

If Only They Could Talk

Our regular focus on equine health. This month vet JOHN MARTIN discusses fractures of the sesamoid bones.

SESAMOID bones are small bones embedded within a tendon or ligament in close proximity to a joint. They are found at sites of extreme loading and their function is to reduce friction and wearing of the tendon or ligament as the limb is loaded and unloaded.

When referring to sesamoid injuries in the racing thoroughbred most people are describing injuries to the proximal sesamoid bones found at the back of the fetlock joint, although there are other examples of sesamoid bones in the horse, such as the navicular bone found at the back of the foot.

The proximal sesamoid bones are a pair of small triangular bones situated at the back of each fetlock joint. They form part of a group of structures known collectively as the suspensory apparatus. The function of the suspensory apparatus is to prevent excessive extension of the fetlock joint during exercise.

The suspensory apparatus is made up of the large suspensory ligament which originates at the back of the cannon bone just below the knee. This ligament runs along the back of the cannon bone between the bone and the flexor

tendons. About two-thirds of the way down the cannon bone, the ligament divides into the medial and lateral branches which attach to the top of the medial and lateral sesamoid bones.

The distal sesamoidean ligaments are a collection of ligaments that are a functional continuation of the suspensory ligament, and these attach from the base of each sesamoid bone to the back of the pastern bone. There is a dense inter-sesamoidean ligament which secures the two sesamoid bones together. The function of the sesamoid bones within the suspensory apparatus is to provide stability and prevent extreme over-extension of the fetlock joint when the horse is performing.

FRACTURES of these sesamoid bones are a reasonably common injury in the racing thoroughbred and, unlike most other bone injuries, they do not heal very well.

There are a few reasons for their poor capacity to heal. Firstly, as they develop in tendons or ligaments, they do not have the same anatomical structure as normal skeletal bone. Normal skeletal bone has a thin covering called the periosteum which

plays a crucial role in the daily modelling and remodelling of the bone in response to exercise. Skeletal bone also has a stiff outer cortex and a soft centre known as the medulla where blood cells are generated. All these layers found in normal skeletal bone have healing properties, but they are not found in the sesamoid bones.

ANOTHER factor which impairs the healing of a fractured sesamoid bone is that the various ligament attachments will pull in different directions, meaning the fracture is unstable. Instead of forming a strong bridging callus, as is the case in skeletal bone, fractures in the sesamoid bones are bridged with fibrous tissue which is not strong enough to withstand the forces exerted by a horse at full speed.

Fractures of the sesamoid bone occur during the weight-bearing phase of the stride when there is a pulling force on the suspensory apparatus. When this force exceeds the strength of the suspensory apparatus, a tear in the suspensory ligament or a fracture of the sesamoid bones will occur.

Sesamoid fractures are not exclusively associated with racing. They are also quite commonly seen in foals, typically when aged between two weeks and two months. Such fractures can result from the foal galloping with their mothers, often in large paddocks on hard ground. This causes the suspensory apparatus to fatigue, leading to hyper-extension of the fetlock joint, and the excessive forces exerted on the sesamoid bones result in a fracture. There are also some studies which suggest that poor conformation may predispose the foal to sesamoid fractures by placing additional stresses on the bone.

These foal fractures are managed with support bandaging and restricted exercise, and while their capacity to heal is not quite as bad as in the skeletally mature horse, they will result in an elongated sesamoid bone which often has an inherent weakness.

BECAUSE of this poor capacity for healing, Mark and Charlie pay particular attention to the sesamoid bones and fetlock joints when examining yearlings at the sales. Quite often an old foal fracture can be detected on physical examination by having a slightly irregular profile and these horses will not be considered for purchase.

Fractures of the sesamoid bones occur at certain predilection sites and have been categorised based on the site

of the fracture. Each type of fracture will have a different treatment and prognosis for a future athletic career.

Apical fractures are those which occur in the proximal third of the sesamoid bone and are the most common type of sesamoid fracture seen in thoroughbreds. Horses with an apical sesamoid fracture will present acutely lame after exercise. On examination there will be a marked effusion of the fetlock joint with response to passive flexion of the joint and resentment to palpation of the area. As these fractures will not heal sufficiently, surgical removal of the affected fragment is advised. The horse can function with up to 30% of the sesamoid bone removed as the suspensory ligament will form a fibrous union with the remaining sesamoid bone. These injuries are most seen in the hindlimb and carry a reasonably good prognosis for a return to athletic function.

Mid-body fractures occur, as the name suggests, through the centre of the bone. Unlike the case with apical fractures, the fragments of bone are too large to remove and treatment options are limited. Surgical fixation of the sesamoid with a lag screw can be attempted but the prognosis for a return to athletic function is poor and this is often reserved only for those horses that have a breeding career.

Basilar fractures are defined as fractures which occur in the distal third of the sesamoid bone and are best managed in the same way as apical fractures with surgical removal of the fragment. Prognosis for a return to racing depends on the degree of displacement and disruption of the surrounding soft tissue structures. Fractures with mild displacement and minimal disruption of the distal sesamoid ligaments carry a good prognosis for a return to athletic function.

Comminuted fractures of the sesamoid bone are severe and are associated with complete disruption of the suspensory apparatus. This is a catastrophic injury and due to the extent of damage to the bone and surrounding tissue these fractures almost always result in euthanasia.

IN summary, a sesamoid fracture is a serious injury which, due to the unique properties of the bone, has poor healing qualities. At best, such injuries will require surgical intervention to achieve a return to athletic function; and at worst can result in retirement, or in some cases euthanasia.



Normal sesamoid at rear of a fetlock joint



Mid-body sesamoid fracture with significant displacement



Apical sesamoid fracture. The circled fragment was removed surgically.



Becky Dinsdale

At Johnston Racing, the peace of mind of our owners is a priority. This is why we have included the vet fees in our inclusive daily rate for horses in training.

Becky Dinsdale was born and raised on a farm in upper Wensleydale. She attended Ripon Grammar before studying veterinary science at the University of Liverpool, graduating in July 2019. She had a spell shadowing the vets at Kingsley Park as part of a university placement, and had further placements in France and New Zealand. After graduating she had another stint at Johnston Racing as an assistant to the vets. She then worked at a first-opinion veterinary practice in west Yorkshire before joining the yard as a full-time vet in early 2020.

Our veterinary team



John Martin

John Martin is from the town of Stradbally in County Laois in Ireland's Midlands. He was raised on a farm and from a young age had ambitions to be a vet.

He trained at University College in Dublin and it was there that he first took an interest in horse racing, which nurtured an ambition to eventually specialise in working with horses as a vet.

After graduating he took up a post at a veterinary hospital in Navan, County Meath, before moving to England to join a practice in Louth, Lincolnshire.

He joined Mark Johnston Racing at the start of 2010, staying for more than two years before returning to Ireland for a brief spell and then resuming his position at the yard in April 2013.