

IT'S YOUR CASE

Species: Equine

Breed: Thoroughbred

Sex: Mare

Age: 4 years

Clinical History:

Lame left fore for 4 weeks, swelling left carpus. Used for racing.

Anatomic regions: Carpus (left)

Details of study and technical comments: LM, flexed LM, DLPMO, DMPLO, DP and DPrDDiO (flexed distal row skyline) views of the left carpus. Images are of good diagnostic quality.

Diagnostic interpretation:

There is a complete, articular, dorsal plane slab fracture of the third carpal bone affecting the radial facet. The margins of the fracture are smooth. The fracture line extends in proximal to distal direction involving both articular surfaces of the third carpal bone, creating a large fragment, 8.5mm in depth and 23mm in width. The fragment is slightly displaced, with the fracture line being wider proximally compared to distally. At least one small separate fragment is seen on the proximal edge of the fracture line. The third carpal bone is heterogeneous, characterised by irregular lucencies mixed with sclerosis, palmar to the fragment and within the fragment itself, best visualized in the flexed skyline view. Poorly defined linear lucencies are suspected to extend from the fracture line to the palmar aspect of the bone.

The intermediate facet of the third carpal bone is sclerotic. Smooth bone proliferation is present on the dorsal surface of the third carpal bone. There is also bony remodelling along the dorsomedial aspect of the fourth carpal bone adjacent to the articulation with the third carpal bone.

An ill-defined lucent concave defect (6 x 1.4mm) is present in the distal dorsal surface of the radial carpal bone. An additional, smaller lucent defect is present in the subchondral of the distal articular surface of the radial carpal bone surrounded by sclerosis. The dorsal aspect of the radial carpal bone is sclerotic.

There are periarticular osteophytes on the distal aspects of the radial and intermediate carpal bones, dorsolateral aspect of the intermediate carpal bone at the level of the radiocarpal joint, and along the dorsal and dorsomedial aspects of the carpometacarpal joint. There is irregular osseous proliferation along the dorsal medial surface of the radial carpal bone, dorsal and dorsal lateral surface of the third carpal bone and



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dorsal lateral surface of the proximal third metacarpal bone in the region of the joint capsule attachment. There is marked swelling of the middle carpal joint.

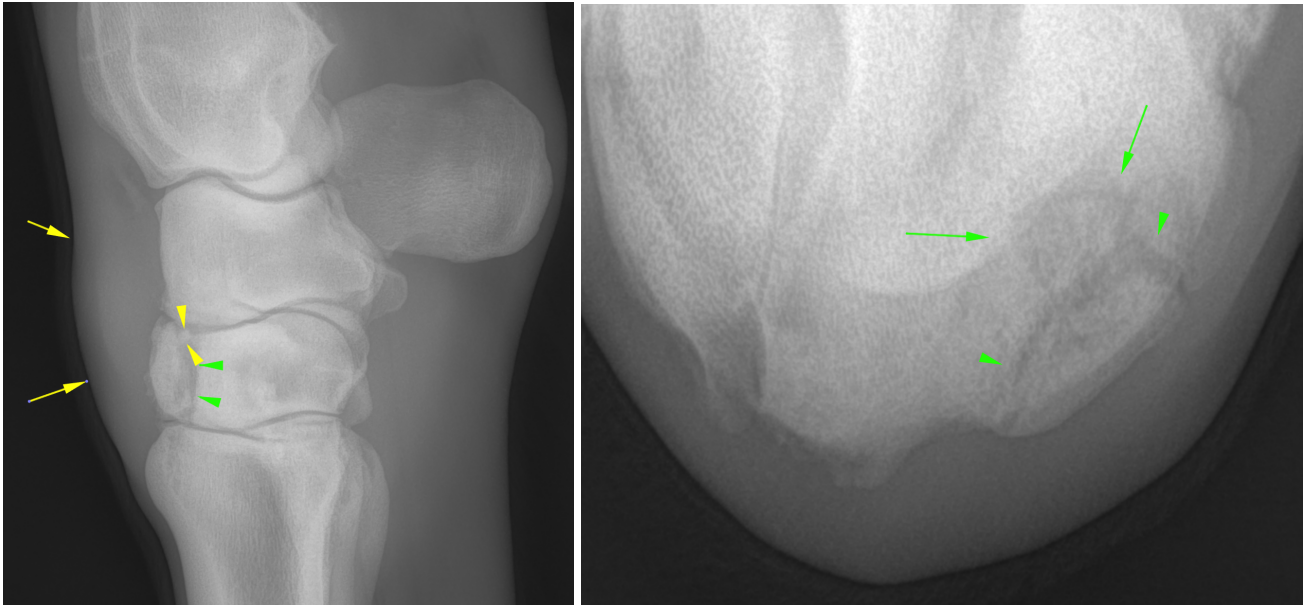


Figure 1 & 2: LM and DPRPaDiO views showing the slab fracture of the third carpal bone (green arrowheads), the separate fragment (yellow arrowheads) and the heterogeneous opacity in the third carpal bone palmar to the fracture (green arrows). Note also the swelling of the middle carpal joint (yellow arrows).

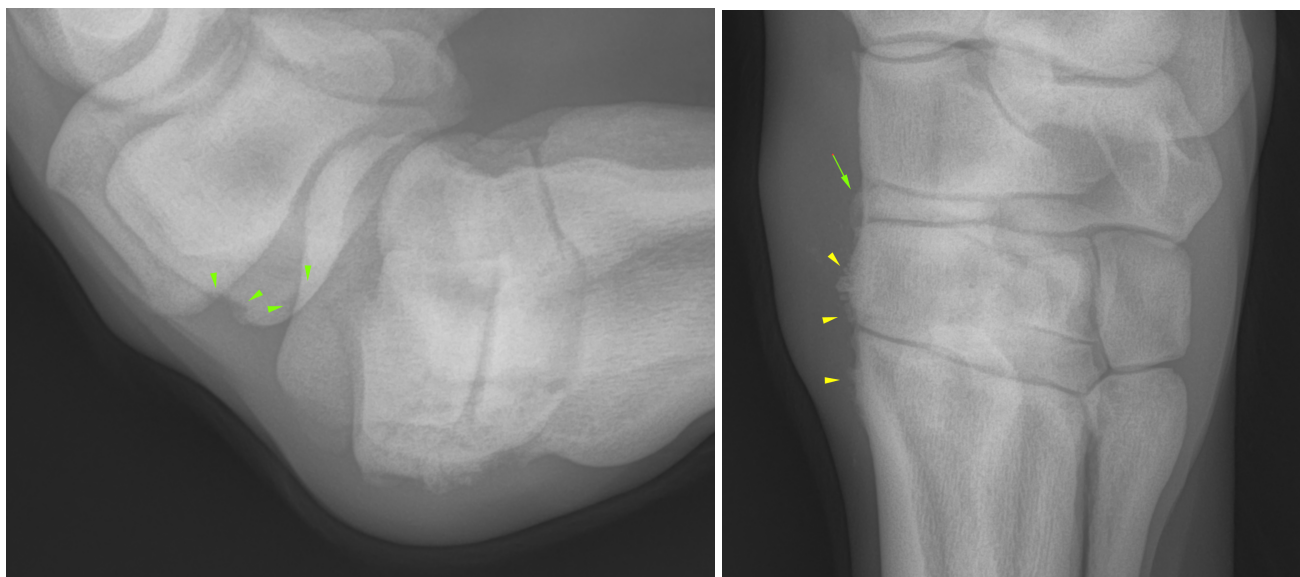


Figure 3 & 4: Flexed LM and DMPLO views showing the defects in the radial carpal bone (green arrowheads), the remodelling at the capsular attachment (yellow arrowheads) and the periarticular osteophytes (green arrow).



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Conclusions:

- Chronic slab fracture of the radial facet of the third carpal bone with evidence of mild displacement and fragmentation of the proximal articular margin.
- Extensive third carpal bone sclerosis and remodelling.
- Subchondral defect in the opposing surface of the radial carpal bone.
- Osteoarthritis of the radiocarpal, middle carpal and carpometacarpal joints.
- Middle carpal joint effusion and insertional capsulitis

Additional comments:

The radiographic findings and margins of the fracture suggest the fracture is chronic in nature and likely occurred at the time of initial injury. All the other changes observed are likely secondary to the chronic articular fracture;

Teaching Points:

- “Slab fractures” of the carpal bones are biarticular (affecting both joint surfaces), while “chip fractures” are uniarticular (affecting only one joint surface, usually the proximal articular surface of the third carpal bone).
- Racehorses are prone to fractures of the carpal bones. This is likely due to repetitive loading and maladaptive modelling of the bone.
- CT of this carpus would be beneficial to rule out additional fracture lines that propagate to the palmar aspect from the main dorsal slab fracture.

Additional reading:

The carpus - Ch 7 - Butler et al, Clinical Radiology of the Horse, 4th Edition Wiley and Blackwell



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