

Morpho-functional approach of shoulder and elbow ultrasound in 12 scan planes

Elbow

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DVM, GP Cardio, CCRT, PhD, DECVDI



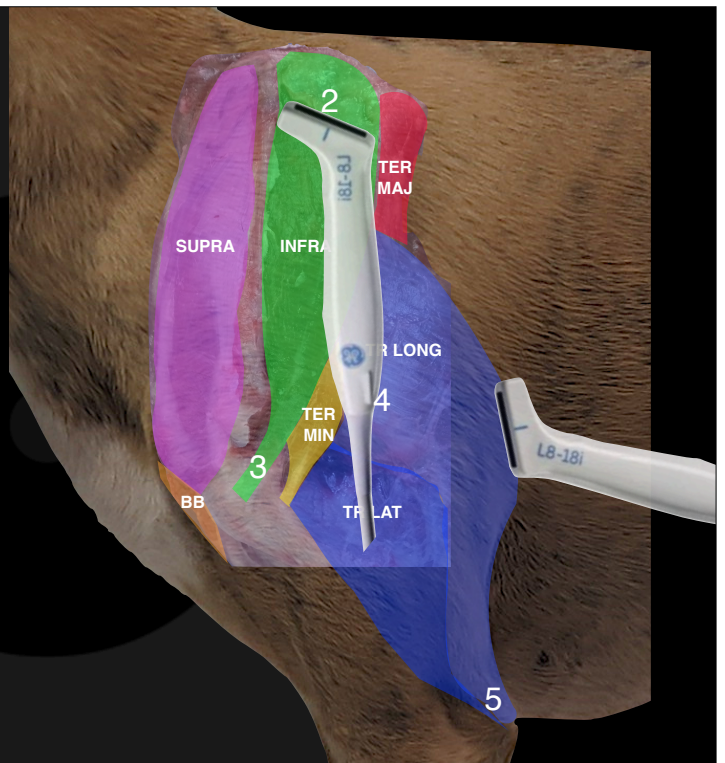
Diagnostic Mindset



Thank to www.imaios.com

Ultrasound of the shoulder

1. Deltoid
2. Proximal aspect infraspinatus
3. Distal aspect infraspinatus
4. Proximal aspect of the triceps
5. Distal aspect of the triceps



From the shoulder to the elbow

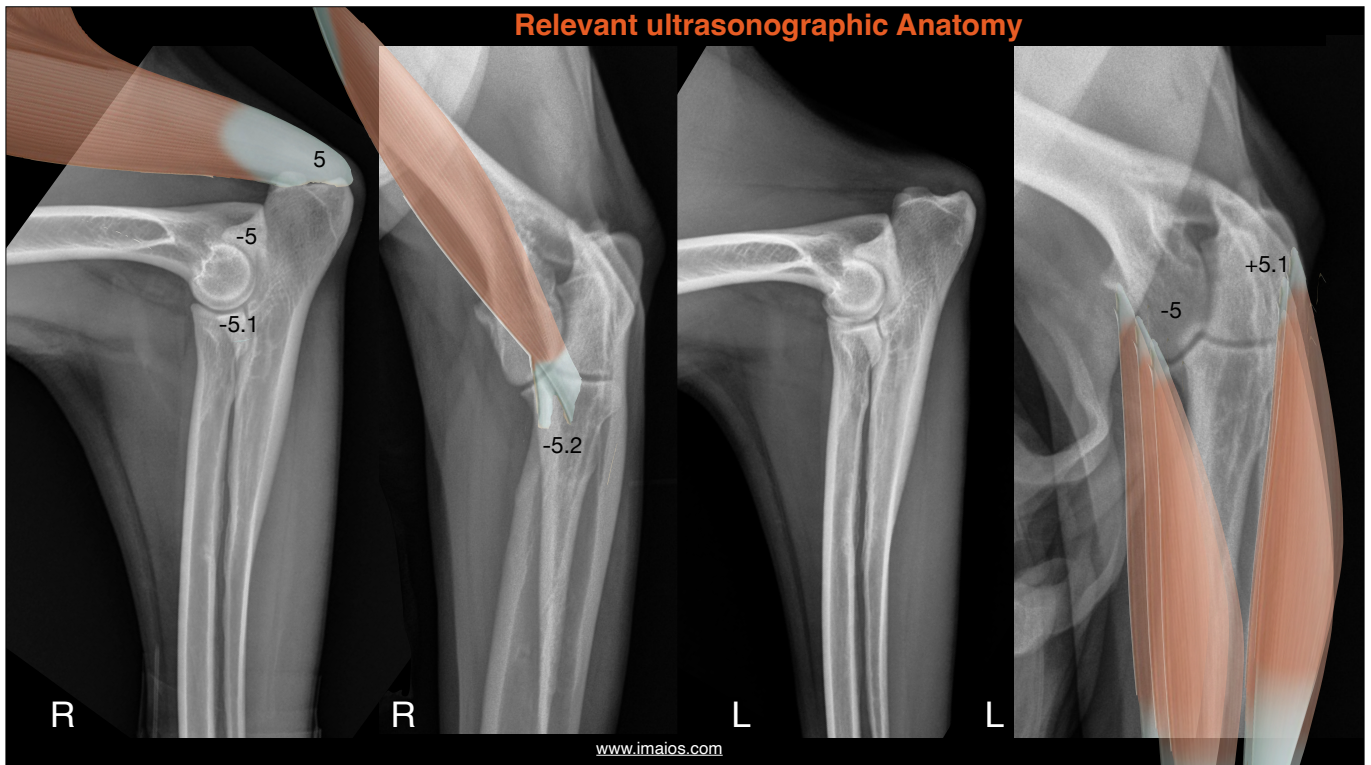


The shoulder ultrasound: elbow steps

1. 5 Triceps tendon insertion
2. - 5 Flexor tendons origin medial epicondyle
3. - 5.1 Cranial margin MCP
4. -5.2 Biceps tendon insertion
5. +5.1 Extensor tendons origin

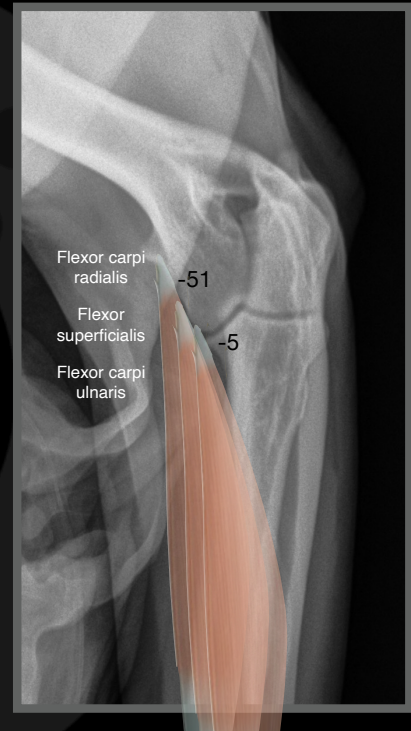


Relevant ultrasonographic Anatomy



The medial epicondyle

- The attachment of the flexor's tendon of the carpus



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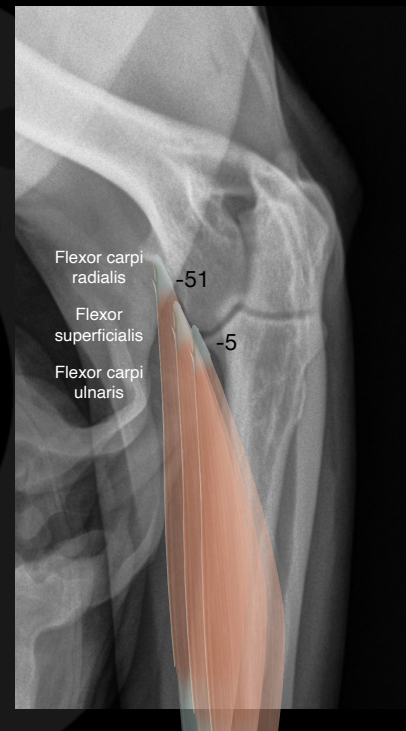
XXX, Golden, XX, X years

- Lame right front limb at five months of age
- Orthopaedic examination positive for right elbow pain
- Radiographic examination performed at the time

The medial surface of the elbow

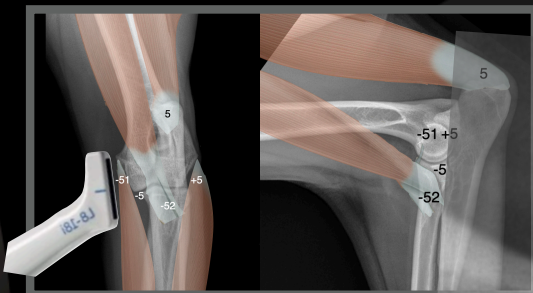
- The attachment of the flexor's tendon of the carpus
- Cranial surface of the ulnar's medial coronoid process

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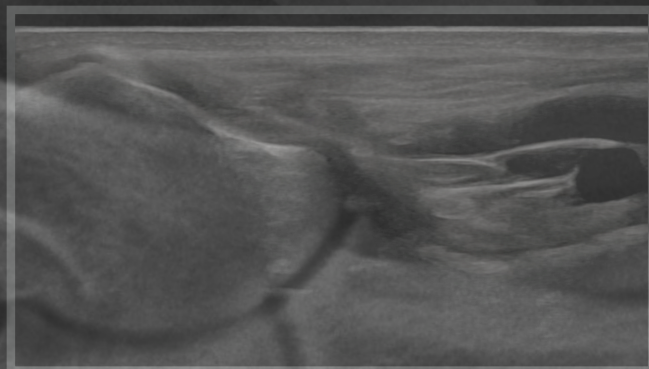
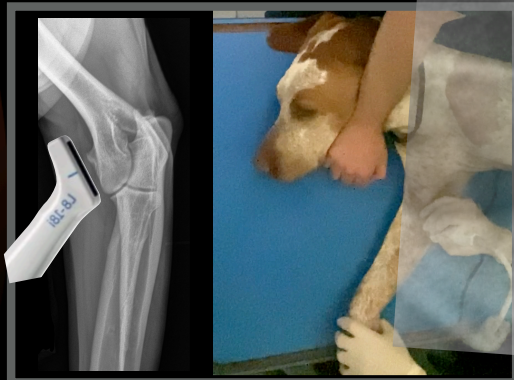


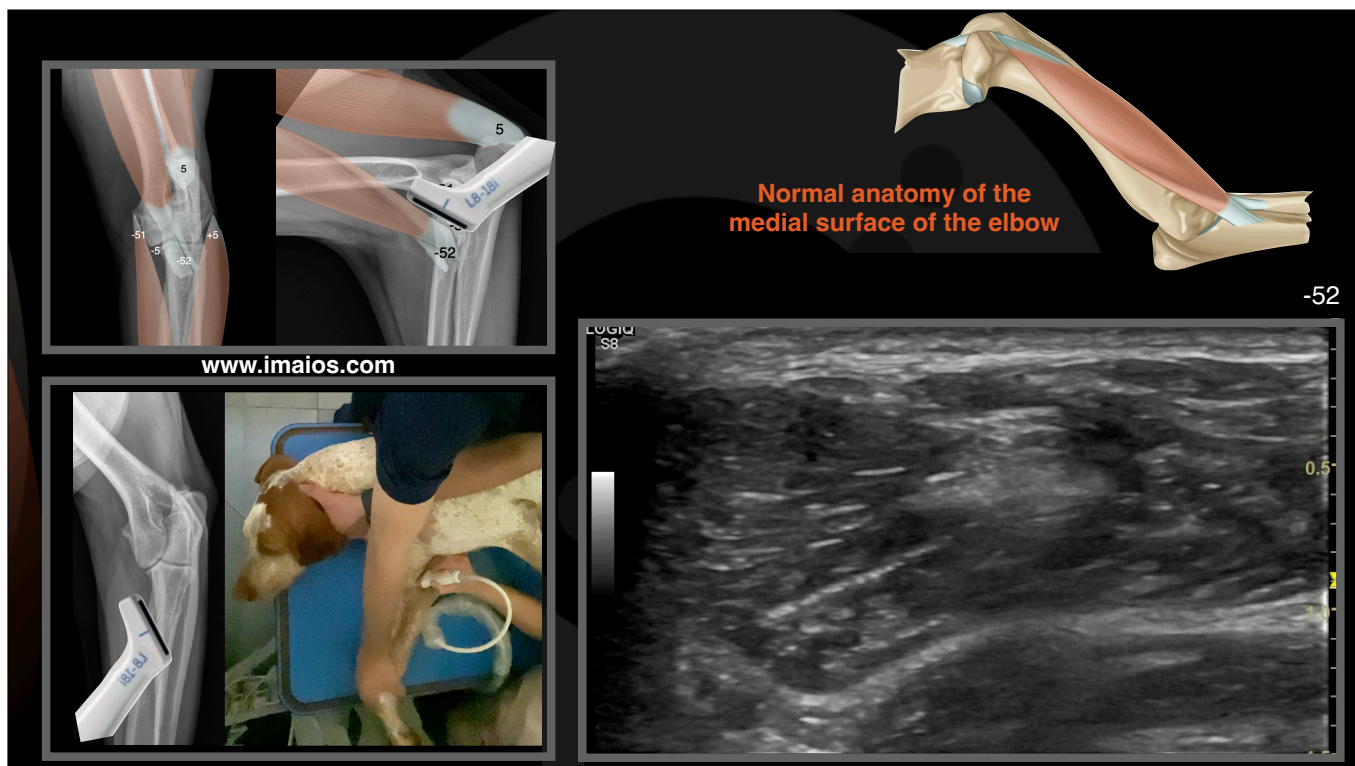
Normal anatomy of the medial surface of the elbow

-51-5



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Use of Ultrasonography in Diagnosis of Medial Compartment Disease of the Elbow in Dogs



Maxime Jacqmin¹ Véronique Livet² Juliette Sonet³ Mathieu Harel³ Eric Viguier²
 Pierre Henri Moissonnier¹ Thibaut Cachon²

Vet Comp Orthop Traumatol 2023;36:132–138.

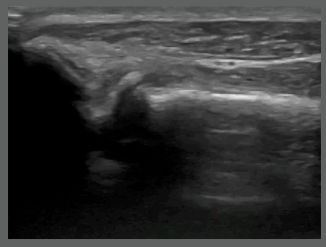
Results of the present study revealed that joint effusion was more frequently found by ultrasonography (10/15), than subtrochlear sclerosis in radiography (7/15) or CT (6/15). **Abnormal medial coronoid process** was also more frequently seen by ultrasonography (9/15), than by radiography (0/14) or CT (7/15). In all elbows, at least one lesion (subtrochlear sclerosis, **joint effusion**, or medial coronoid process abnormality) was noticed with at least one imaging technique (radiography, CT scan or ultrasonography) (15/15). In eleven elbows (11/15), at least two lesions were noticed in the medial compartment, and at least three lesions were seen in five elbows (5/15). On the fifteen diseased elbows included in this study, seven and six had not any lesion on radiography and CT scan respectively. Using ultrasonography, joint

1. 15 diseases elbows
2. 13/15 ultrasound
3. 9/15 CT
4. 7/15 RX

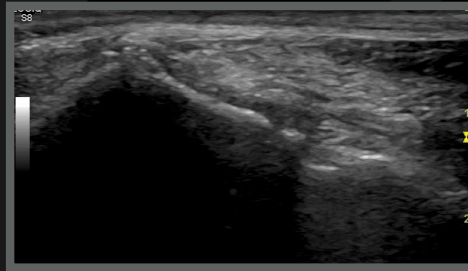
Use of Ultrasonography in Diagnosis of Medial Compartment Disease of the Elbow in Dogs

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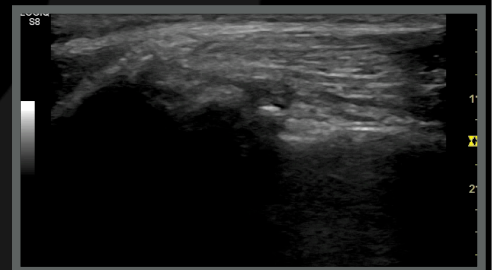
Normal synovial space



Minimal synovial sufferance



Severe synovial effusion (FCP)

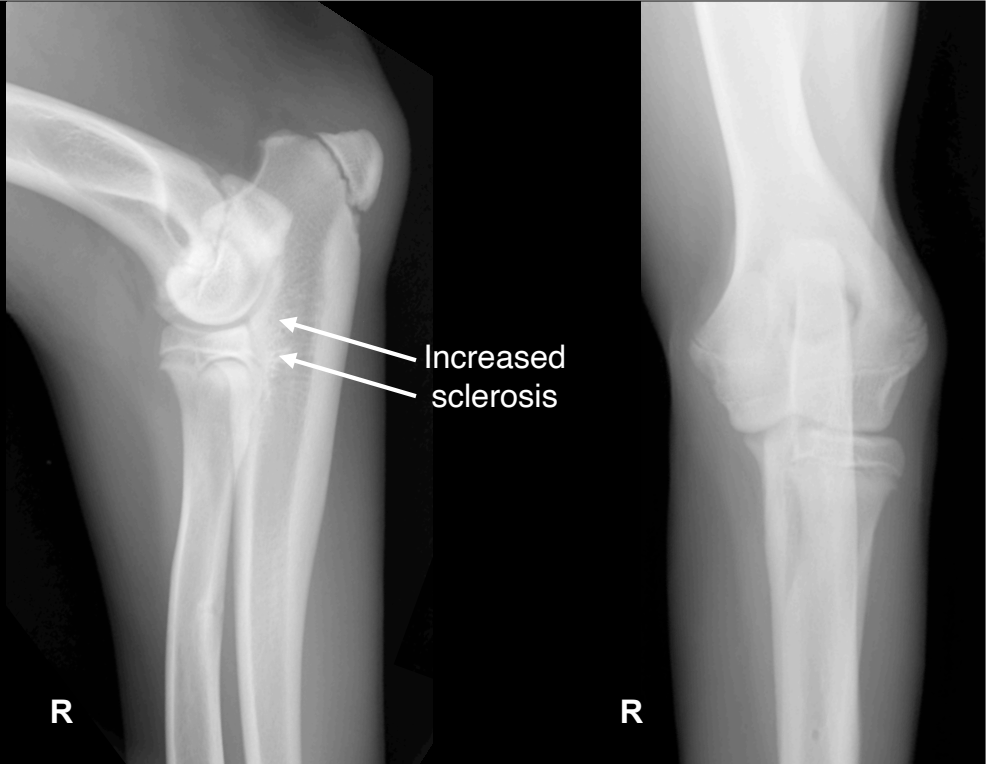


Mia, Labrador, FS, 2 years

- Lame right front limb at five months of age
- Orthopaedic examination positive for right elbow pain
- Radiographic examination performed at the time



Mia, FS, 5 months



Mia, FS, 5 months



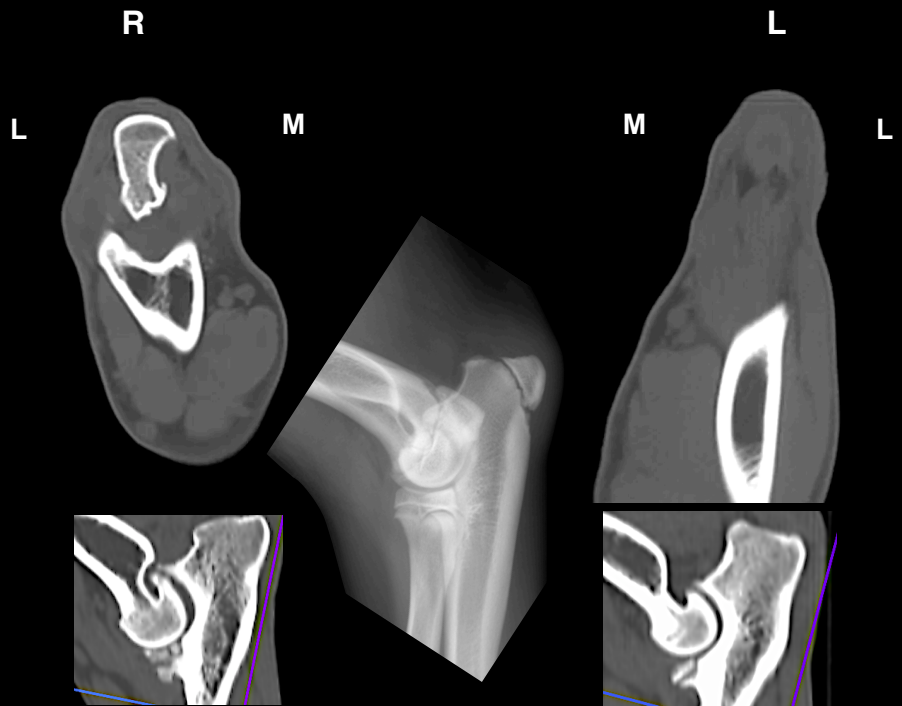
- High suspicion for FCP
- CT advised and performed



Mia, FS, 6 months



- Confirmed bilateral FCP



Mia, Labrador, FS, 2 years

- Bilateral FCP diagnosed at 6 months of age
- Initially, excellent response to NSAID
- Recently, after minor exercise, RFL lameness switched from first-degree to third degree
- Lameness is not responding to treatment



Why is the lameness only on the right side?

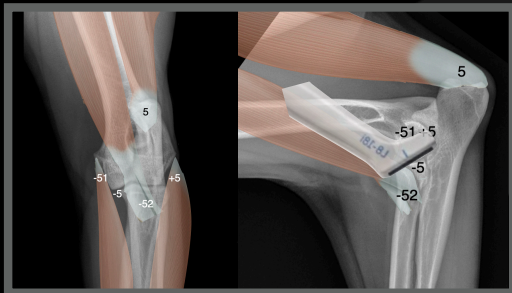
Mia, FS, 2 years



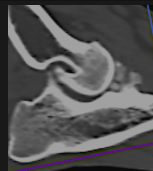
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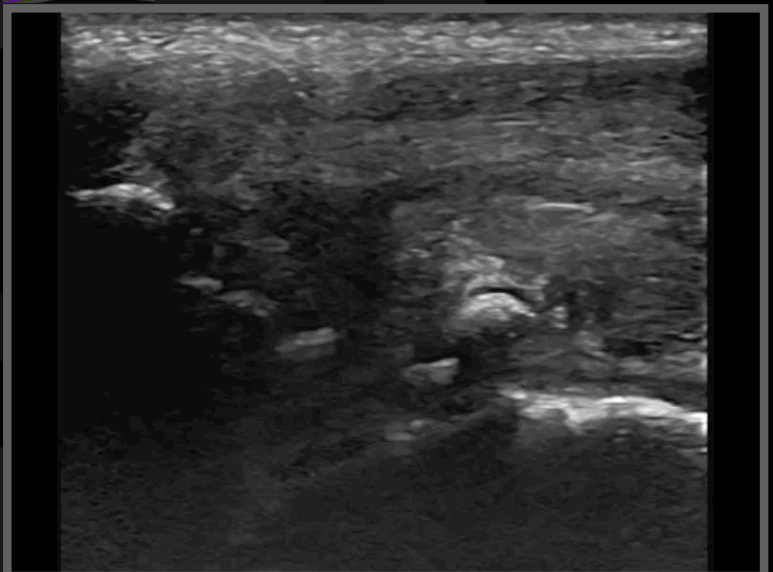
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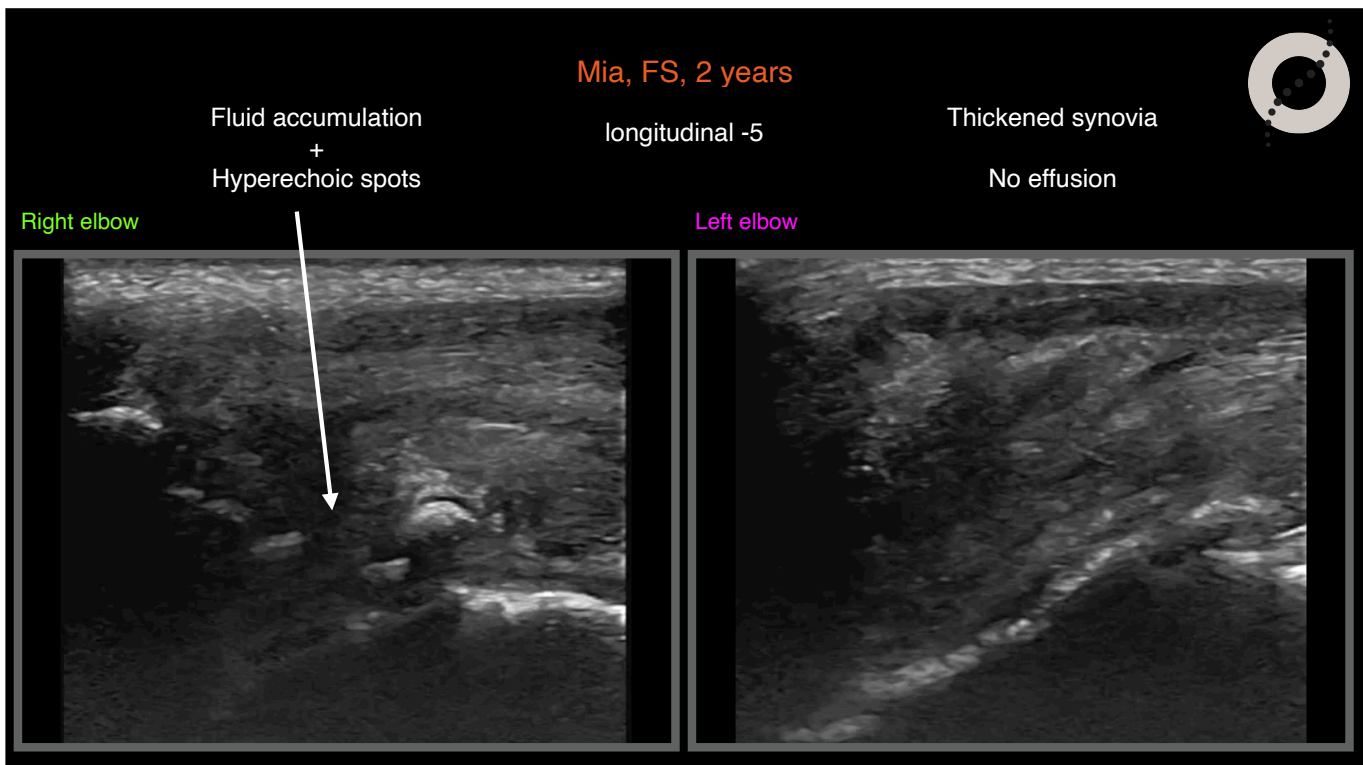


Mia, FS, 2 years

Right elbow

-5

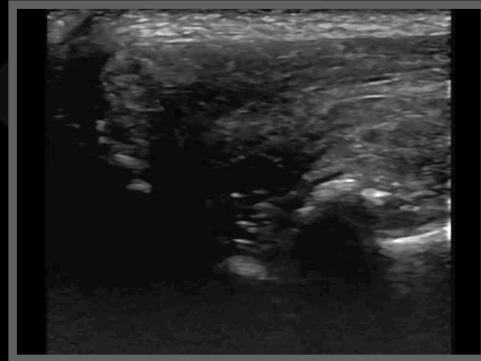




Mia, Labrador, FS, 2 years

Ultrasonographic diagnoses

- Right elbow effusion + severe articular surface remodelling
- Hyperechoic spots???



vacuum phenomenon joints

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User Guide

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Sorted by: Best match

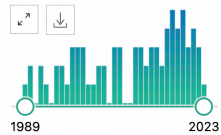
Display options

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69 results

Page 1 of 7

RESULTS BY YEAR



TEXT AVAILABILITY

- Abstract
- Free full text
- Full text

ARTICLE ATTRIBUTE

- Associated data

ARTICLE TYPE

- Books and Documents
- Clinical Trial
- Meta-Analysis
- Randomized Controlled Trial

Vacuum phenomena in the sacroiliac joints and in association with sacral insufficiency fractures. Incidence and significance.

1
Cite Peh WC, Ooi GC.
Spine (Phila Pa 1976). 1997 Sep 1;22(17):2005-8. doi: 10.1097/00007632-199709010-00013.
Share PMID: 9306531

SUMMARY OF BACKGROUND DATA: The occurrence of **vacuum phenomena** is well recognized in the vertebra, but not in the sacroiliac joint. ...RESULTS: In the group with sacral insufficiency fractures, **vacuum phenomena** were detected in 69.2% of patients ...

Vacuum phenomenon.

2
Cite Yanagawa Y, Ohsaka H, Jitsuiki K, Yoshizawa T, Takeuchi I, Omori K, Oode Y, Ishikawa K.
Emerg Radiol. 2016 Aug;23(4):377-82. doi: 10.1007/s10140-016-1401-6. Epub 2016 May 4.
Share PMID: 27147527 Review.

This article describes the theory of the formation of the **vacuum phenomenon (VP)**, the detection of the VP, the different medical causes, the different locations of the presentation of the VP, and the differential diagnoses. ...Clinically, the pathologies associated with th ...

Radiologic interpretation of vacuum phenomena.

3
Cite Balkissoon AR.
Crit Rev Diagn Imaging. 1996 Oct;37(5):435-60.
Share PMID: 8922894 Review.

"**Vacuum**" **phenomena** may occur within peripheral **joints** or in the spine. ...Under physiologic conditions, naturally occurring peripheral **vacuums** cannot exist in the presence of **joint** fluid. This is often an easy, inexpensive, noninvasive means of ...

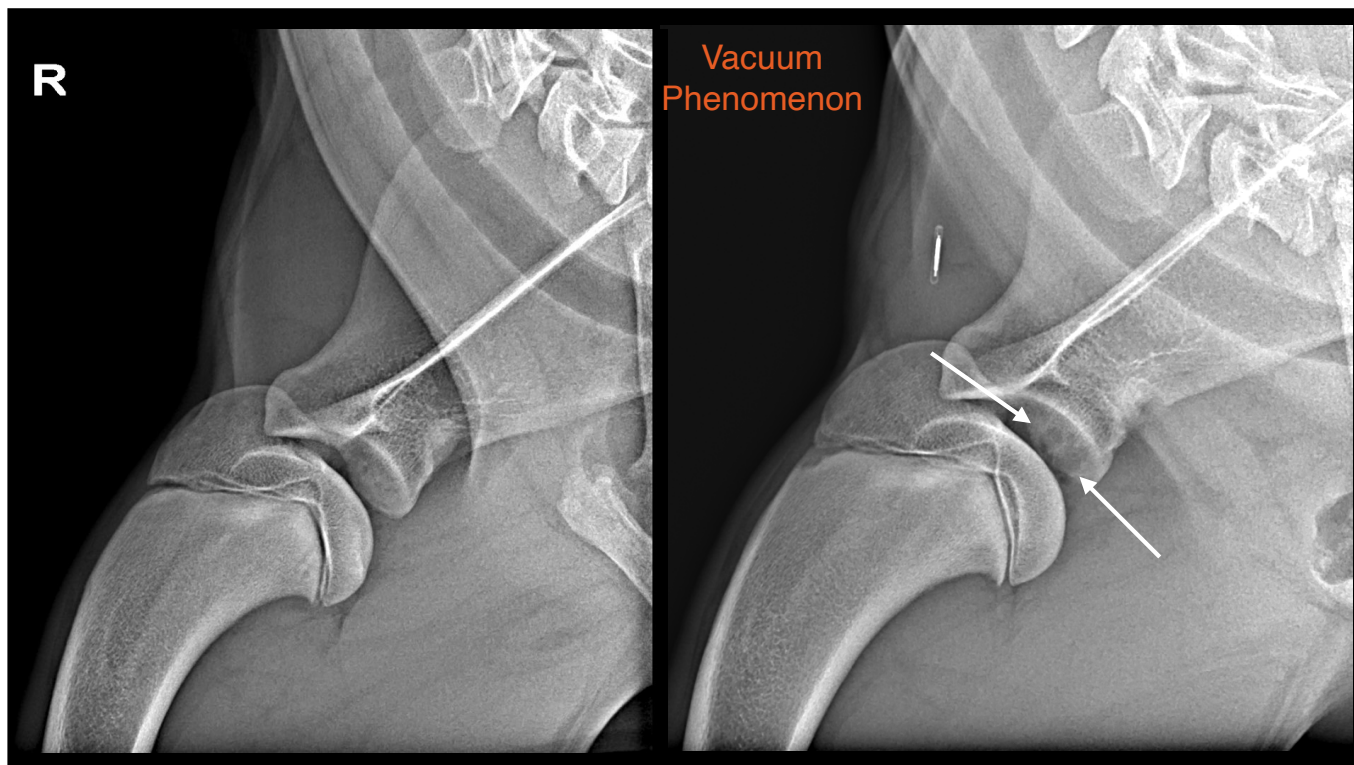
Vacuum phenomenon

Youichi Yanagawa¹ · Hiromichi Ohsaka¹ · Kei Jitsuiki¹ · Toshihiko Yoshizawa¹ · Ikuto Takeuchi¹ · Kazuhiko Omori¹ · Yasumasa Oode¹ · Kouhei Ishikawa¹

the mechanism responsible for the formation of the VP [1]. If an enclosed tissue space is allowed to expand as a rebound phenomenon after an external impact, the volume within the enclosed space will increase. In the setting of expanding volume, the pressure within the space will decrease. The solubility of the gas in the enclosed space will decrease as the pressure of the space decreases. Decreased solubility allows a gas to leave a solution. The combination of lower nitrogen solubility and the minimal metabolism of nitrogen by the body mainly accounts for the formation of the VP. Basically, the mechanism underlying the formation of the VP is the same as cavitation induced by rotation of a ship's propeller in water, which depends on two laws of physics: Henry's Law and Boyle's Law.

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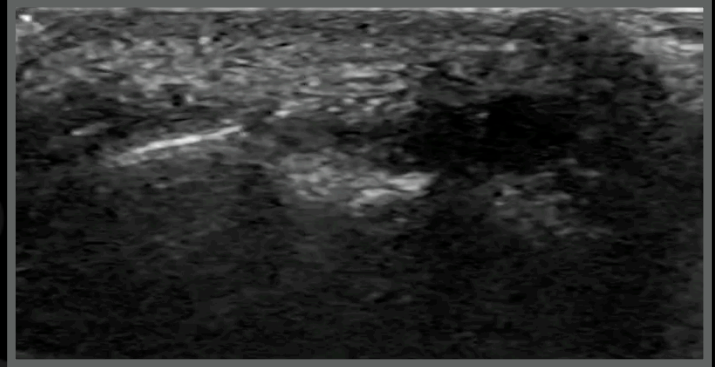
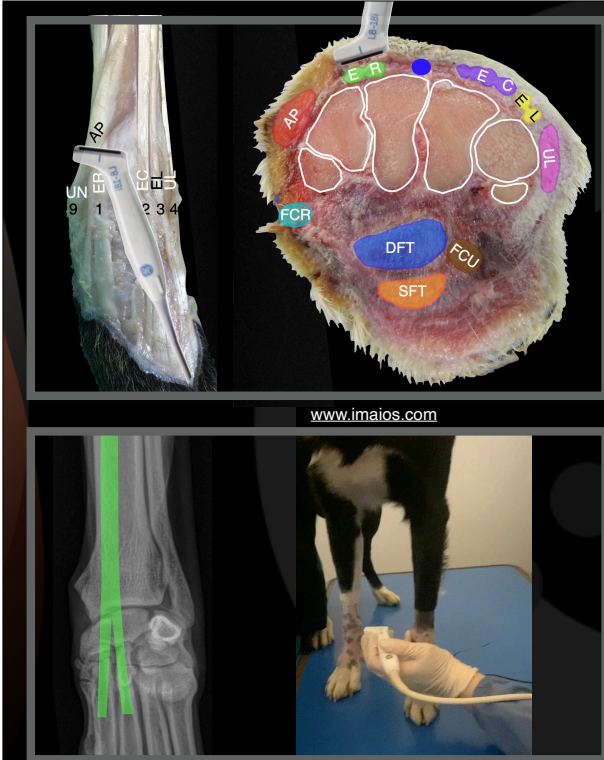


Mia, FS, 2 years

Left carpus

Extensor Carpi Radialis transverse scan

1

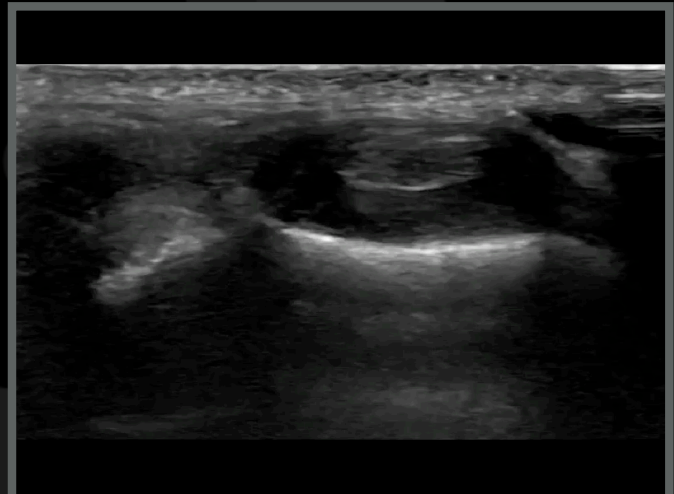
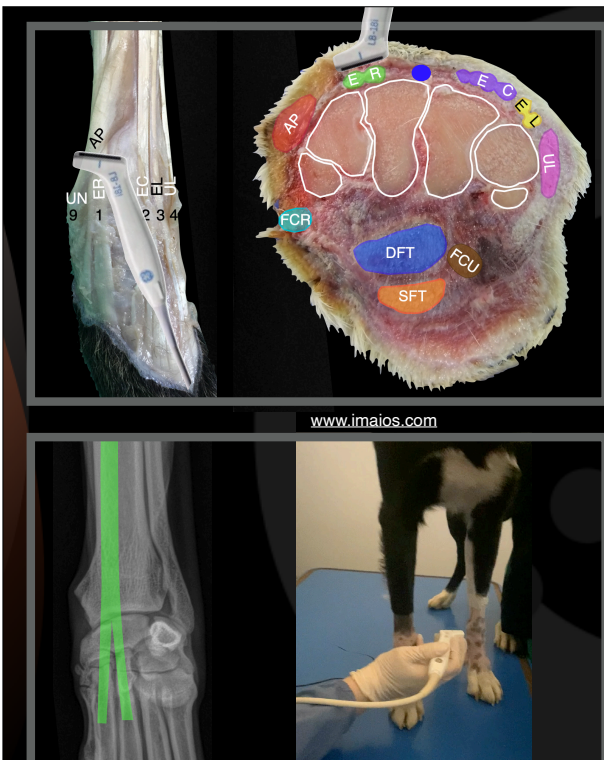


Mia, FS, 2 years

Right carpus

Extensor Carpi Radialis transverse and longitudinal scan

1

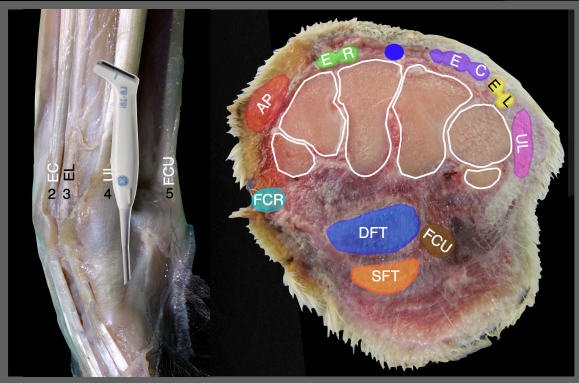


Mia, FS, 2 years

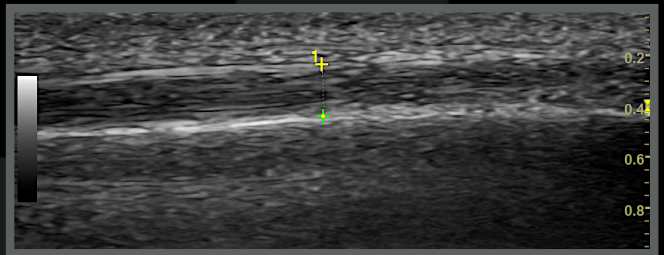
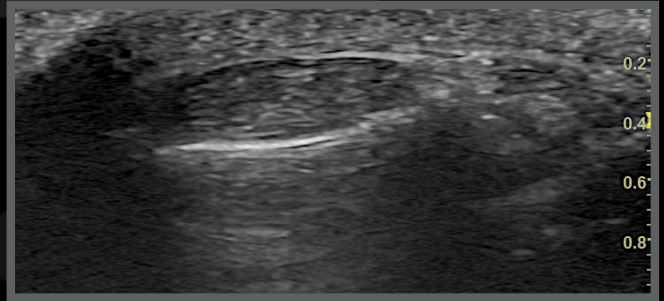
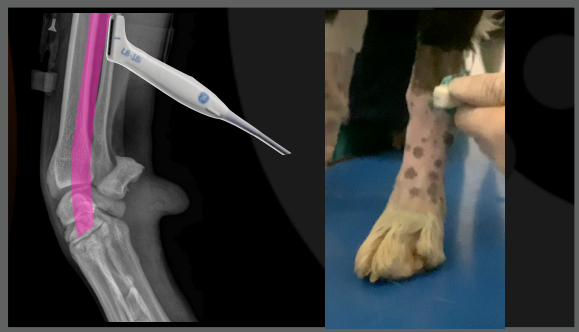
Left carpus

Ulnaris lateralis transverse and longitudinal scan

4



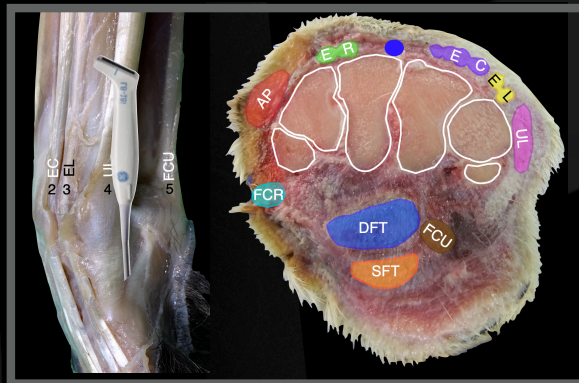
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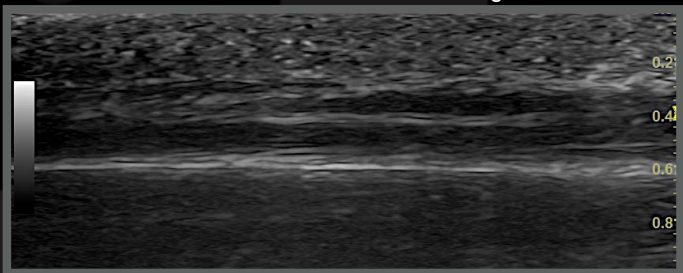
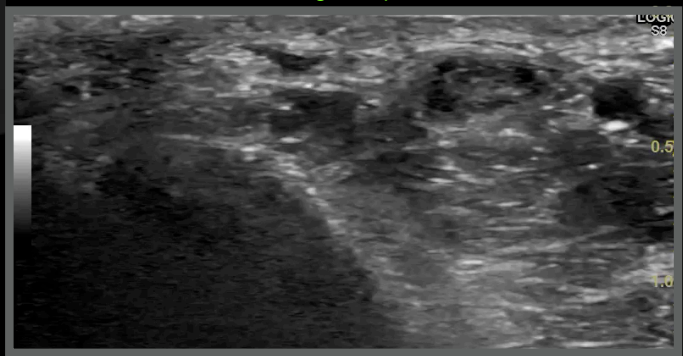
Mia, FS, 2 years

Right carpus

Ulnaris lateralis transverse and longitudinal scan



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Mia, Labrador, FS, 2 years

Two months follow-up

- She is doing very well
- Physiotherapy once a week and then every two weeks
- No need for NSAID at the moment
- She increased her daily exercises



Thank you



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