatomic resolution and detailed bone and soft tissue visualization this technique can increase our knowledge of the pathology in the equine tarsus.