results in substantial stress to the bird and risk to the handlers, and over time increases the risk of humanisation. While many of the MVI injuries were serious in eagles and the birds were euthanased immediately, the difficulty in deciding whether to treat the bird was in balancing the animal welfare aspects of force-feeding and confinement, against the difficulty of treating and handling the large eagles. At all times the animal’s welfare, both short and long-term was of paramount concern.

Consideration has been given as to whether the continued treatment of wild raptors is justified as it occupies substantial amounts of practice time and money. Most species seen at the practice are not endangered, and there is evidence that the number of birds saved and released does not have a significant impact on numbers in the wild population. Birds will inevitably suffer some discomfort recovering from injuries, disease or surgery. The short-term impact on the birds’ welfare should be balanced by favorable long-term prognoses. Counterbalancing these factors are the advantages of improving the professions’ image by providing pro bono treatment for Australian wildlife, and gaining expertise in uncommon species that may one day become endangered. Wildlife carers will continue to attempt to treat these birds irrespective of the involvement of the veterinary profession. It is the author’s viewpoint that for this reason alone it is important that veterinarians are involved to ensure the birds’ welfare, and devise the most appropriate treatment regimes. Treatment of these unique birds is of considerable interest to practice staff, both by giving them the opportunity to observe, handle and treat birds which are not generally seen at close range, and as a diversion from the routine of small animal practice. The author has found that working with wild raptors is sometimes a little risky, always intellectually stimulating and very rewarding when rehabilitated birds are released. Despite the financial cost, we will continue to provide a public service by treating wild Australian birds of prey.

**References**


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**Unusual osteochondral lesions of the talus in a horse**

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A 2-year-old Thoroughbred gelding was evaluated for a grade 3 out of 5 unilateral hind limb lameness. Flexion of the right hock and stifle joints (spavin test) exacerbated the lameness. Response to intra-articular and perineural anaesthesia isolated the source of lameness to the tarsocrural area, despite an absence of tarsocrural joint effusion. Routine radiographic examination of the hock did not reveal any significant abnormalities. Skeletal scintigraphic evaluation revealed a focal region of increased bone activity in the proximal medial trochlear ridge of the talus. Flexed lateromedial radiographic views identified three discrete semicircular lytic lesions at the proximal articular margin of the medial trochlear ridge of the talus. Conservative management of the lesions was associated with a successful return to racing. The location and appearance of the osteochondral lesions of this report have not been previously reported and may be a manifestation of developmental orthopaedic disease and abnormal endochondral ossification. Nuclear scintigraphy and flexed lateromedial radiographic views facilitated identification of the lesions. This radiographic view is recommended when lameness is isolated to the tarsocrural joint and standard radio-graphic projections fail to identify a cause.

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Keywords: Osteochondritis dissecans, subchondral cyst-like lesions, tarsocrural joint, nuclear scintigraphy

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Developmental orthopaedic disease is a term widely applied to musculoskeletal growth disturbances in horses. Included in this group of growth disturbances are osteochondritis dissecans and subchondral cyst-like lesions, both of which are common causes of lameness in young horses.\textsuperscript{1,2} Developmental osteochondral lesions have been described in most joints in the horse. Particular joints and specific intra-articular sites have a predilection for osteochondrosis.\textsuperscript{2-4} The tarsocrural joint is a common site of osteochondritis dissecans, though not for subchondral cyst-like lesions. Within the tarsocrural joint, the distal intermediate ridge of the tibia, distal aspect of the lateral trochlear ridge and medial malleolus are sites of predilection for osteochondritis dissecans.\textsuperscript{2,4} This article documents the clinical findings and outcome of an unusual developmental osteochondral lesion in a previously unreported location in the tarsocrural joint of a horse.

Case report
A 2-year-old Thoroughbred gelding was referred for evaluation of a right hind limb lameness that developed three weeks into its second race preparation. There was no previous history of lameness. On examination, the lameness was assessed as grade 3 out of 5.\textsuperscript{5} Examination of the hind limbs and pelvic region at rest was unremarkable. Flexion of the right hock and stifles (spavin test) exacerbated the lameness by one grade. Intra-articular anaesthesia of the right distal intertarsal and tarsometatarsal joints did not alter the lameness. The limb distal to the hock was eliminated as the source of lameness with perineural anaesthesia of the plantar, plantar metatarsal and dorsal metatarsal nerves (a low six point block), and regional anaesthesia below the hock (a subtarsal ring block). Perineural anaesthesia of the right tibial, and deep and superficial peroneal (fibular) nerves completely resolved the lameness.

Radiographic examination of the right hock included lateromedial, dorsoplantar, dorsolateral-plantaromedial and plantarolateral-dorsomedial oblique views. No significant radiographic abnormalities were observed. Nuclear scintigraphic evaluation of the hind limbs was performed, following intravenous administration of 7GBq of technetium 99m combined with dihydrophosphate (TechnesCan\textsuperscript{®} HDP, Mallinckrodt Medical USA). Bone phase scintigraphic images were obtained three hours following injection using a gamma camera (Maxi-Camera II/61 - General Electric, Denmark). Scintigrams were compiled using a nuclear formatter (SM H250BF, General Electric, USA). Lateral and plantar scintigraphic views of the right hock revealed a focal region of intense radionuclide uptake in the proximal medial trochlear ridge of the talus (Figure 1).

Additional flexed lateromedial radiographic views of the right hock revealed three discrete semicircular lytic lesions at the proximal articular margin of the medial trochlear ridge of the talus (Figure 2). The non-articular margin of the subchondral lesions had a sclerotic border. A flexed lateromedial view of the contralateral hock showed no radiographic abnormalities.

Treatment options offered to the owner included arthroscopic evaluation of the plantar pouch of the tarsocrural joint and debridement of the lesions, or conservative management. The owners elected conservative management. This treatment regimen included stall rest with hand walking for two months, followed by paddock rest for a further eight months. Pentosan polysulphate (Cartrophen Vet\textsuperscript{®}, Biopharm, Australia) 3 mg/kg IM, weekly for four treatments was given to minimize articular cartilage degeneration and nonsteroidal anti-inflammatory treatment (phenylbutazone 4.4 mg/kg of bodyweight, PO q24hr) was instituted for 10 days.

The gelding was re-examined 10 months after initial evaluation, and showed no lameness at a trot in a straight line, no response to a spavin test and had no tarsocrural joint effusion. Dorsoplantar and flexed lateromedial radiographs were taken. The original osteochondral defects were smaller with increased sclerosis at the non-articular margin (Figure 3). Smaller, additional subchondral lesions with a similar appearance were now obvious adjacent to the initial lesions. There was no radiographic evidence of osteoarthritis of the tarsocrural joint. The gelding returned to training following this examination and successfully raced 16 times without recurrence of lameness. A further evaluation, at 16 months after diagnosis, found no sign of lameness at the trot nor following flexion of the hock. Flexed lateral radiographic views of the right hock showed

![Figure 1. Lateral (A) and plantar (B) scintigrams of the right hock, showing localized increased uptake of radionuclide at the proximal medial aspect of the talus (arrows). Lateral (C) and plantar (D) scintigrams of the left hock with normal radionuclide distribution.](image)
anaesthesia of the right tibial and deep and superficial peroneal nerves did alleviate the lameness, confirming its site. Clinically inapparent synovial effusion is a common finding with subchondral bone cysts of the metacarpophalangeal and femorotibial joints, and was a feature in this horse. Intra-articular anaesthesia does not consistently alleviate pain associated with subchondral lesions, presumably due to the presence of subchondral bone pain and intact overlying cartilage.

Routine radiographic views did not identify the lesions of the proximal aspect of the talus in this horse. Flexed lateromedial or flexed oblique radiographic views allowed evaluation of the plantar aspect of the trochlear ridges of the talus and facilitated identification of the lesions. This radiographic view is recommended when lameness is isolated to the tarsocrural joint and standard radiographic projections fail to identify a cause. The presence of multiple cystic lesions within the same bone is uncommon, though was a feature in this horse. The horse initially had three unilateral cystic lesions and, on follow up radiographic examination, several additional smaller lesions were identified adjacent to the original lesions. The pathogenesis of the additional subchondral lesions is unclear. It is possible these osteochondral defects were developing or were acquired after the initial examination. Given the age of the gelding, the development of the lesions as a result of defective endochondral ossification is an unlikely cause. Similarly, their development secondary to joint trauma is unlikely as the gelding underwent a 10 month period of rest. Furthermore, the differences in radiographic projection (slight proximal to distal obliquity of the follow up lateromedial view) between initial and follow up examinations may also explain their detection.

The lameness was not progressive, despite the progression of the subchondral lucencies, perhaps because the lesions progressed during a period of convalescence when they were not subject to the trauma associated with training.

Scintigraphy has been suggested to be less reliable than radiography for diagnosing osteochondritis dissecans and subchondral cyst-like lesions. However in some cases its use is limited by the absence of clinical signs of lameness, which may lead to an underestimation of the severity of the lesions. The horse of this report presented with a grade 3 out of 5, unilateral lameness. The severity of the lameness is likely to reflect the weight bearing location and extent of the subchondral defect. Intrarticular anaesthesia was not performed because of the absence of tarsocrural joint effusion, therefore it is not known whether intrarticular anaesthesia would have resolved the lameness. Perineural anaesthesia of the right tibial and deep and superficial peroneal nerves did alleviate the lameness, confirming its site. Clinically inapparent synovial effusion is a common finding with subchondral bone cysts of the metacarpophalangeal and femorotibial joints, and was a feature in this horse. Intrarticular anaesthesia does not consistently alleviate pain associated with subchondral lesions, presumably due to the presence of subchondral bone pain and intact overlying cartilage.

Discussion

The osteochondral lesions identified in this report were unusual in appearance and location, and their pathogenesis remains uncertain. The lesions may be a manifestation of developmental orthopaedic disease (DOD) and abnormal endochondral ossification. Alternatively, the lesions may have developed secondary to subchondral bone trauma, fracture, sepsis or chronic osteoarthritis. The lack of historical and radiographic evidence to support a previous fracture, sepsis or osteoarthritis suggests that the lesions in this horse were either developmental or due to subchondral bone trauma, or a combination of both. No unique features consistently distinguish osteochondrosis lesions from trauma to a developing osteochondral junction.

The appearance of the lesions in this case were semicircular and involved articular cartilage and subchondral bone. There were similarities in their radiographic appearance to osseous cyst-like lesions, though their shape and multiplicity were not typical of cyst-like lesions reported in other joints. The lesions in this gelding were located at a site under high biomechanical load and experiencing considerable motion. Although similar lesions have not previously been reported in the proximal medial trochlear ridge of the talus, cysts are often seen in areas under high load and motion. Although the gelding had raced without lameness prior to presentation, it is not uncommon for clinical signs of osteochondrosis, particularly subchondral cyst-like lesions, to manifest after several race preparations.

The horse of this report presented with a grade 3 out of 5, unilateral lameness. The severity of the lameness is likely to reflect the weight bearing location and extent of the subchondral defect. Intrarticular anaesthesia was not performed because of the absence of tarsocrural joint effusion, therefore it is not known whether intrarticular anaesthesia would have resolved the lameness. Perineural anaesthesia of the right tibial and deep and superficial peroneal nerves did alleviate the lameness, confirming its site. Clinically inapparent synovial effusion is a common finding with subchondral bone cysts of the metacarpophalangeal and femorotibial joints, and was a feature in this horse. Intrarticular anaesthesia does not consistently alleviate pain associated with subchondral lesions, presumably due to the presence of subchondral bone pain and intact overlying cartilage.
scintigraphy may detect increased bone activity several weeks before lesions become radiographically apparent. In the gelding in this report, scintigraphy was useful in isolating lesions not readily apparent on standard radiographic views, reflecting active osteoblastic activity of the subchondral bone associated with these lesions.

Treatment options for osteochondral lesions include surgical debridement, restricted exercise, chondro-protective and non-steroidal anti-inflammatory medication. The proximal medial troclear ridge may be visualized arthroscopically through the medial plantar pouch, and would have provided surgical access to the lesions in this horse. Arthroscopic surgical debridement to evacuate the cystic contents and debride the margins is considered the treatment of choice for subchondral cystic lesions of the medial femoral condyle and distal third metacarpus. Some surgeons have suggested that bone remodeling is more prolonged with non-surgical management of subchondral cystic lesions. A similar surgical treatment approach is recommended for osteochondritis dissecans. Whether surgical treatment of the lesions in this case would have improved the outcome is unknown.

Intra-articular sodium hyaluron and polysulphated glycosaminoglycans and systemic nonsteroidal anti-inflammatory drugs may retard cartilage degeneration and reduce synovitis and intraosseous pain in horses with osteochondrosis lesions. Successful results following conservative management of subchondral cystic lesions located in the medial femoral condyle, distal metacarpal condyles, proximal first phalanx, cubital joint and distal tibia have been reported. Resolution of lameness is considered to be directly related to the amount of joint surface involved, the importance of that joint surface relative to the mechanical load and the presence of osteoarthritis. Despite the large, weight-bearing area involved in the gelding in this report, the response to conservative management was good, with the horse subsequently racing without further lameness.

References


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