Computed Tomography for the appendicular skeleton

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Appendicular skeleton

Limb:

- Bone
- Joint
- Muscle-Tendon

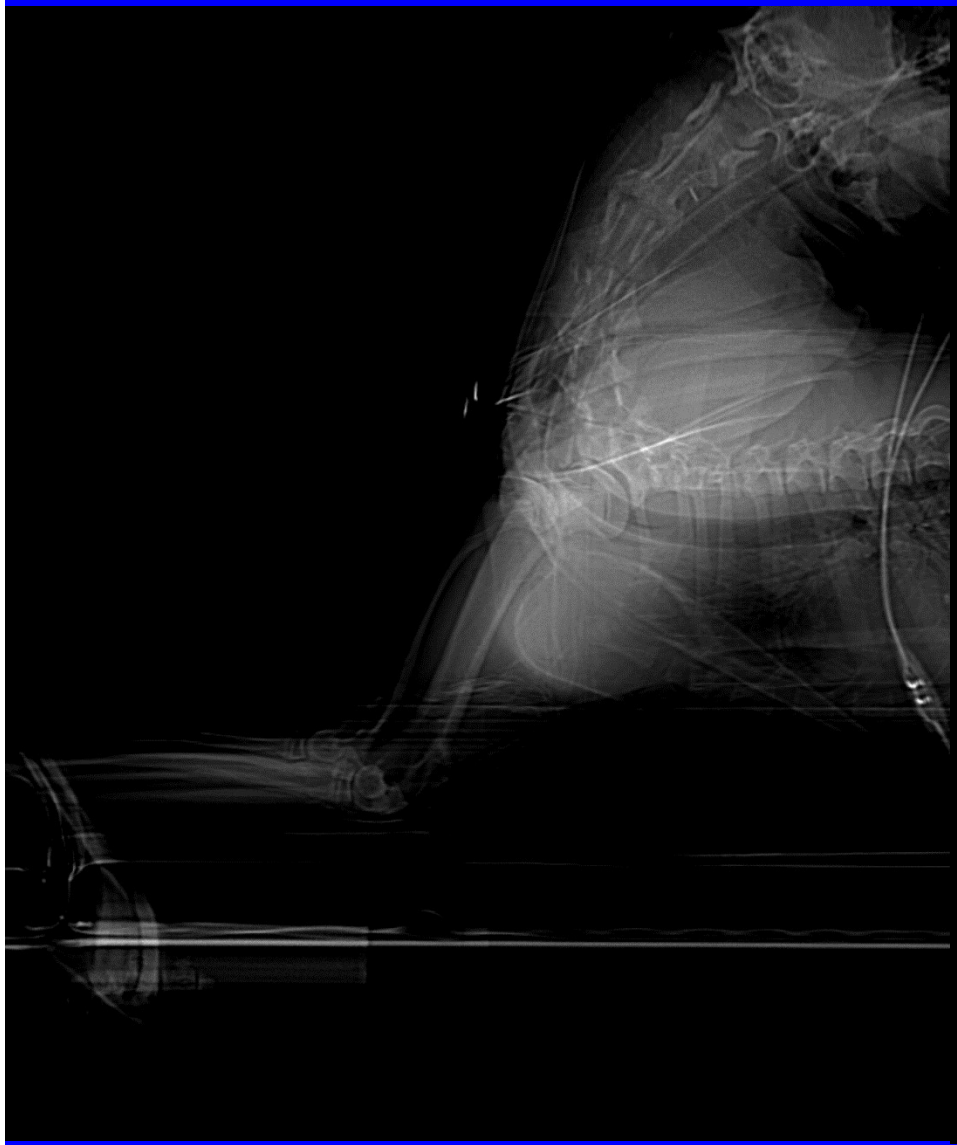
CT

Technique:

- Axial/helical
- 1-3 mm slice thickness
- Algorithm (bone, soft tissue)
- Retrorecon
- MPR/Vol Rendering/3D
- MDCT

Forelimb

Positioning for elbow, eventually shoulder



Gomiti

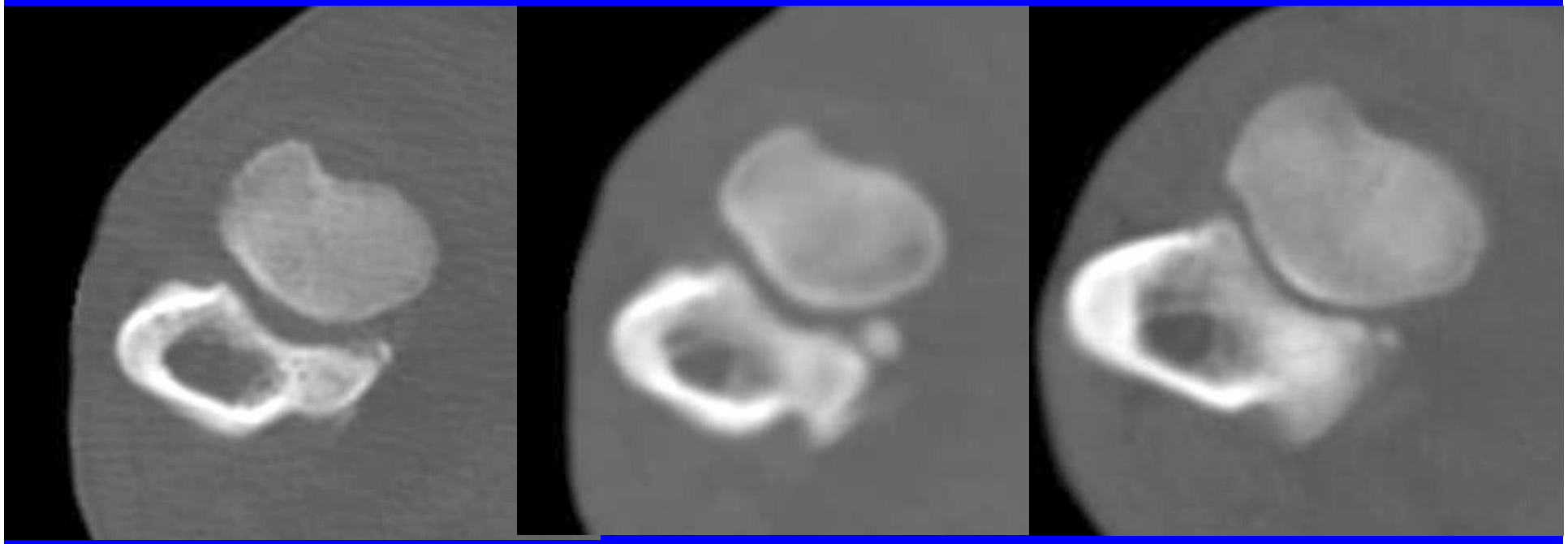
Observer variability and sensitivity of radiographic diagnosis of canine medial coronoid disease.

Rau F et al., Tierarztl Prax. 2011;39(5):313-22.

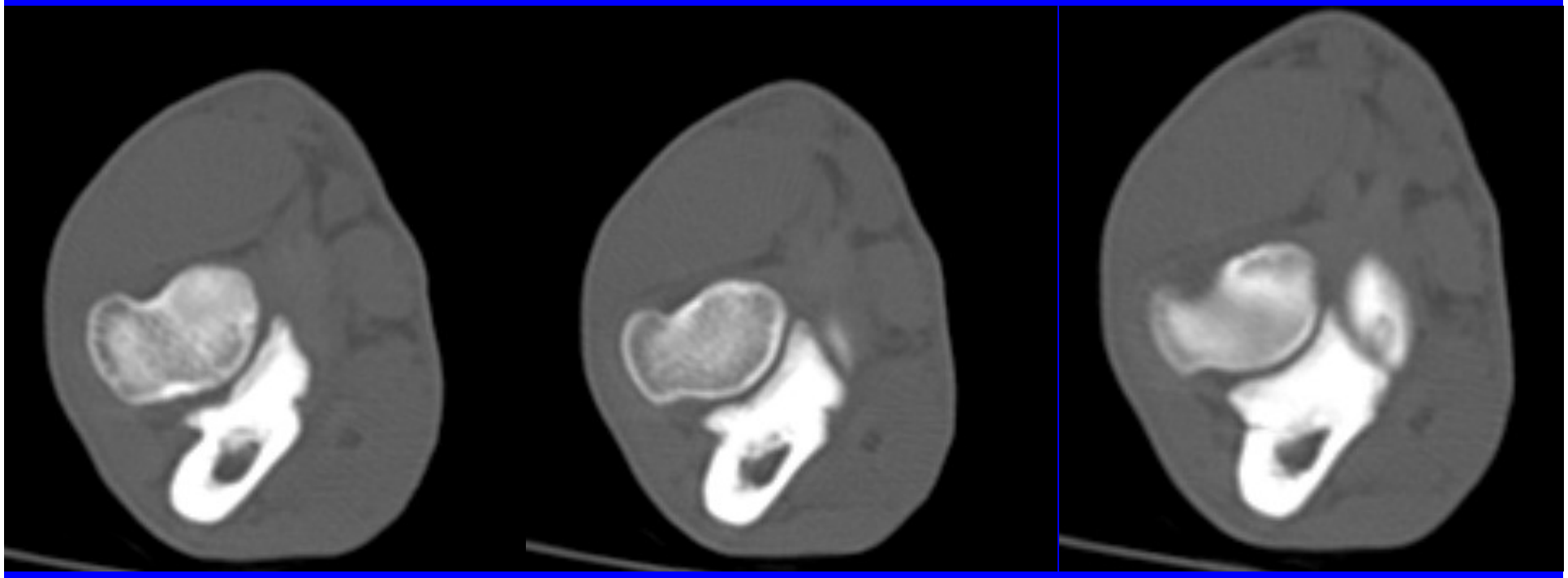
- Arthroscopy as gold standard
- Sensitivity **92.4-96.7%** two experienced observers Vs **77.2-80.4%** of the two less experienced observers
- **CT 100%**

FCP/MCPD

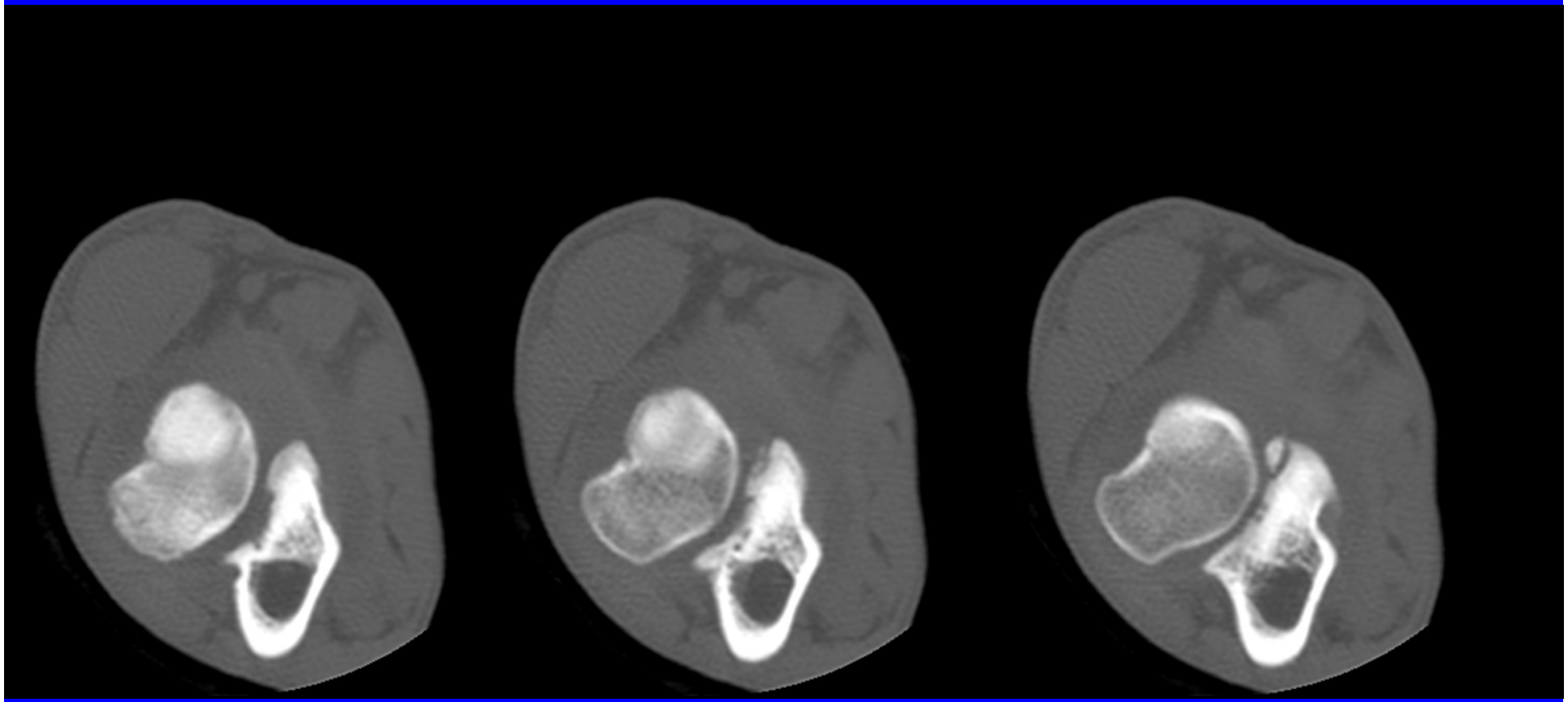
Labrador m 4m



Labrador R., m, 6 m



FCP - BOVBER m 1y



Computed tomography versus arthroscopy for detection of canine elbow dysplasia lesions. Moores AP, Benigni L, Lamb CR. Vet Surg. 2008 Jun;37(4):390-8.

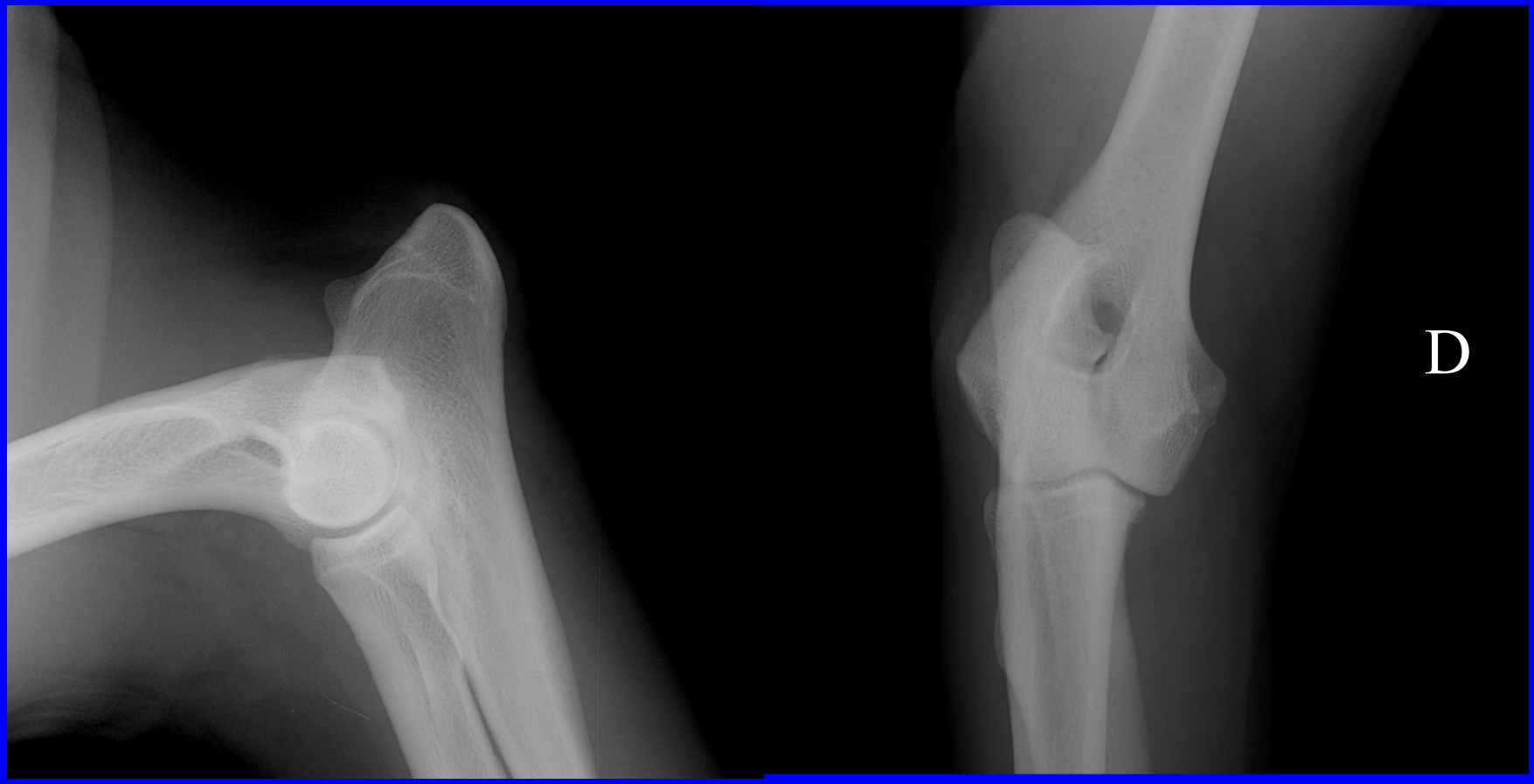
- Canine elbows (n=101) investigated by CT and arthrosc.
- MCP fragment on CT was significantly associated with the arthroscopic identification of a displaced MCP fragment, cartilage erosion affecting the MCP, and cartilage erosion affecting the humeral condyle
- Irregular radial incisure of the ulna on CT was significantly associated with cartilage erosion affecting the MCP
- CT and arthroscopy can provide contradictory information
- CT can provide information for the investigation of dogs with elbow dysplasia, but the absence of CT signs (or arthroscopic abnormalities) does not rule out elbow lesions

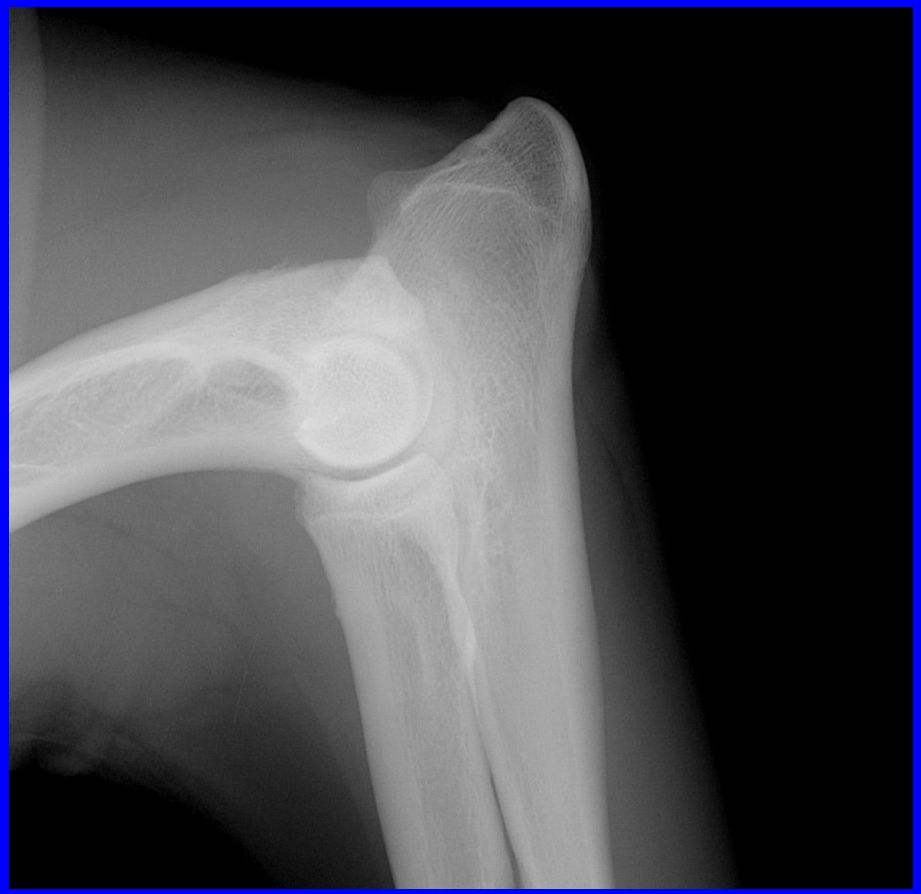
Radiographic and computed tomography findings in Belgian shepherd dogs with mild elbow dysplasia.

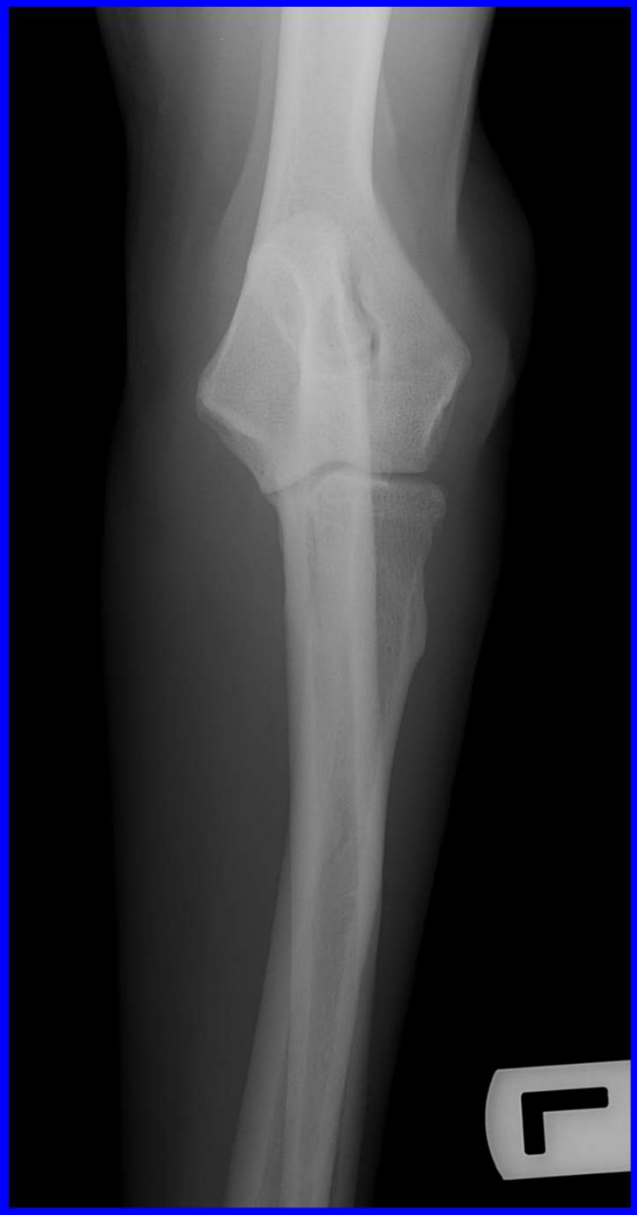
Lappalainen AK, Mölsä S, Liman A, Laitinen-Vapaavuori O, Snellman M. Vet Radiol Ultrasound. 2009 Jul-Aug;50(4):364-9.

- Compared CT and radiographic findings with grade 1 or borderline elbow dysplasia in 18 dogs
- A fragmented medial coronoid process was seen in 5 joints, and remaining 31 joints were considered free of dysplasia based on CT images
- In radiographs, height of the radiopaque area on the anconeal process was 0-2.7 mm in dysplastic and 0-3.0 mm in other joints
- Sensitivity of this sign as dysplasia indicator was 40% and specificity 29%
- All dysplastic joints and three of the other joints had blurring of the cranial edge of the medial coronoid process. Subtrochlear sclerosis was seen in four dysplastic joints and in three other joints. Both changes were significant indicators of dysplasia ($P < 0.001$).

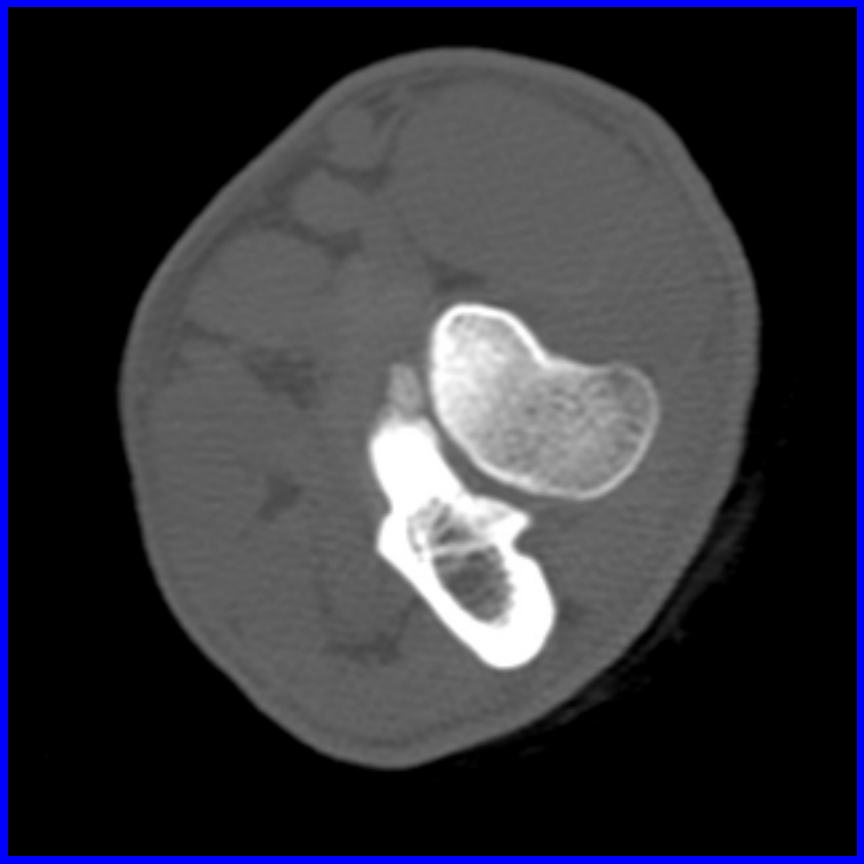
BOUVIER DES FLANDRES m 18m

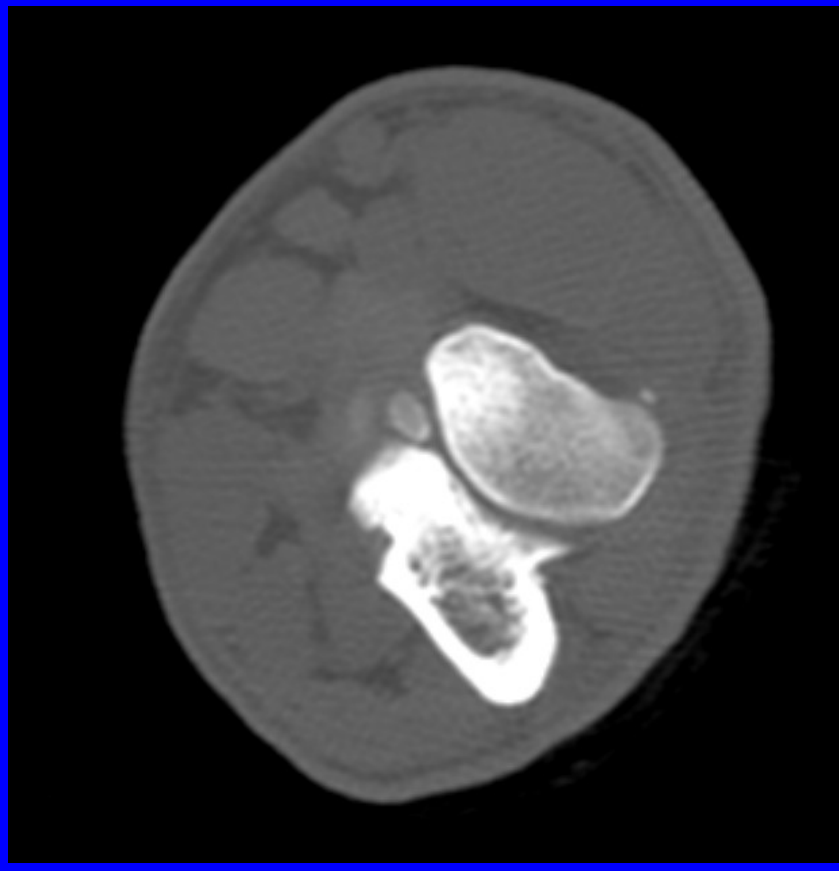


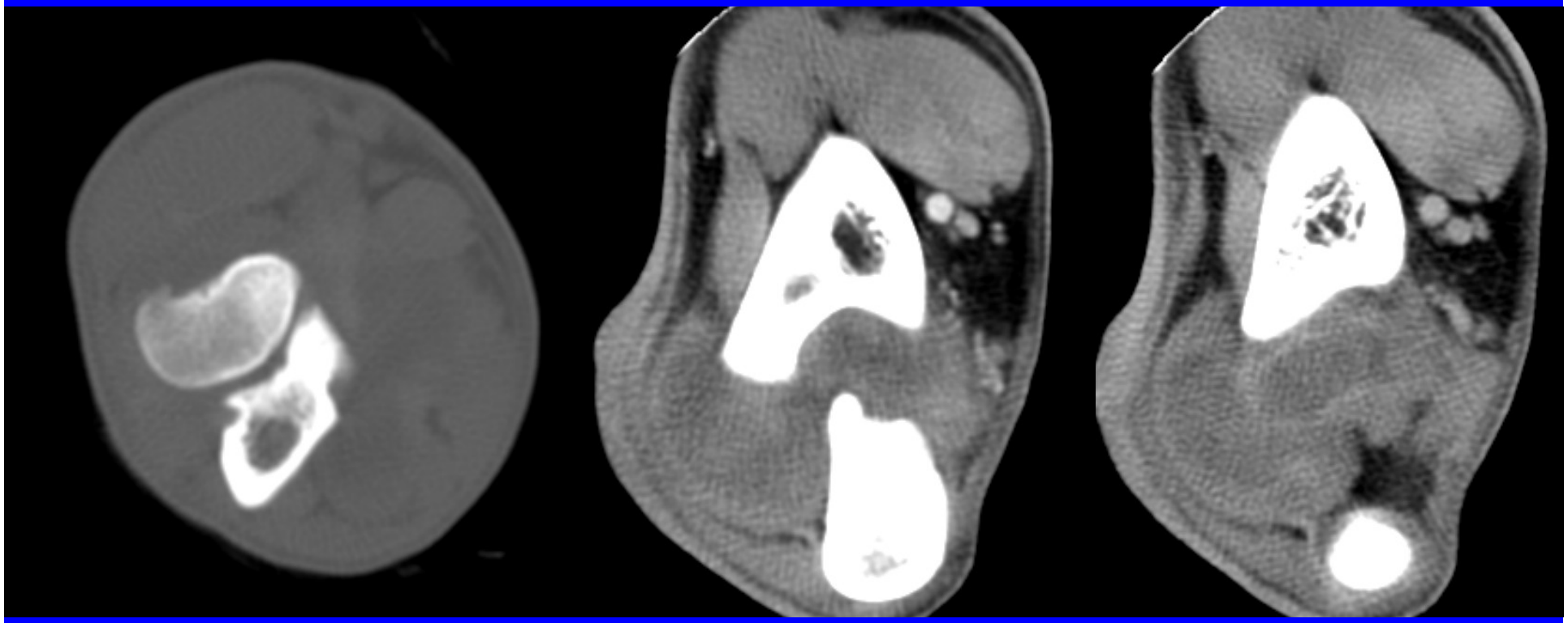




RT

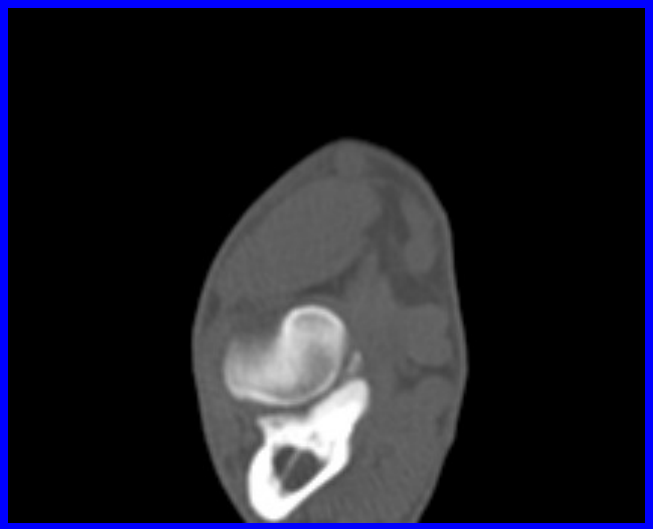


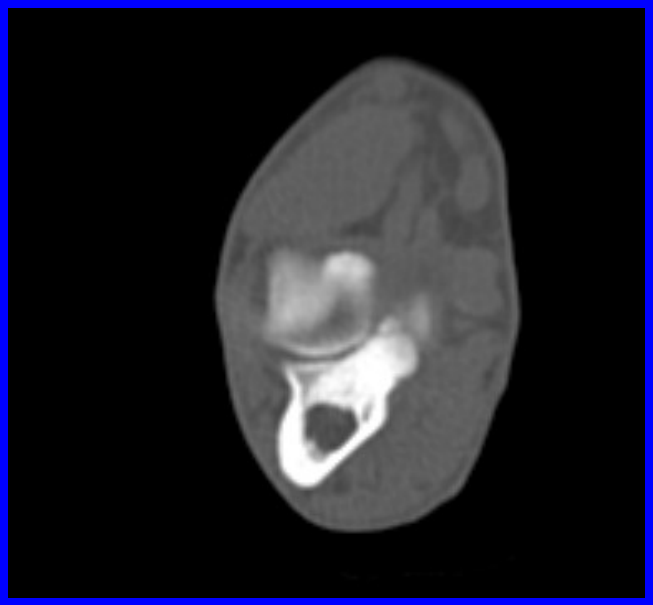


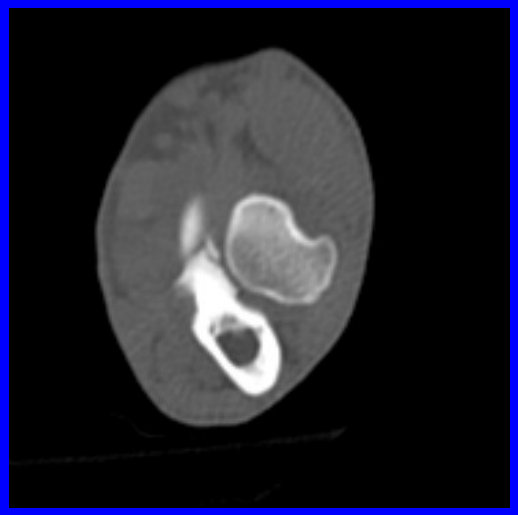


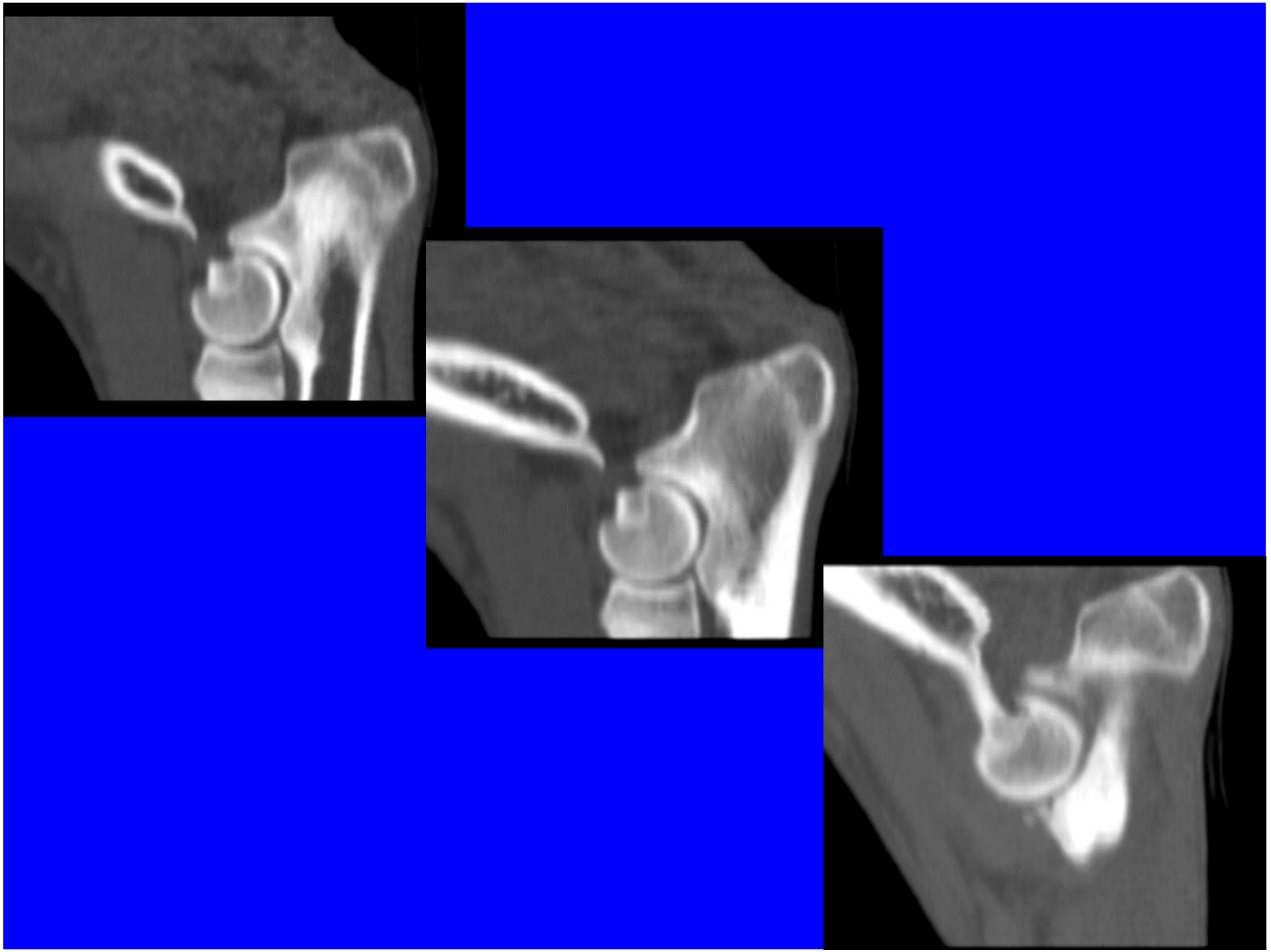
FCP – Labr m 6 a

GS, m, 6 m

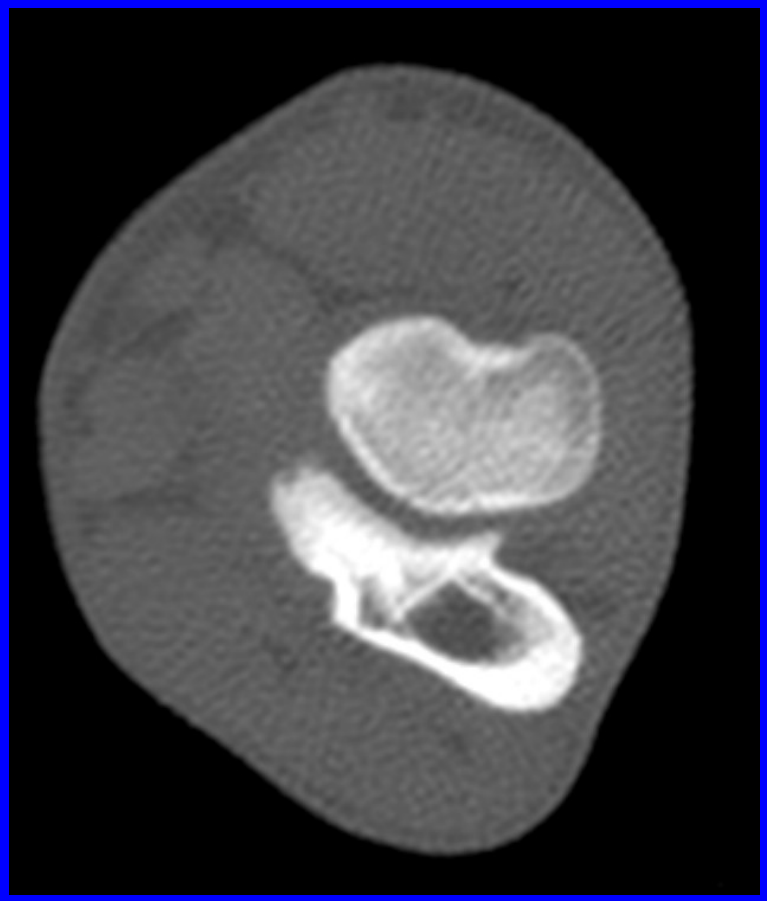


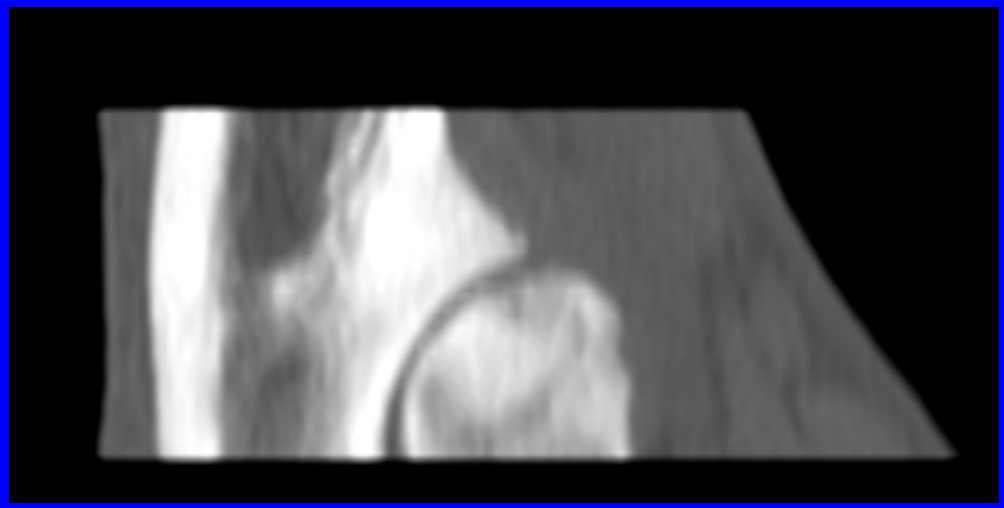


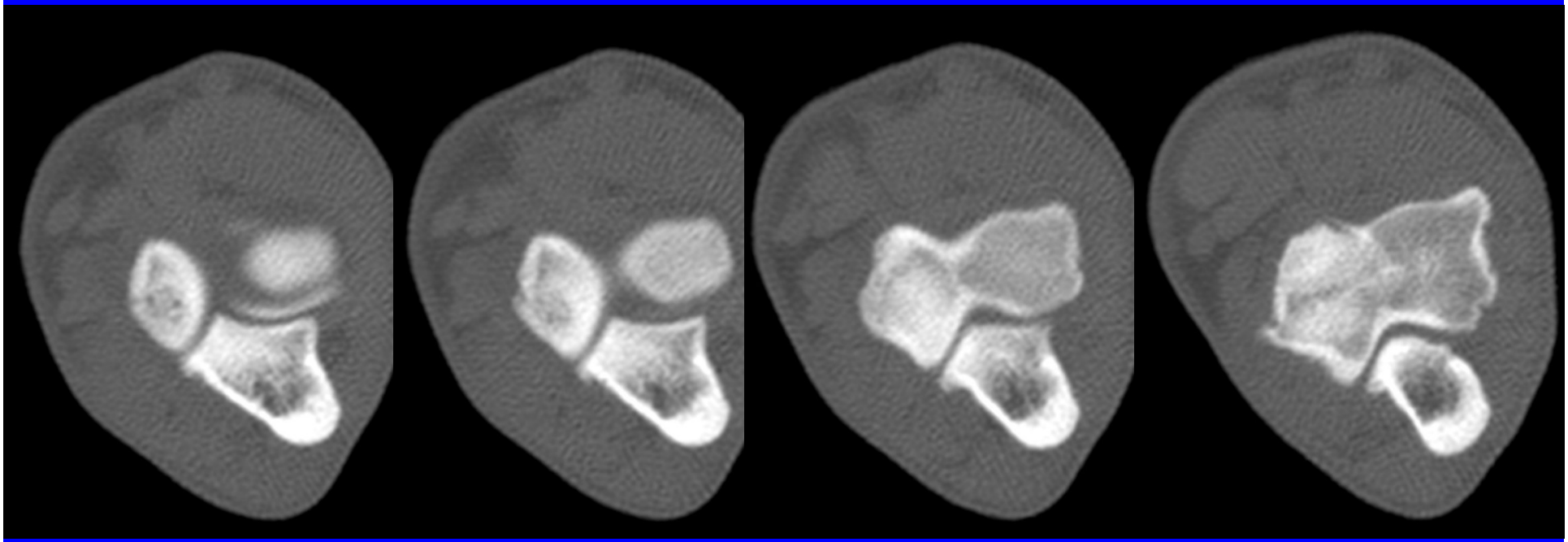


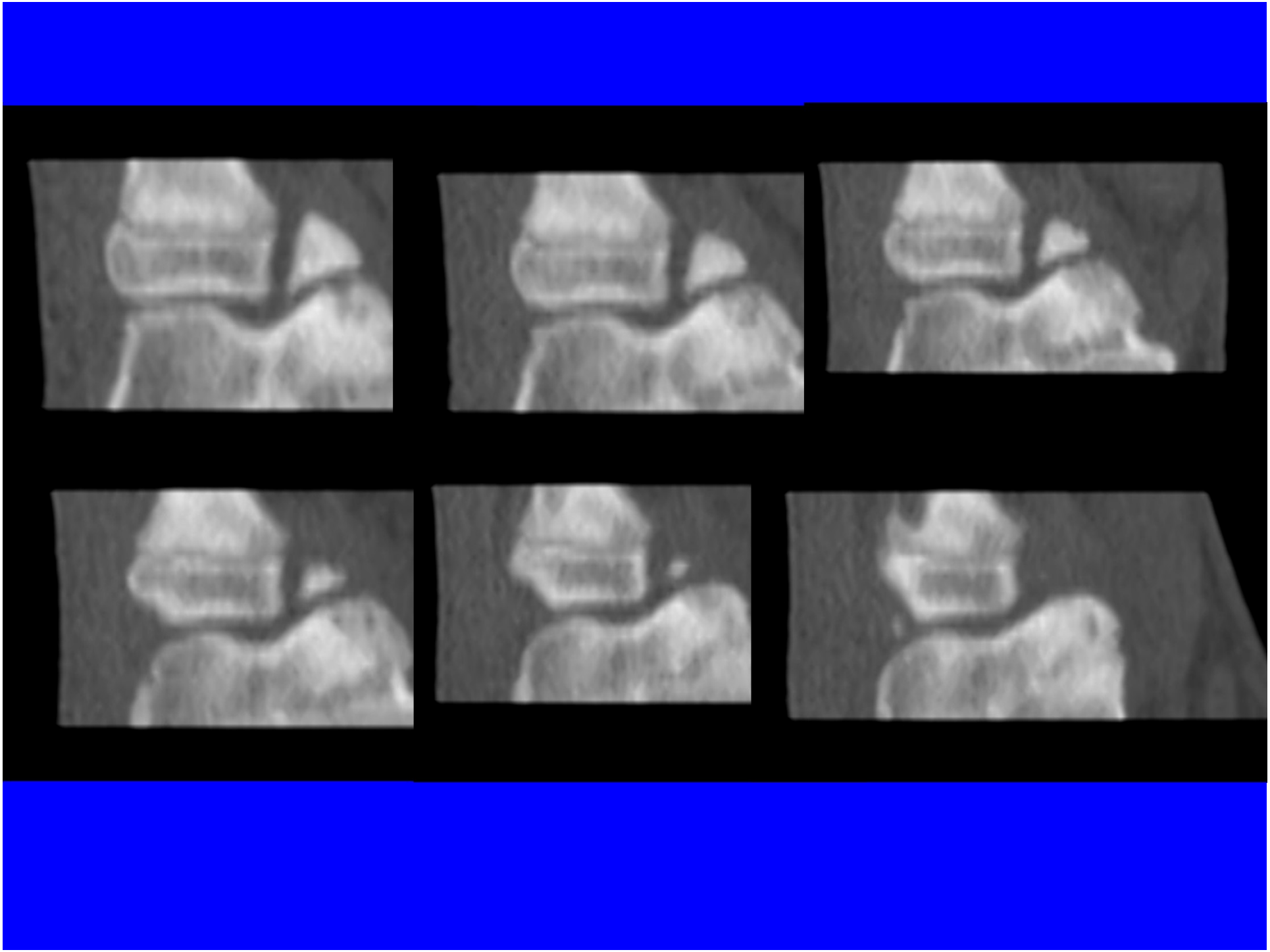


FCP/OCD – Labrador m 6m

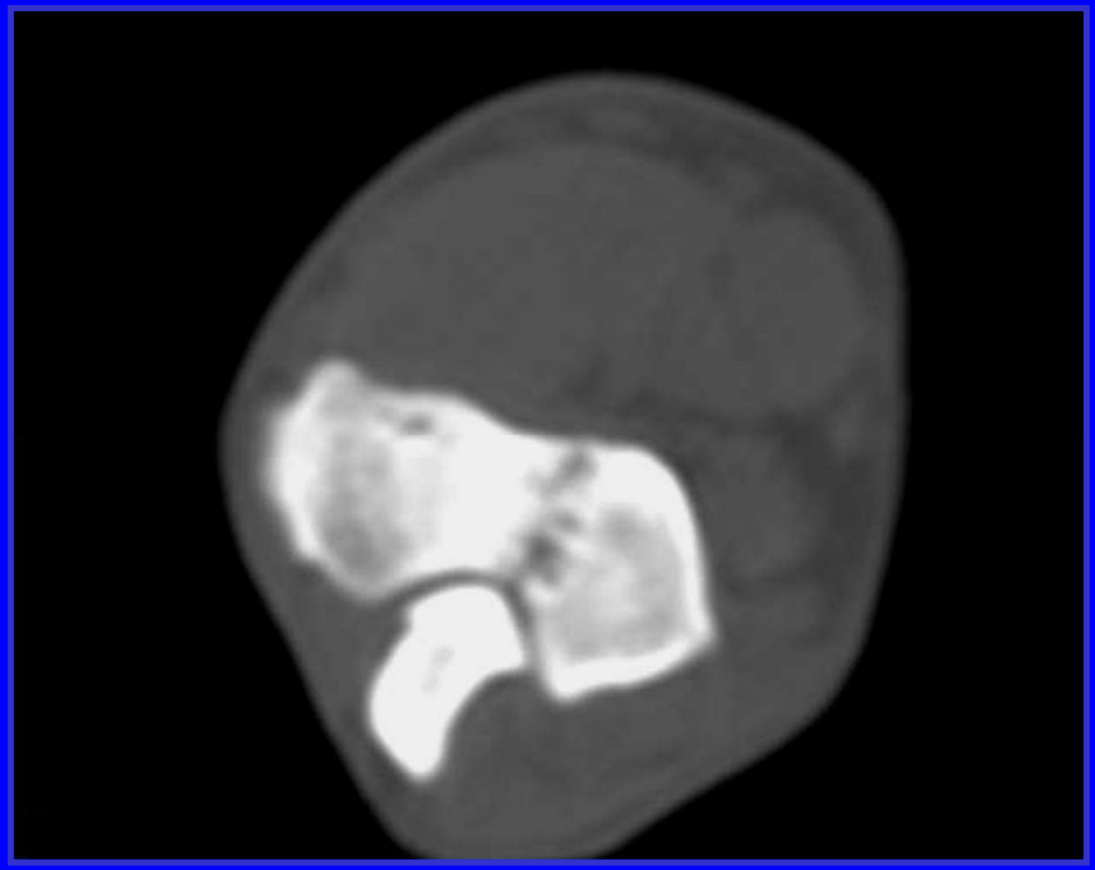




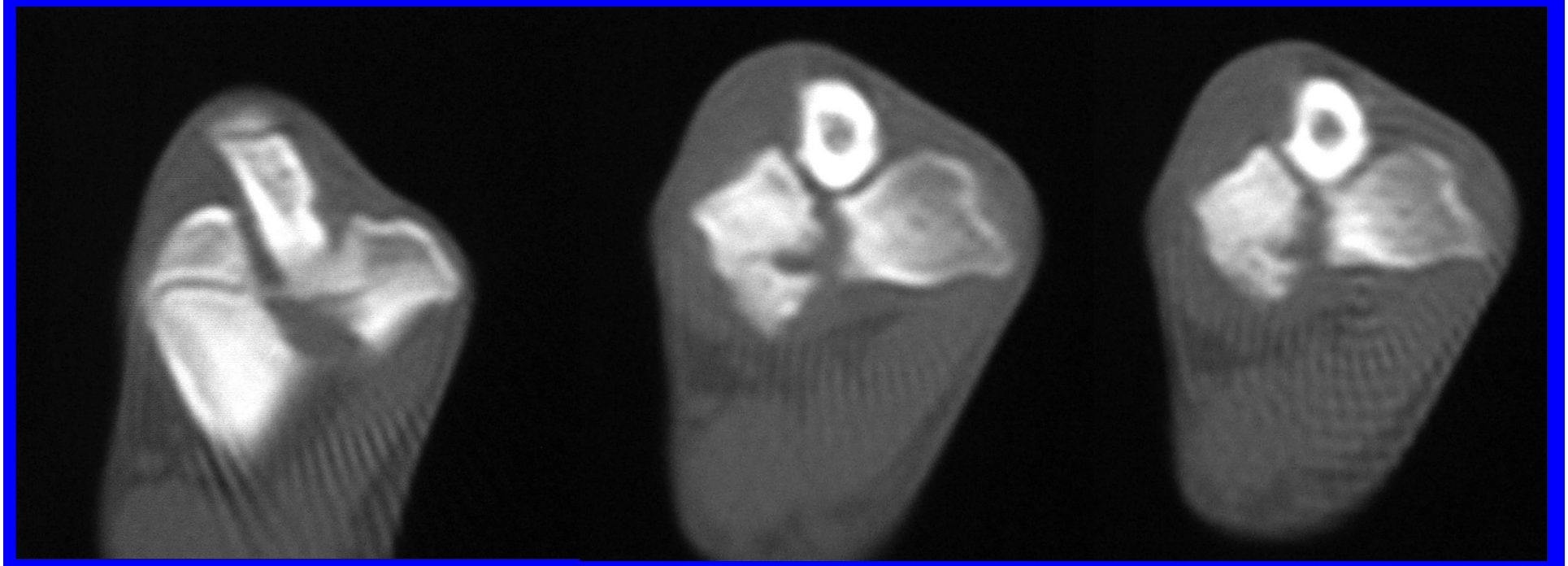




IOHC - Pinscher m 16 m

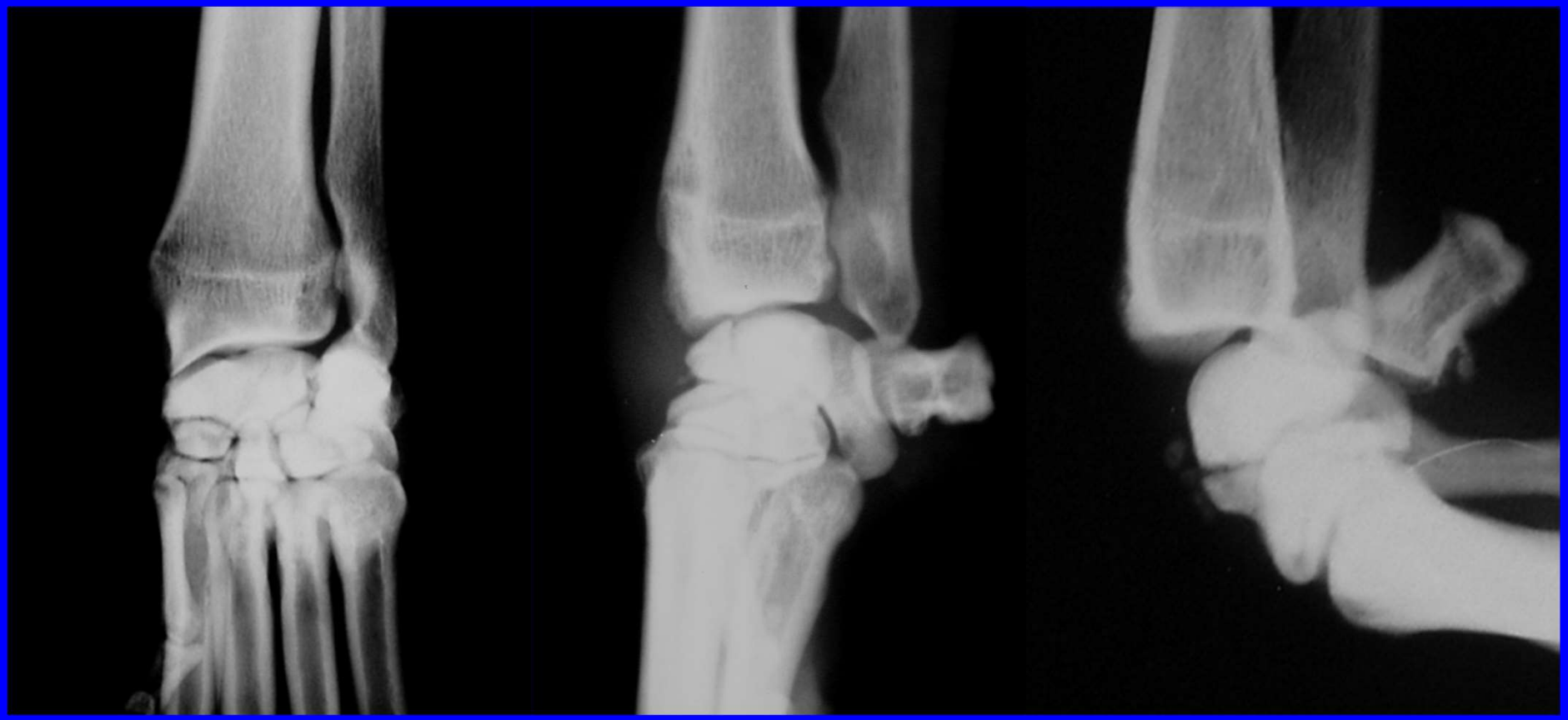


IOHC - Pinscher



Non-union of the radial carpal bone

BOXM18M



Radial carpal bone fracture in 13 dogs. G. Gnudi, C.M. Mortellaro, G. Bertoni, F.M. Martini, A.M. Cantoni, M. Di Giancamillo, M.Vignoli, VCOT, 3/2003.

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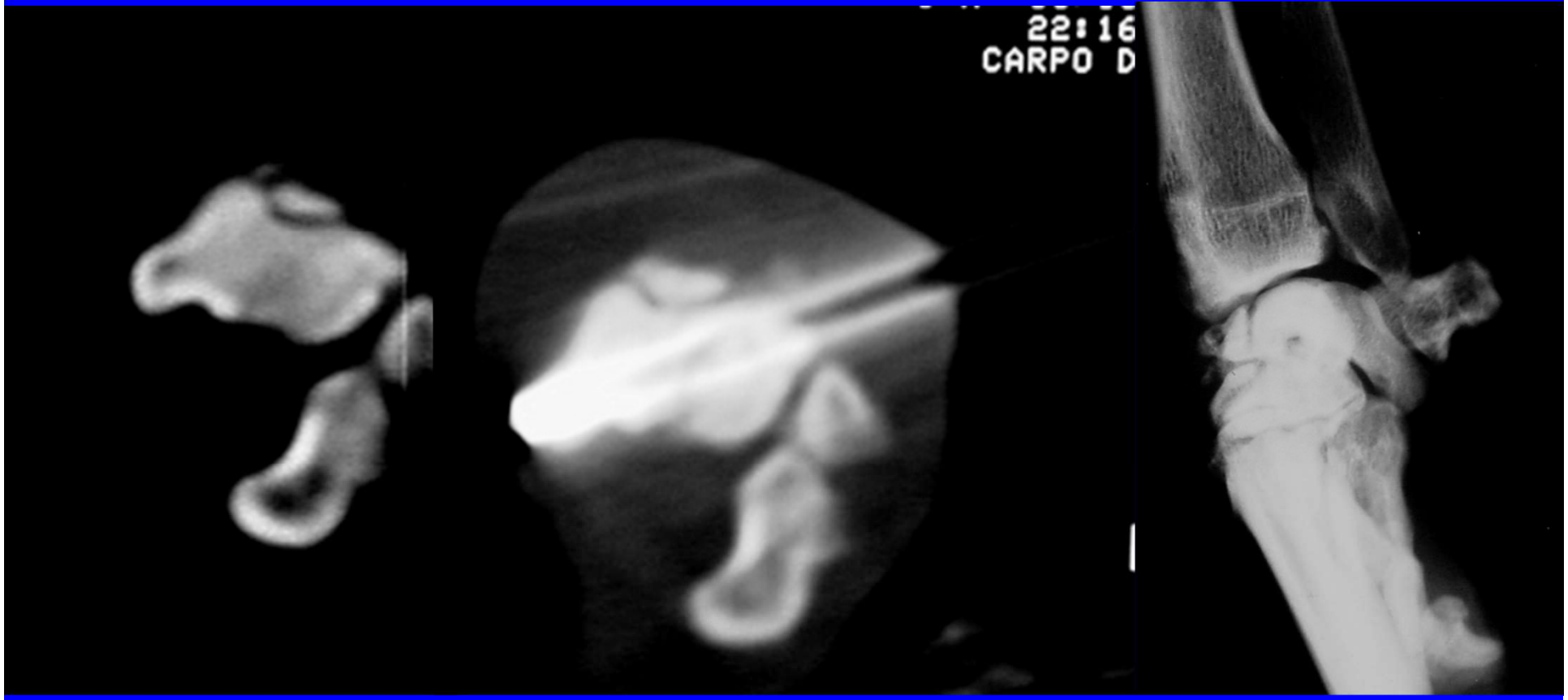

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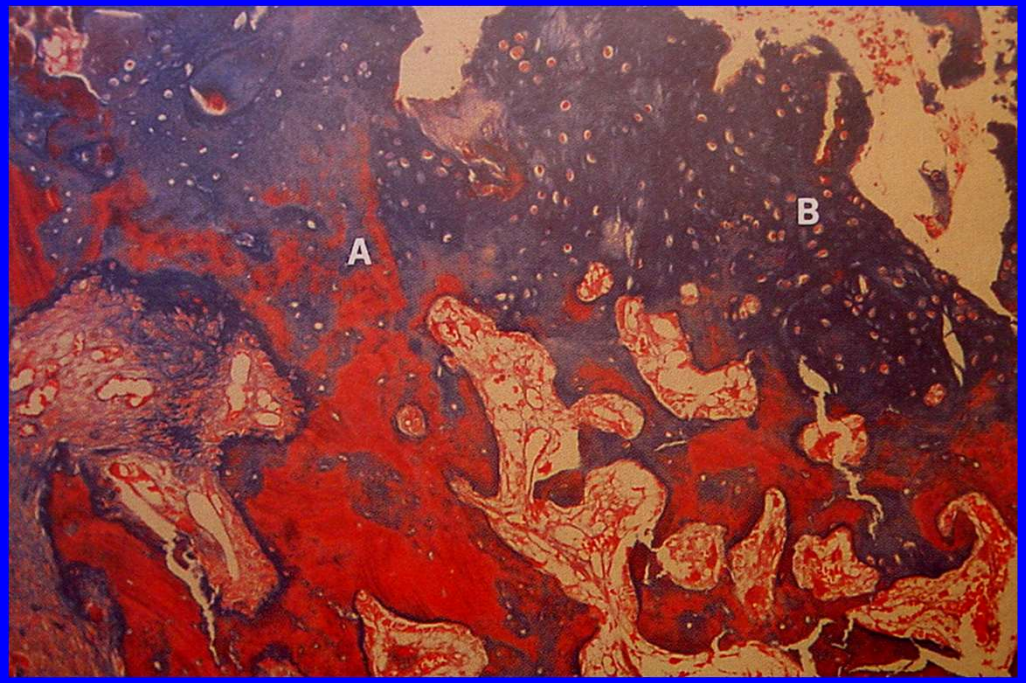
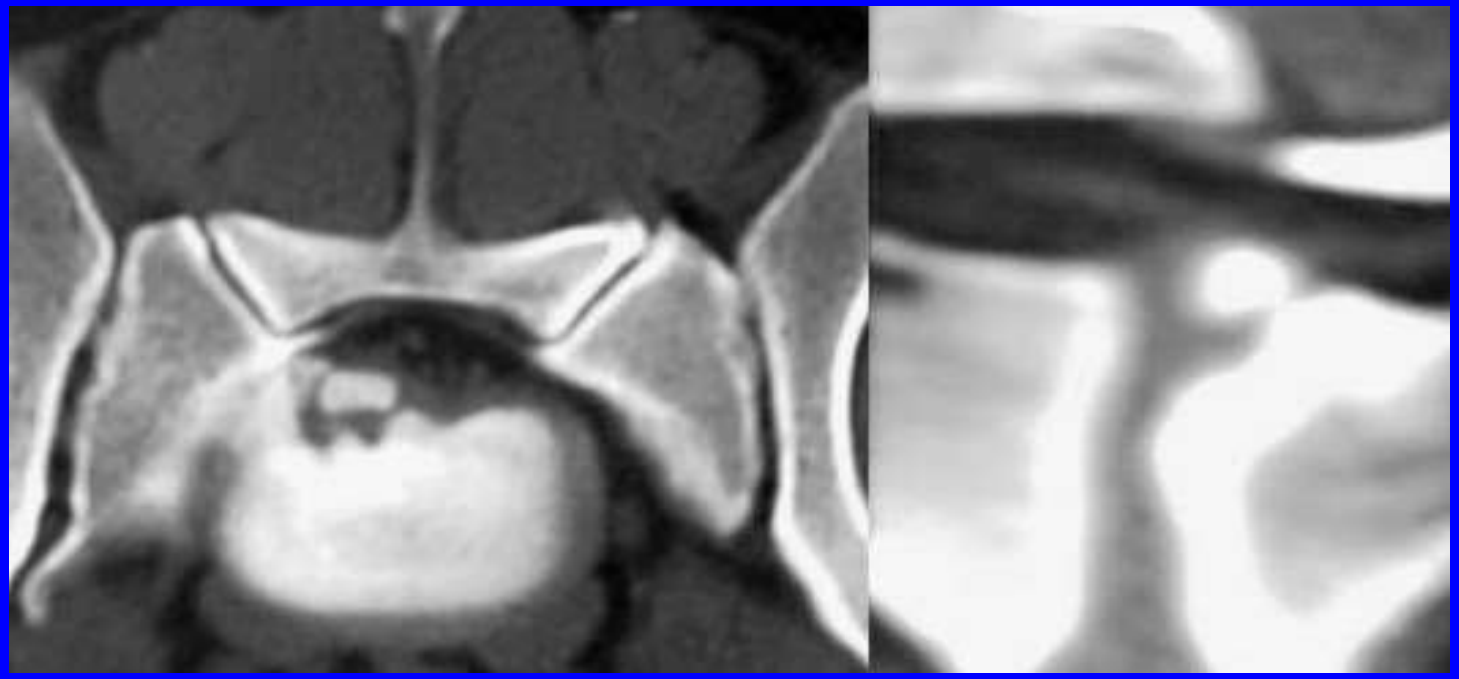


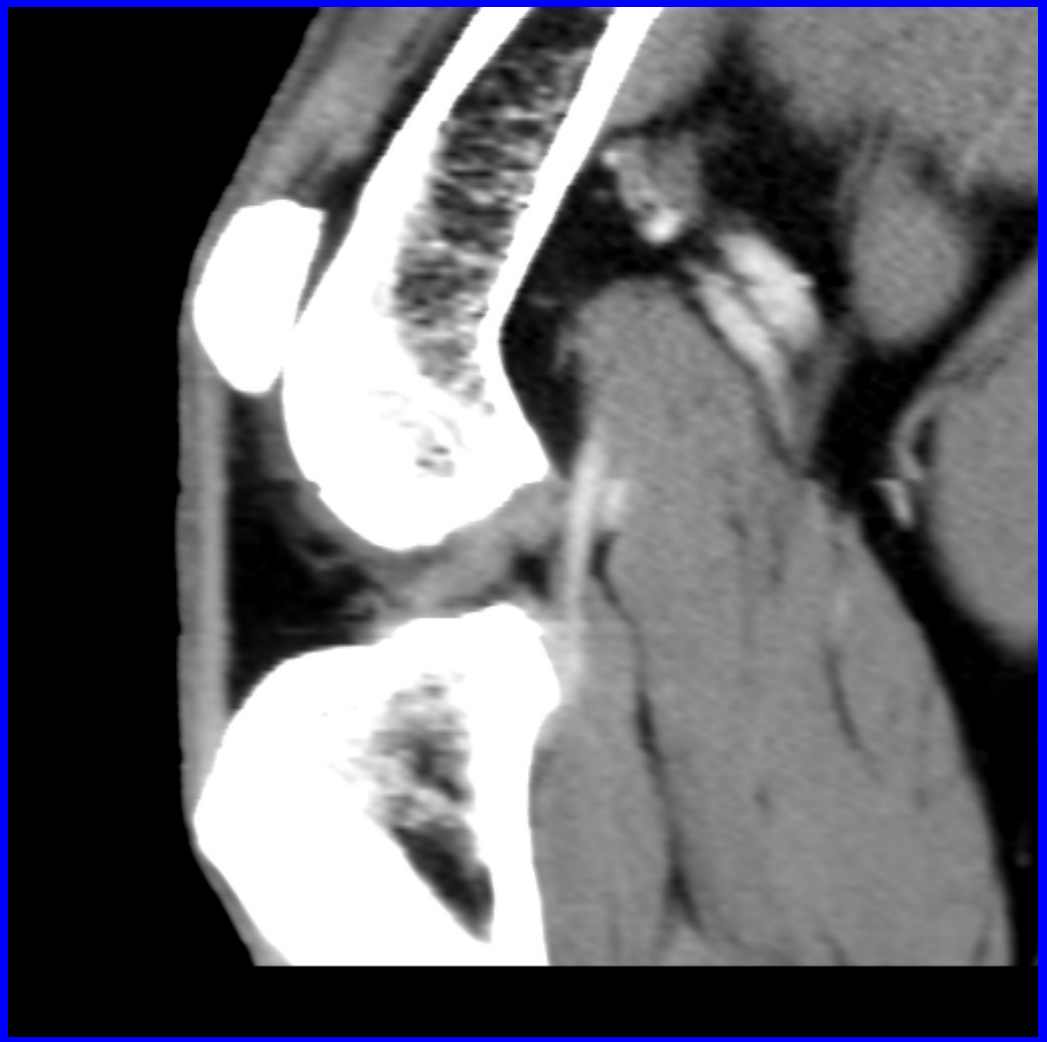
Rear limb

OCD sacro

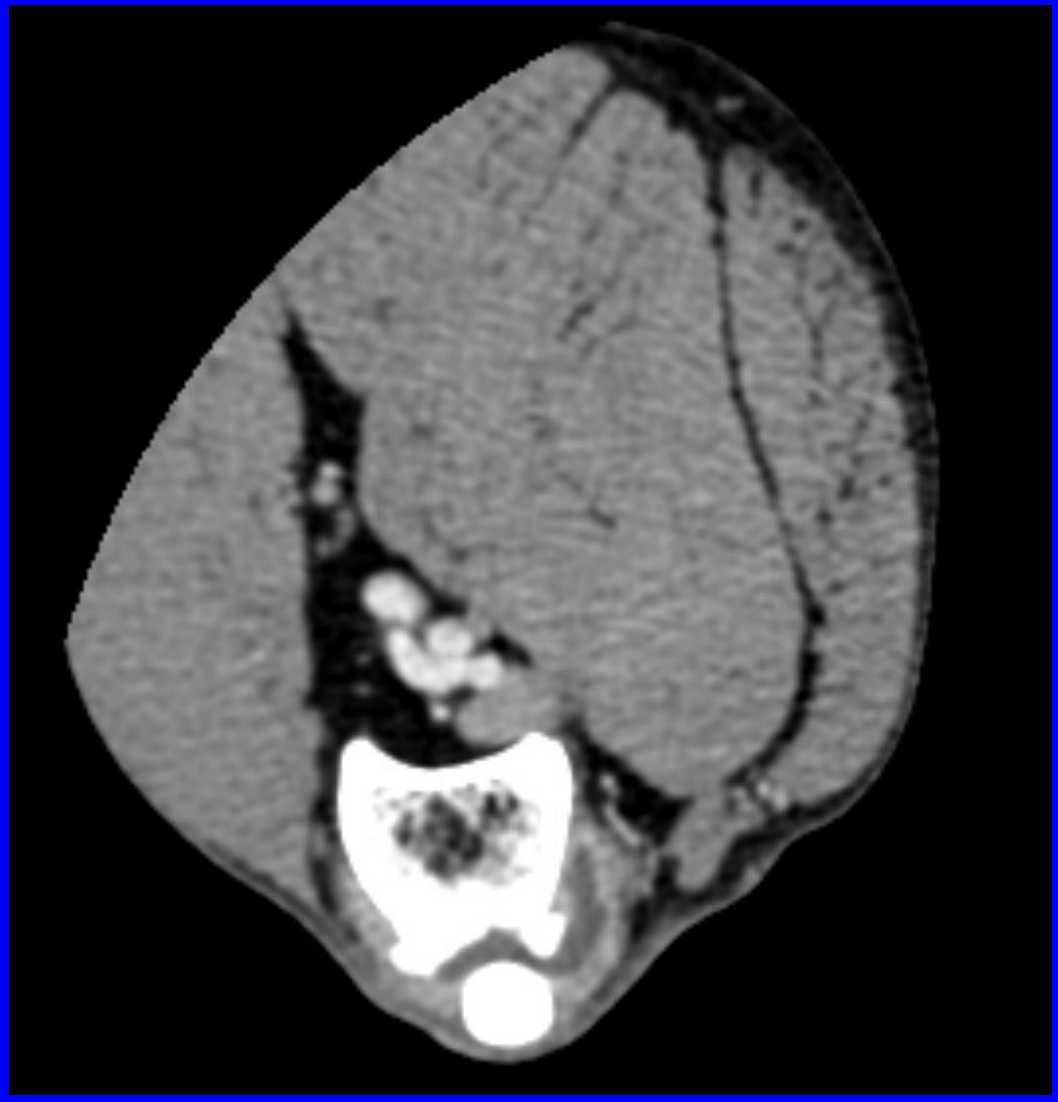


Stifle - MPR - dorsal

MPR - sagittale



Cranial cruciate ligament rupture



Dysplasia Epiphysealis Hemimelica

BOXF2-18M

Dysplasia epiphysealis hemimelica in a Boxer puppy.
Vignoli M. et al. Vet. Radiol. & Ultrasound, 2002.

Dysplasia epiphysealis hemimelica in a Boxer puppy. Vignoli M. et al. Vet. Radiol. & Ultrasound, 2002.

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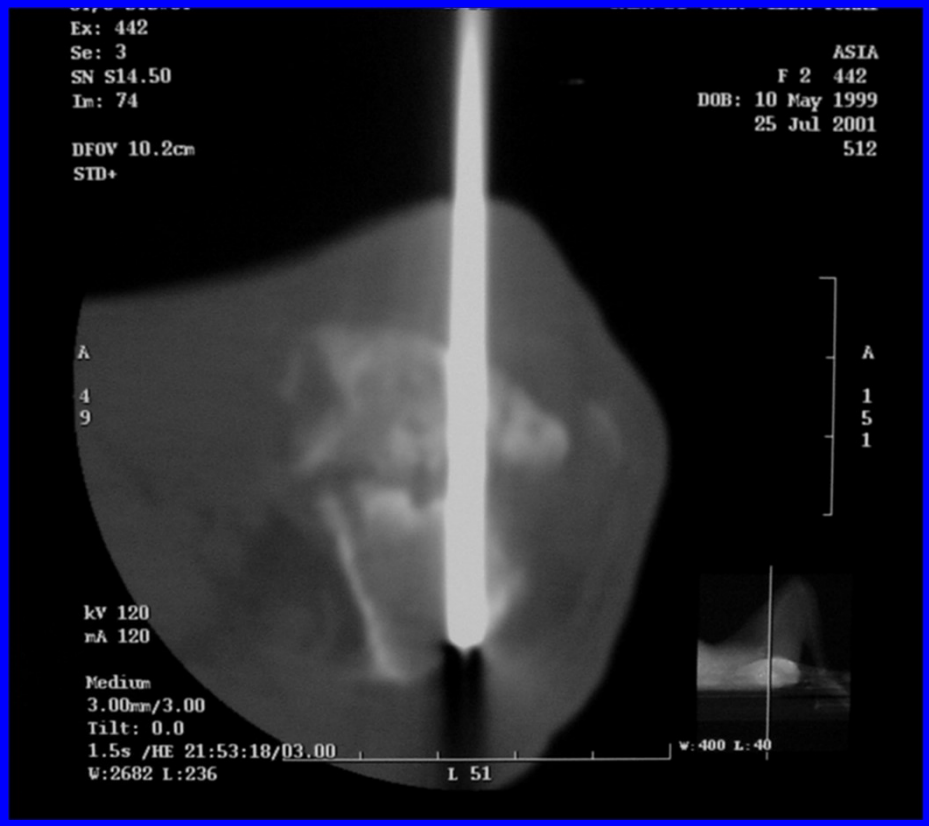
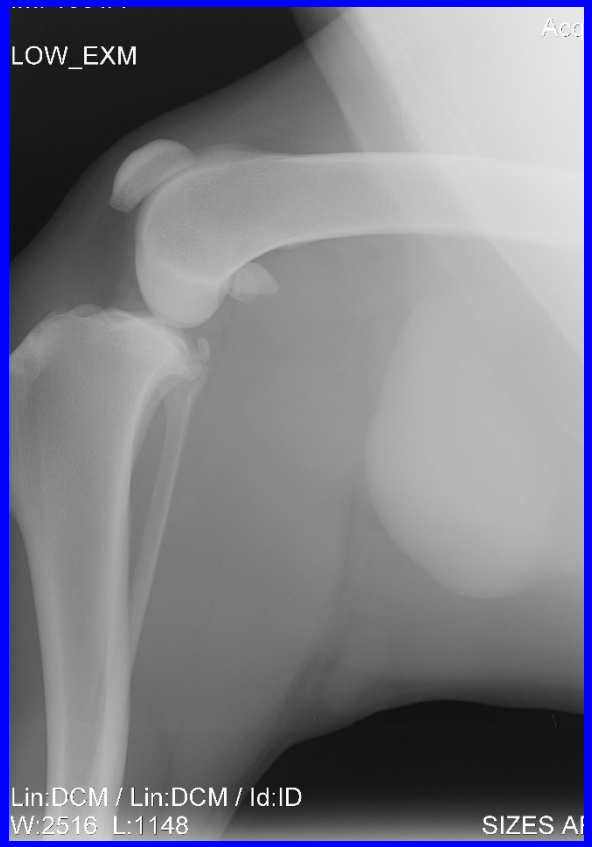
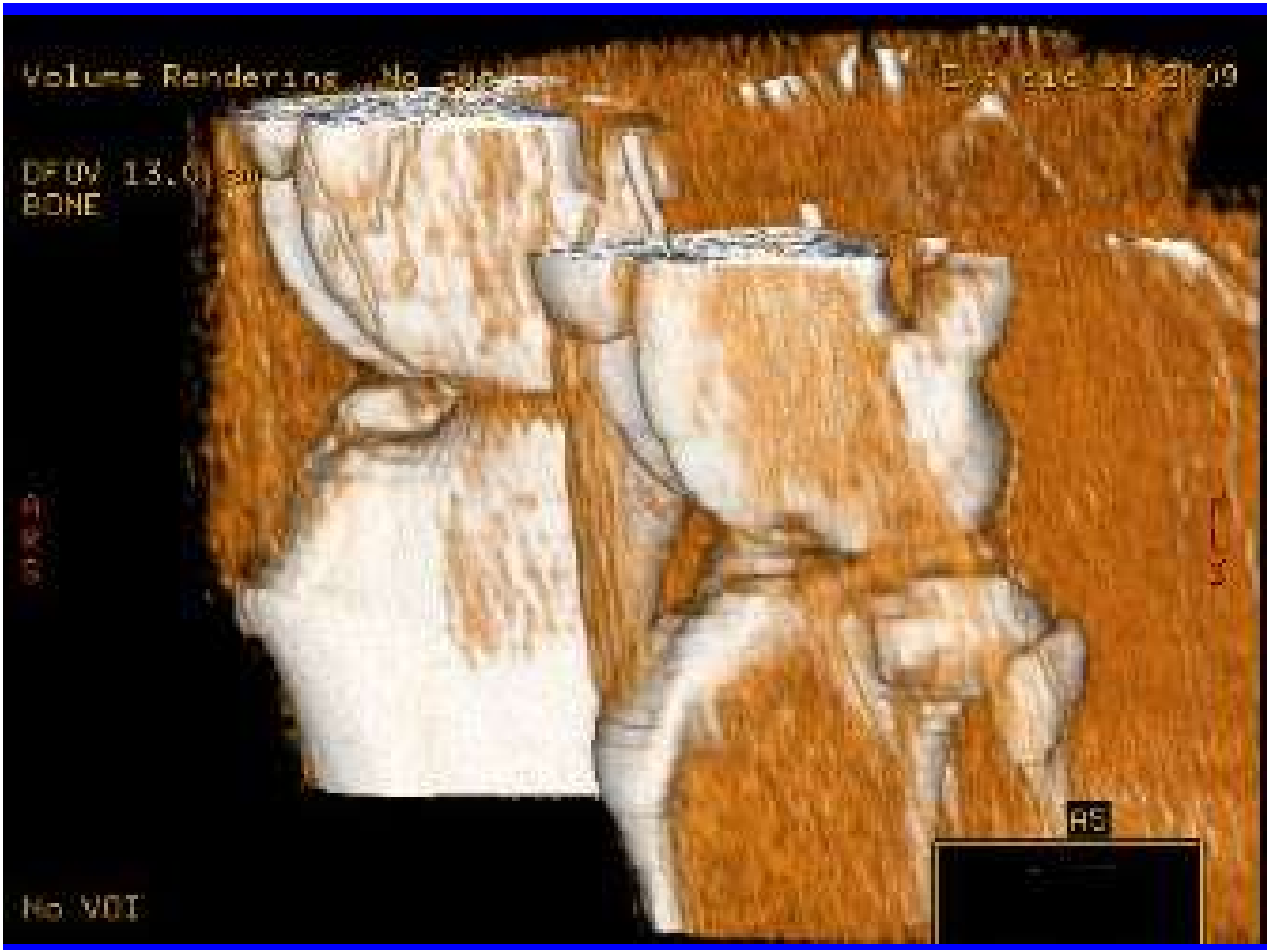
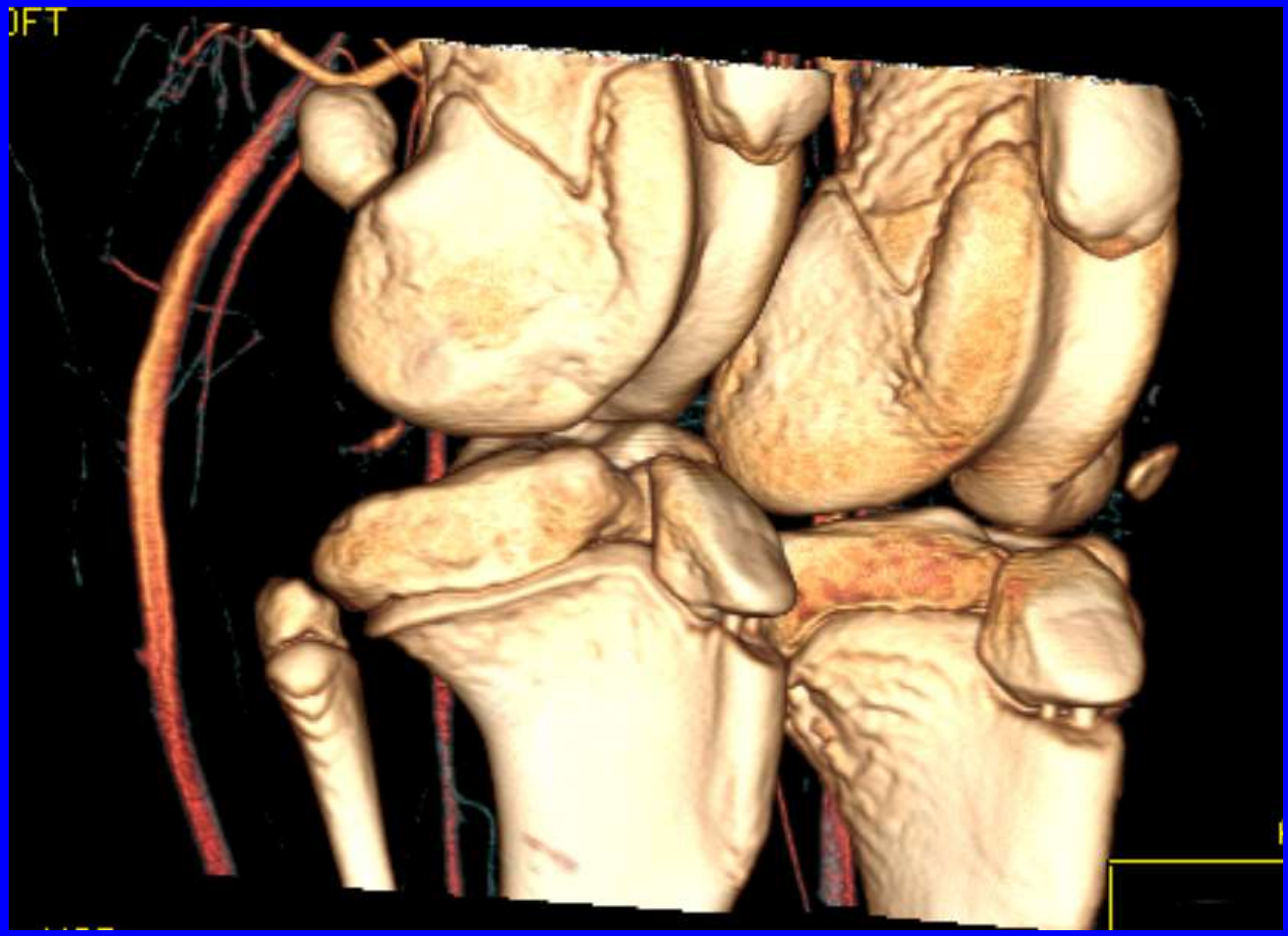
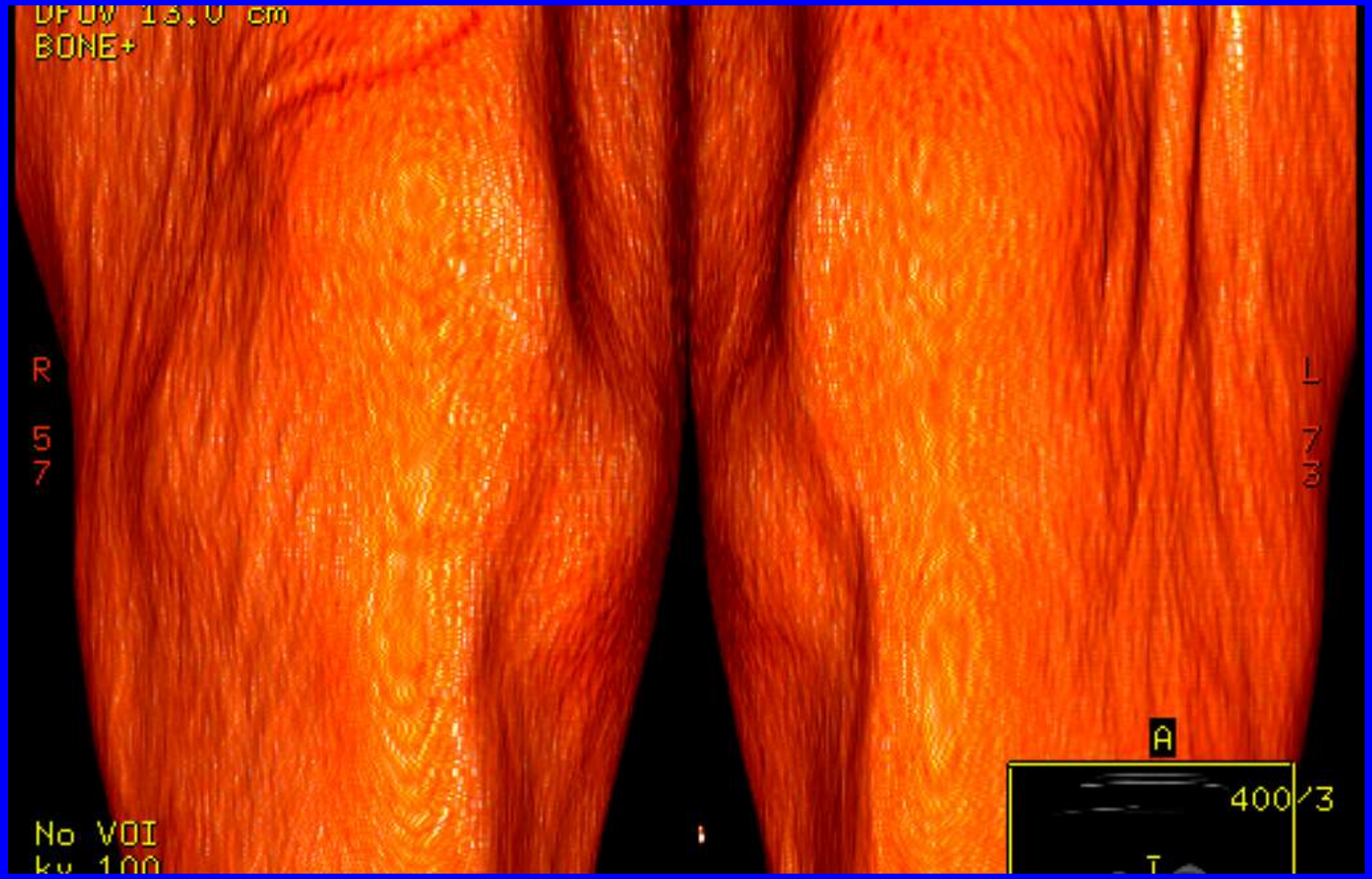


Mix dog, m, 5 y – Patellar tendon rupture




Volume Rendering No cut
DFOV 13.0
BONE
No VOI

Great Dane m 5m – OCD + avulsion fx EDPL



Hunting dog m 5m – avulsion fx lateral collateral ligament