

# Referring for standing equine MRI

The proven game changer in  
lameness diagnosis

# What's so special about MRI?

**Since the advent of MRI, much has been learned about the causes of equine lameness. From the previously under-diagnosed, such as collateral desmitis of the distal interphalangeal joint, through the previously misunderstood, such as navicular syndrome, to the previously unknown, such as bone marrow oedema, MRI has revolutionised our ability to provide a diagnosis and improve prognosis in equine lameness.**

## **Soft and bony tissue imaging**

Unlike other modalities MRI provides excellent detail of both soft and bony tissues. More than this, because MRI distinguishes water from fat, it can highlight areas of pathology such as inflammation and bruising in a way that has no parallel in radiography, CT, ultrasound or nuclear scintigraphy.

## **Three dimensional imaging**

MRI images the region of interest in slices orientated in any 3D plane. This allows a lesion to be visualised without superimposition of adjacent structures, with multiple views to truly appreciate its full extent.

**“Hallmarq’s MRI has revolutionised the way foot lameness has been diagnosed in thousands of cases over the last 20 years. Excellent image quality facilitates accurate diagnoses, appropriate treatment selection and formulation of a prognosis.”**

Dr. Sarah Taylor, BVM&S MSc PhD Cert ES(Orth) DipECVS DipECVSMR MRCVS, The University of Edinburgh.

The Royal (Dick) School of Veterinary Studies

# When should I consider an MRI referral?

**It is important to localise the source of lameness before referring a case. In particular the abaxial sesamoid block alone is not sufficient. Horses referred for a foot scan should have a positive response to a palmar digital or coffin joint block. Additional scans of the pastern and fetlock should be considered for horses that are positive to abaxial sesamoid but negative to more distal blocks.**

- Lameness localised by nerve blocks to a specific region of the limb, where radiographs are negative or unclear and access by ultrasound is difficult
- Penetrating injuries needing urgent attention
- Injury assessment where general anaesthesia is inadvisable, eg suspected fetlock, carpal or tarsal bone fractures that cannot be found by x-ray
- Acute onset of lameness during exercise
- Racehorses at risk of fetlock fractures or palmar osteochondral disease through repetitive fast work
- Cases that do not respond to treatment as expected
- Monitoring the progress of treatment, and to assess readiness for competition

**“Standing MRI allows us to accurately diagnose the cause of lameness in the vast majority of cases where standard diagnostic techniques fail to give us the answer. It permits the selection of appropriate treatment methods, whereas without it we would often have been guessing”**

Tim Mair BVSc PhD DEIM DESTS DipECEIM MRCVS,

Bell Equine Veterinary Hospital

# How do I refer & how is the horse scanned?

**In the first instance, most referral centres welcome a phone call to discuss the case in more detail as no two lameness cases are the same. You will normally be required to submit online forms giving detailed patient information. For non-urgent appointments, the referral practice will generally contact the horse owner directly with a date and time for admittance.**

## How do I refer a case?

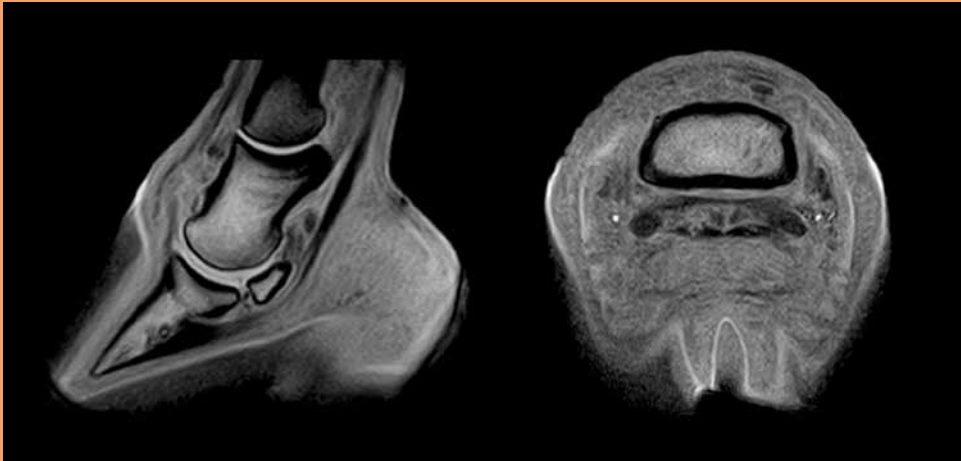
The referral clinic will need to know the case history and previous diagnostic results. After the scan they will provide an interpretation and radiological report.

Other options may also be available by arrangement:

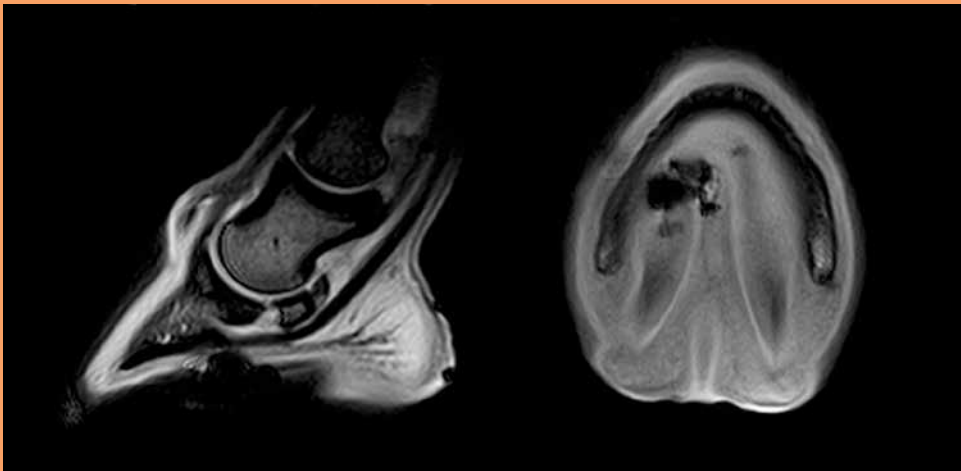
- Suggestions regarding treatment and prognosis
- An explanation to the client in appropriate language
- In every case, the patient is returned to your care with a recommended treatment plan for you and the horse owner to implement

## How is the horse scanned

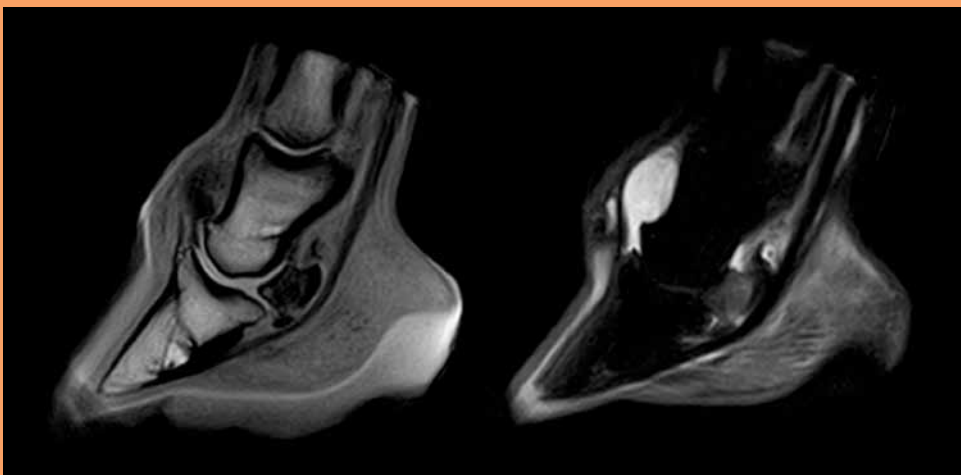
- The shoes are removed and, for foot scans, checks made for residual nail fragments
- The sedated horse stands with the limb in the magnet within a radio-frequency shielded room.
- Scanning takes 1-2 hours, possibly longer if a horse is uncooperative. The horse will need some time to recover from sedation before going home
- Typically 500-600 images are collected, and interpreted by a specialist which may take 24-72 hours
- No ionising radiation is used and there are no known biological effects of magnetic fields



DDFT Lesion



Foot Penetration



Navicular Bone Oedema





# FAQs

## Are all MRI scanners the same?

There are three types of MRI scanner:

- Standing MRI. The Hallmarq system is the only MRI scanner that can image the foot and leg of the standing sedated horse.
- Adapted human 1.5T high field, tubular scanners. Mostly found in institutions that scan both companion animals and horses. The reported diagnostic rate and lesions detected are similar for both high field and standing systems\*, though some clinicians prefer a high field machine for enhanced image quality.
- Low field “down” scanners. General anaesthesia is again required, though without gaining the benefit of the stronger magnetic field. Some systems can scan body parts larger than the distal limb.

\* Byrne, C.A., Marshall, J.F., Voute, L.C. (2020) Clinical magnetic resonance image quality of the equine foot is significantly influenced by acquisition system. Equine Vet J. 00, pp 1–12

## Is MRI safe?

There is a known\* risk that about 1 in 100 otherwise healthy horses will die or suffer complications due to general anaesthesia or on recovery. Horse owners are aware of the risk and often reluctant to consider general anaesthesia for a diagnostic procedure alone. The Hallmarq MRI system is specifically designed to be safe, with no need to anaesthetise the horse, lay it down, or move it using hoists.

\*Dugdale A.H., Obhrai. J., Cripps P.J. (2016) Twenty years later: a single-centre, repeat retrospective analysis of equine perioperative mortality and investigation of recovery quality. Vet Anaesth Analg. 43, (2), 171-8

## Is MRI expensive?

On average standing MRI proves no more expensive than conventional diagnosis. Lameness is a challenging condition, and often a horse undergoing just conventional work-up and treatment will return to the clinic again and again, proving more expensive than an early, definitive MRI diagnosis. Early diagnosis enables faster and more effective treatment, improved outcomes and a more cost efficient return to work.

## How do you deal with motion?

During a standing foot scan the foot is placed firmly on the floor. With correct positioning the horse will usually remain remarkably stationary for the 2-5 minutes required for each set of images. Any unsatisfactory scans can quickly be identified and repeated. Higher up the leg, Hallmarq's award-winning motion correction software compensates for movement, and repeats any parts of the scan that would lead to blurring.

## Take a look at some interesting case studies:

<https://hallmarq.net/case-studies-categories/equine-mri/>



**Hallmarq**  
Visionary Veterinary Imaging

**Hallmarq Veterinary Imaging Ltd**

Unit 5, Bridge Park, Guildford,  
Surrey, GU4 7BF, UK  
+44 (0)1483 877812

**Hallmarq Veterinary Imaging Inc**

1829 Suncast Ln,  
Batavia, IL 60510, USA  
(+1) 978 266 1201



[hallmarq.net](http://hallmarq.net)