

REFERRING FOR EQUINE MRI
Standing for Safety



WHY?

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,

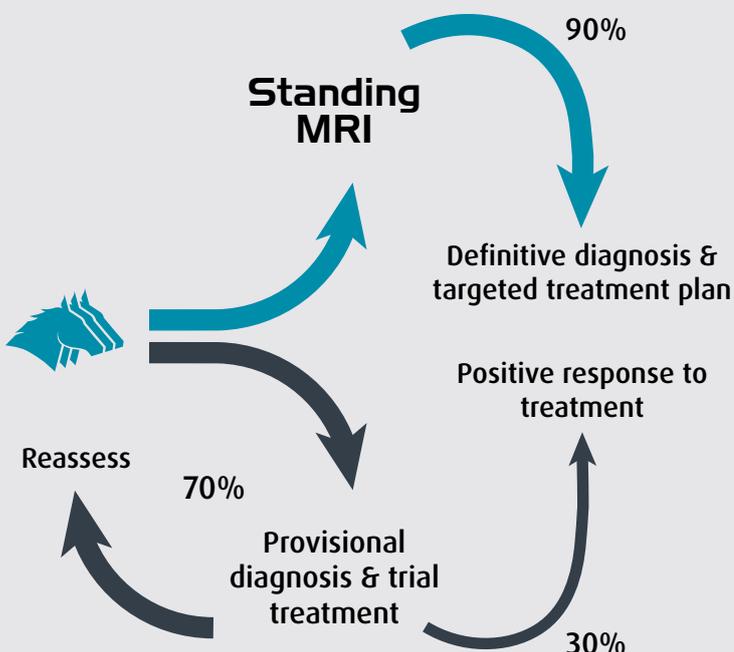
because MRI distinguishes water from fat, it can highlight areas of pathology such as inflammation and bruising in a way that has no parallel in radiography, CT, ultrasound or nuclear scintigraphy.

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.

“Absent a diagnosis, medicine is poison, surgery is trauma, and alternative therapy is witchcraft”

Dr Kent Allen DVM, Virginia Equine Imaging,
FEI National Head Veterinarian



WHEN?

WHEN SHOULD I CONSIDER AN MRI REFERRAL?

- ✓ 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

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.



HOW?

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 be also available by arrangement:

- Suggestions regarding treatment and prognosis
- An explanation to the client in appropriate language
- Further case management or treatment

HOW IS THE HORSE SCANNED?

- The shoes are removed and, for foot scans, checks made for residual nail fragments
- The horse is sedated and stood in an electrically screened room with its leg inside a large magnet
- Scanning takes 1-2 hours, possibly longer if a horse is uncooperative. Then 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



How do I find my nearest referral clinic?
visit hallmarq.net/find-us



Q&A

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. Almost all equine MRI systems in the UK are Hallmarq standing units.
- Adapted human 1.5T high field, tubular scanners. Mostly found in institutions that scan both companion animals and horses, there are very few of these in the UK or Europe. 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 performance issues where only minor lesions are suspected. General anaesthesia is always required.
- Low field “down” scanners. General anaesthesia is again required, though without gaining the benefit of the stronger magnetic field. Some such systems can scan body parts larger than the distal limb.

Is MRI safe?

There is a known* risk that about 1 in 200 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 was specifically designed to be safe, with no need to anaesthetise the horse, lay it down, or move it using hoists.

*1. Johnston, G. M., Taylor, P. M., Holmes, M. A. & Wood, J. L. Confidential enquiry of perioperative equine fatalities (CEPEF-1): preliminary results. *Equine Veterinary Journal* **27**, 193–200 (1995).

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, accumulating higher total costs than an early, definitive MRI diagnosis. Early diagnosis is also likely to leave funds available for more effective treatment, improve outcome, and reduce distress to horse and owner.

How do you deal with motion?

During a standing foot scan the foot is placed firmly on the floor, and 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.

“Whilst certain clinical, radiological and ultrasonographic findings may point toward a particular diagnosis of foot pain, in many horses with foot pain an accurate definitive diagnosis can only be made using MRI”

Parkes R., Newton R., and Dyson S.J.
Vet J **204**, 40-46 (2015)

To take a look at some interesting case studies please visit:

www.hallmarq.net/equine/cases-studies



Hallmarq

Standing Equine MRI

“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

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