Highlights of recent clinically relevant papers

Full-thickness skin grafting to cover equine wounds caused by laceration or tumor resection


The objective of this case series was to describe and evaluate full-thickness skin grafting of equine wounds.

Six adult horses were used in the study. A full-thickness graft was harvested from the pectoral region with the horse anaesthetised or standing and sedated after local anaesthetic infiltration. Grafts were attached to the cutaneous margin of the wound with staples and/or sutures if the horse was anaesthetised or if the recipient site was desensitised. Cyanoacrylate glue was used to attach the grafts to the cutaneous margin of the wound of 3 horses. Medical records were reviewed for history, physical examination findings, grafting technique, post operative complications and outcome.

Three horses had full-thickness skin grafting to cover a fresh defect created by excision of a cutaneous neoplasm and 3 had full-thickness skin grafting to cover a fresh or granulating laceration. Grafts were completely accepted in 5 horses. The superficial layers of all grafts sloughed, but the final cosmetic appearance of accepted grafts was good.

The conclusions of the study were that full-thickness skin grafting can be performed in standing sedated horses with good cosmesis, especially when the meshed graft is expanded minimally. Good acceptance of a full-thickness graft can be expected, regardless of whether the graft is applied to a fresh or granulating wound.

Distal interphalangeal articular cartilage assessment using low-field magnetic resonance imaging


The suitability of low-field magnetic resonance (MR) imaging for assessment of articular cartilage has been questioned, based on insufficient image quality.

The purposes of this study were to describe the MR anatomy of the normal distal interphalangeal (DIP) cartilage and evaluate the sensitivity and accuracy of low-field MR imaging for identification of cartilage erosions that were created ex vivo.

Imaging sequences included sagittal and dorsal multiple-oblique T1-weighted gradient-recalled echo (GRE) and sagittal dual echo sequences. In the thickest regions, normal cartilage appeared as a trilaminar structure on high-resolution T1-weighted GRE sequences. All 8 mm large full-thickness erosions were correctly identified (100% sensitivity and accuracy) using T1-weighted GRE sequences.

Sensitivity and accuracy ranged from 80–100% and 10–80%, respectively, for detecting focal full-thickness erosions and from 35–80% and 35–60%, respectively, for detecting partial thickness erosions, using T1-weighted GRE sequences. Superficial irregularities were not diagnosed using any sequence.

Overall, fewer cartilage alterations were detected with sagittal dual echo sequences than with sagittal T1-weighted GRE sequences. The dorsal multiple-oblique plane was useful to detect linear dorsopalmar erosions.

A combination of T1-weighted GRE sequences in 2 planes has potential for identification of severe DIP cartilage erosion in anaesthetised horses using low-field MR imaging.

Comparison of magnetic resonance imaging, computed tomography, and radiography for assessment of noncartilaginous changes in equine metacarpophalangeal osteoarthritis


Four CR projections, helical single-slice CT and MRI (T1-weighted gradient recalled echo [GRE], T2*-weighted GRE with fast imaging employing steady-state acquisition [FIESTA], T2-weighted fast spin echo with fat saturation, and spoiled gradient recalled echo with fat saturation [ISPGR-FS]) were performed on 20 racehorse cadaver forelimbs.

Osteophytosis, synovial effusion, subchondral bone lysis and sclerosis, supracondylar lysis, joint fragments, bone marrow lesions and collateral desmopathy were assessed with each modality. Interexaminer agreement was inferior to intraexaminer agreement and was generally moderate (i.e. 0.4 <kappa <0.6). Subchondral bone sclerosis scores using CT or MRI were correlated significantly with the reference quantitative CT technique used to assess bone mineral density (P<0.0001).

Scores for subchondral lysis and osteophytosis were higher with MRI or CT vs. CR (P<0.0001). Although differences between modalities were noted, osteophytosis, subchondral sclerosis, and lysis as well as synovial effusion were all associated with the degree of cartilage damage.
and the authors suggested should be further evaluated as potential criteria to be included in a whole-organ scoring system.

This study highlighted the capacity of MRI to evaluate noncartilaginous changes in the osteoarthritic equine MCP joint.

**MR imaging features of surgically induced core lesions in the equine superficial digital flexor tendon**


Tendon injuries are common in athletic humans and horses. Ultrasonography is the diagnostic method of choice in horses with tendon injuries but there is increasing application of magnetic resonance (MR) imaging to monitor and follow-up tendon healing.

In this study a core lesion was created in the superficial digital flexor tendon (SDFT) of each forelimb of 4 horses. One of the 4 horses was subjected to euthanasia at 2, 4, 8 and 12 weeks after creation of the lesion. MR examinations of the SDFT were performed immediately post mortem in a 1.5 T Siemens Symphony magnet and compared with histological findings. Measurements from the MR images were also compared to ultrasonographic measurements available from the same lesions. Tendon lesions appeared as well-circumscribed hyperintensities in the core of the SDFT on all pulse sequences. Lesions were most conspicuous on fat-suppressed fast low angle shot (FLASH) sequences and least conspicuous on T2 transverse dual turbo spin echo (T2 TSE) sequences. The signal-difference-to-noise ratio decreased with the age of the lesion in all sequences in this study. Twelve-week-old lesions were not visible on T2 TSE images but in all other sequences the lesion remained hyperintense.

The lesion volume and maximum cross-sectional area of core lesions were significantly smaller in T2 TSE images than in other MR sequences. The lesion volume and maximum cross-sectional area of core lesions were significantly larger in proton density, T1, and FLASH sequences and significantly smaller in T2 sequences than when measured from ultrasonographic images.

The study concluded that through comparison between sequences, MR imaging may be able to provide information on various stages of tendon healing.

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