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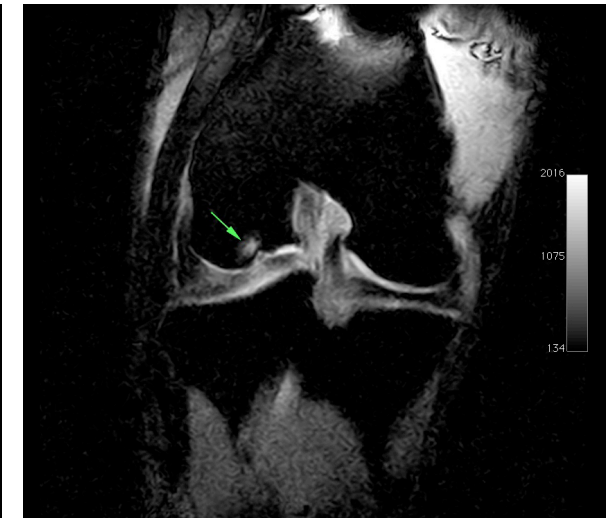
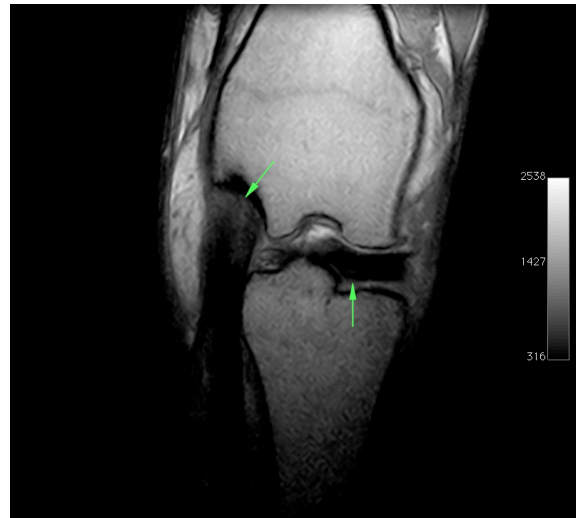
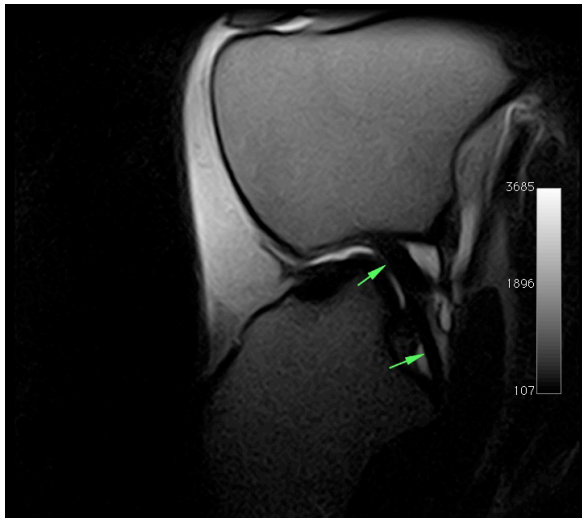
### MRI OF THE STIFLE

Stifle injuries have a prevalence of 8–32% in horses with hind limb lameness. Diagnosis of stifle injury has been limited to clinical examination, radiography, ultrasonography, nuclear scintigraphy, arthroscopy and CT. However, these techniques all have their limitations in determining the cause of stifle lameness. In recent times, MRI also became available, as an alternative to the above mentioned techniques.

Radiography is typically used to diagnose osteochondral injuries of the femoropatellar and femorotibial joints. However, some osteochondral defects of the femoropatellar and femorotibial joints are not reliably diagnosed with radiography. Ultrasonography is useful to detect injuries to soft tissues (the collateral ligaments, patellar ligaments, cranial meniscotibial ligaments, menisci) and limited portions of the articular surfaces. Unfortunately, complete evaluation of the soft tissues of the femorotibial joints is not feasible due to the substantial musculature in the stifle region and deep location of some of the structures within the joint space in horses.

Nuclear scintigraphy can be useful in horses with suspected enthesopathies of the patellar ligaments and osseous injuries. However, nuclear scintigraphy is unreliable for detection of most soft-tissue injuries. In addition, the clinical significance of most positive scintigraphic findings typically require the use of other imaging techniques to obtain a definitive diagnosis. Arthroscopy is limited in the detection of lesions in the stifle due to the extra-articular location of many structures and narrow field of view. CT of the stifle has been used in horses with stifle pain. Computed tomography provides high-quality images of the stifle joint allowing evaluation of osseous and most soft tissues. However, the images have low soft tissue contrast resolution. Therefore, injuries to the menisci, meniscotibial ligaments, and cruciate ligaments may not always be detected. Although intra-articular contrast material has been used to increase the accuracy when evaluating the integrity of the intra-articular soft tissues, CT does not readily detect cartilage defects or bone oedema.

A recent development of magnetic resonance imaging allows a complete non-invasive evaluation of the stifle joint in horses. Therefore, horses with injuries of the femorotibial



and femoropatellar joints that are not detected with other imaging techniques can undergo MRI evaluation. Moreover, MRI can be used to evaluate the articular surfaces of the femoropatellar and femorotibial joints without a need of diagnostic arthroscopy. Currently, a mid-field MRI system with a 90° rotatable magnet is available for imaging the equine stifle joint. To perform the MRI evaluation of the stifle, the magnet is oriented vertically and the horse is scanned under general anaesthesia in either dorsal or lateral recumbency with the affected hind limb extended vertically and the femorotibial joint centered in the magnet's isocenter. Two publications report common lesions seen in the stifle. One paper describes 61 cases of stifle pathology detected with MRI. The second paper correlates mid-field MRI lesions with findings from gross dissection and histopathology in a series of asymptomatic equine stifle joints. The heterogeneous appearance on proton density (PD) and T2-weighted turbo spin echo (TSE) images correlate with subclinical pathology in some tissues and normal variations in composition of others.

This presentation demonstrates the procedure to perform an MRI of the stifle, including its strengths and limitations. Soft tissue and bony lesions detected with MRI will be described.

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