

# Ultrasound of the hip and medio-caudal portion of the thigh

Gliola Spattini  
DVM, GP Cardiol., CCRT, PhD, DECVI



Thank to [www.imaios.com](http://www.imaios.com)

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## Objectives

- Humans use ultrasound to screen for hip joint dysplasia
- Can we do so in canine patients?
- Can ultrasound be used on hip joints?



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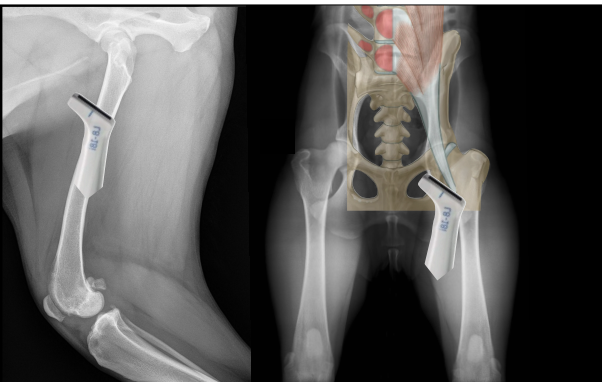
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Ultrasonographic technique to the medial portion of the hip



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### Ultrasonographic technique for the lateral portion of the hip

- Greater trochanter
- Ischiatic tuberosity



Veterin. Anesthesis and Analg. 2011; 19: 107-114. <http://dx.doi.org/10.1155/2011/107107>

RESEARCH PAPER  
**Ultrasound-guided lateral pericapsular hip desensitization of the articular branches of the cranial gluteal nerves: A canine cadaveric study and feasibility study in dogs**

Mohd A. Hossain<sup>1</sup>, Hossain A. Hossain<sup>2</sup>, Hossain F. Hossain<sup>3</sup>, Uta Hornemann<sup>4</sup>, Sören Czemiel<sup>5</sup>, Alkhalaf Alhar<sup>6</sup>, Marlene Chelack<sup>7</sup>, Sabina Wronkova<sup>8</sup>, J. G. Jorge A. Cassiano<sup>9</sup>

DEVELOPING A TECHNIQUE FOR ULTRASOUND-GUIDED INJECTION OF THE ADULT CANINE HIP

CHIARA BERIAMINO, ANNE-LOUISE EYENNE, VALERIA BERSONI

An accurate method for guiding injections into the canine hip would facilitate diagnostic localization of lacerations and targeted treatments. Ultrasound-guided hip injections are commonly used in human and large animals. Aim of this prospective study was to describe the ultrasound (US) anatomy of the adult canine hip and determine the feasibility and accuracy of intra-articular placement of injections using US guidance. Seven adult dogs were used in descriptive US anatomy, five dog cadavers were used to assess the feasibility of the injection technique and 11 dog cadavers were used to assess accuracy of injections. For the accuracy test, 22 joints were injected with radiopaque contrast medium by three operators with different experience. With respect to lateral recumbency, the hyperchoic femoral head surface was identified by following the femoral neck from the greater trochanter to the acetabulum (it was localized by following caudally the line from the iliac wing). An anatomic gap between the femoral head and acetabular surface represented the joint. The capsule was visible as a triangular echic structure and the femoral head acetabular cartilage appeared as an anechic band. The needle was inserted axial to the greater trochanter and directed in a dorso-lateral-ventromedial direction toward the joint space and then parallel through the capsule. Based on post-injection ultrasonography, accuracy was 82.9% at first attempt and 100% at second attempt. This study indicated that US-guided injection is a feasible and accurate technique for guiding the adult canine hip. Future studies in this dog are needed to assess safety and efficacy. © 2015 American College of Veterinary Radiology

*Vet Radiol Ultrasound, Vol. 00, No. 0, 2015, pp. 1-6.*

Can we use ultrasound for hip dysplasia in dogs?

Mohd A. Hossain<sup>1</sup>, Hossain A. Hossain<sup>2</sup>, Hossain F. Hossain<sup>3</sup>, Uta Hornemann<sup>4</sup>, Sören Czemiel<sup>5</sup>, Alkhalaf Alhar<sup>6</sup>, Marlene Chelack<sup>7</sup>, Sabina Wronkova<sup>8</sup>, J. G. Jorge A. Cassiano<sup>9</sup>

Grzesiak R.J., Ackermann N. Ultrasonical evaluation of the coxofemoral joints of the canine neonate. *Vet Radiol Ultrasound* 1992;33: 100-104.

Dozer, Dogue de Bordeaux, MI, 6 Months

- After playing with a friend, left hind limb lameness
- Pain located on the left hip
- More severe on extension



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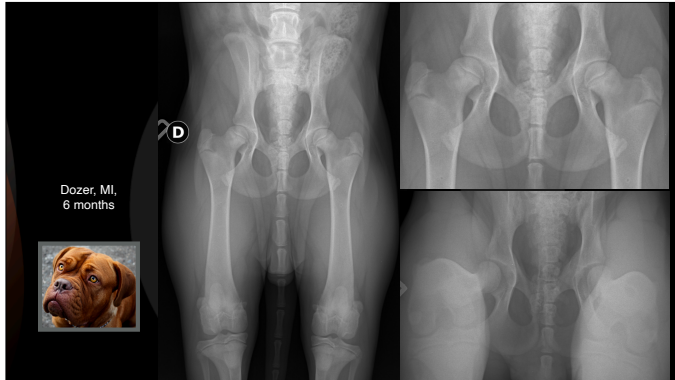
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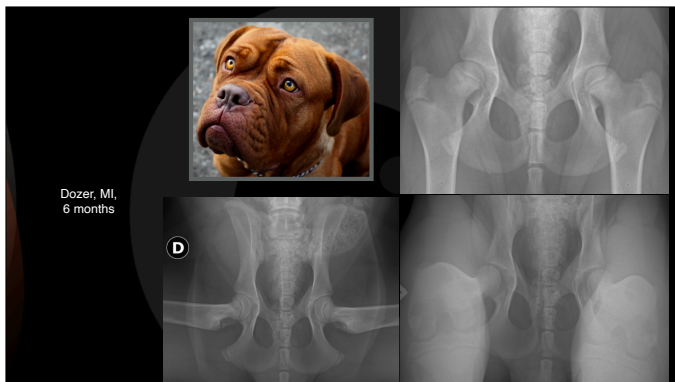
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Dozer, Dogue de Bordeaux, MI, 7 Months

- Relatively unremarkable radiographs
- Soft tissue trauma is suspected
- NSAID and recheck
- Still lame one month later



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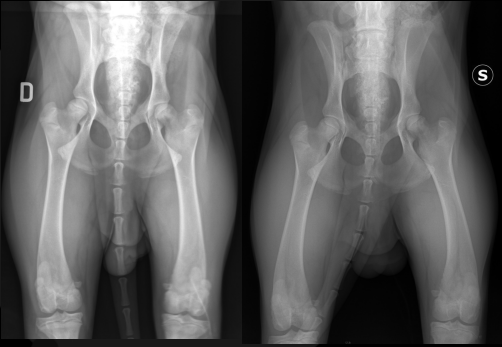
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One month later



Dozer, MI,  
6 months



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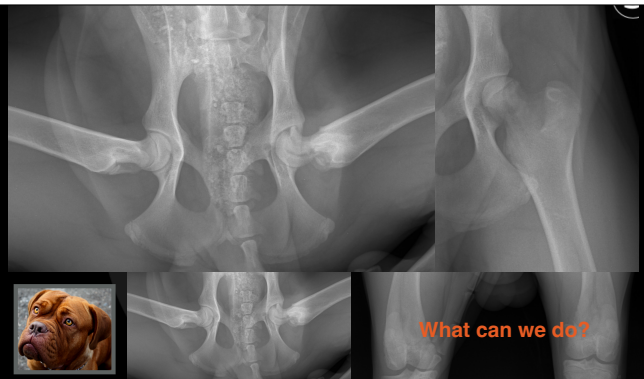
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What can we do?

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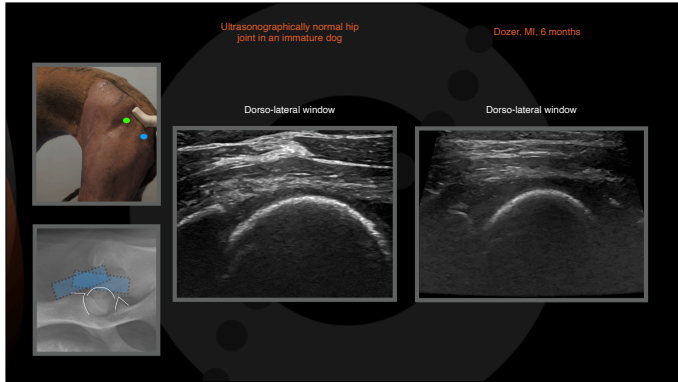
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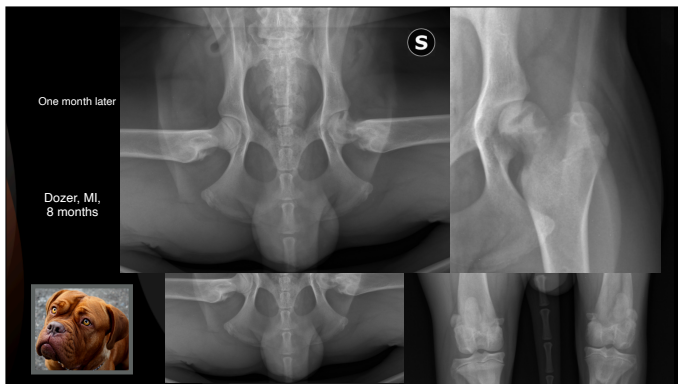
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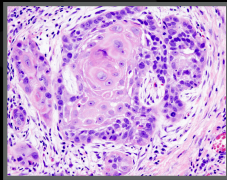
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Dozer, Dogue de Bordeaux, M, 8 Months

• Histology report:

- Degenerative change of the metaphysis
- No inflammatory signs
- No infection signs
- Compatible with metaphyseal dysplasia



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Maya, Mongrel, FS, 11 years

- Intermittent lame left hind limb
- Pain to hip extension
- Left stifle mildly thickened



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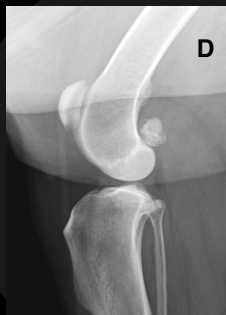
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Maya, FS,  
11 years



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Maya, Mongrel, FS, 11 years



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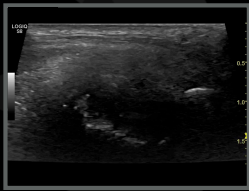
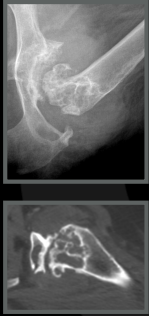
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Maya, Mongrel, FS, 11 years



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Maya, Mongrel, FS, 11 years

- Aggressive polyostotic lesion of the left hip joint
- Soft tissue mass
- Not diagnostic FNA sampling



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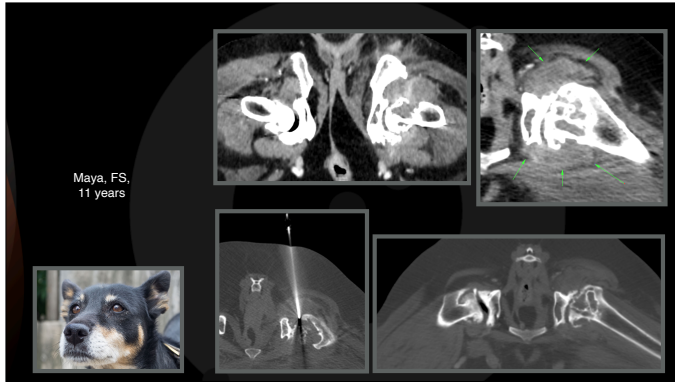
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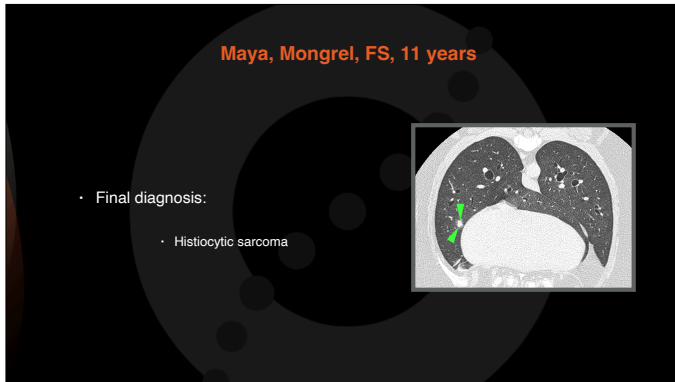
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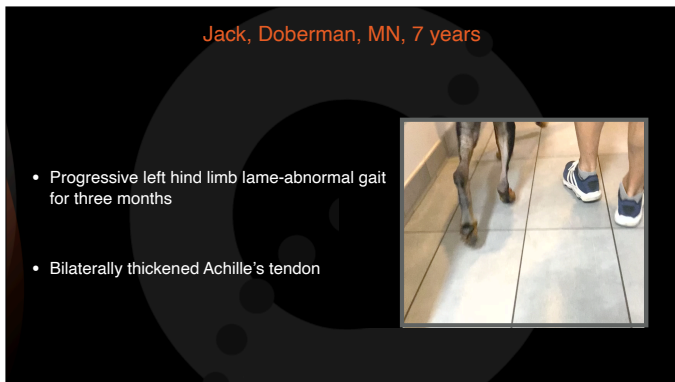
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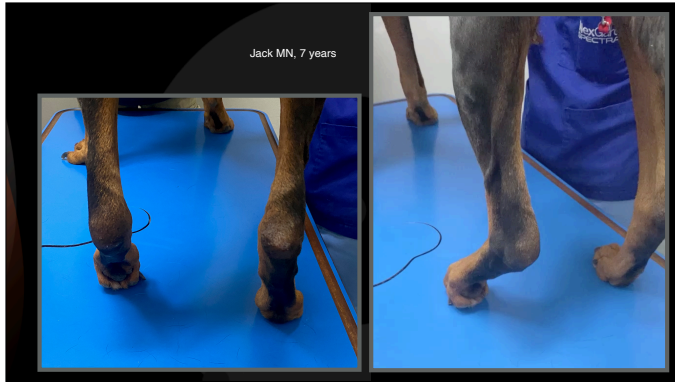
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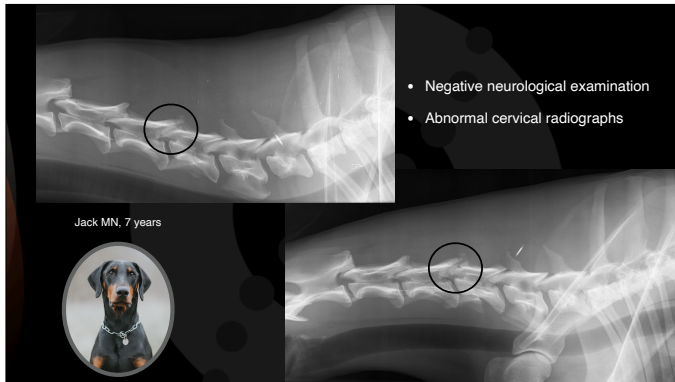
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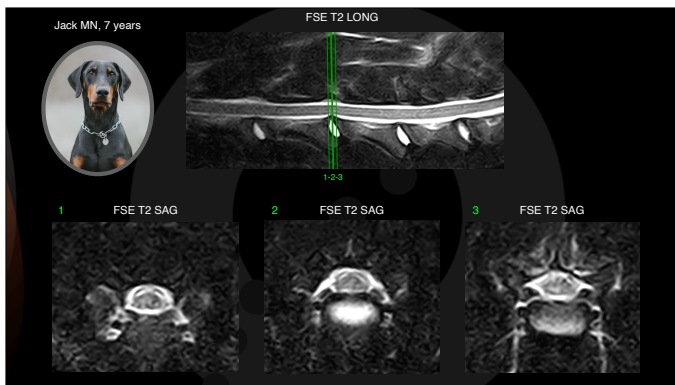
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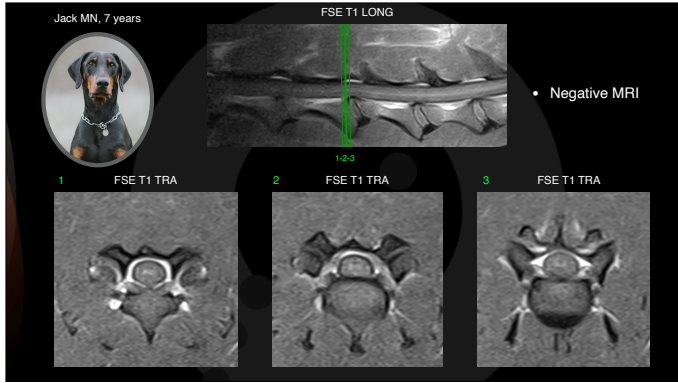
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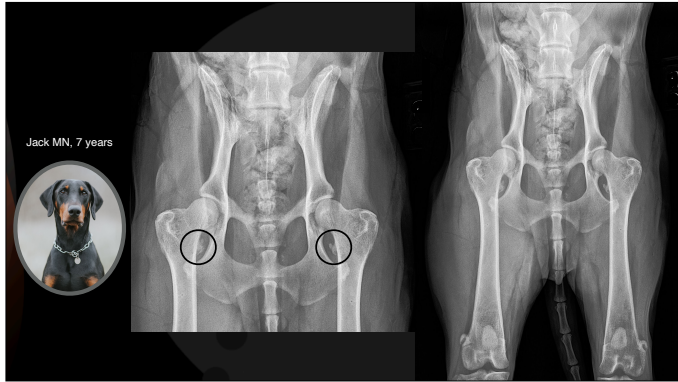
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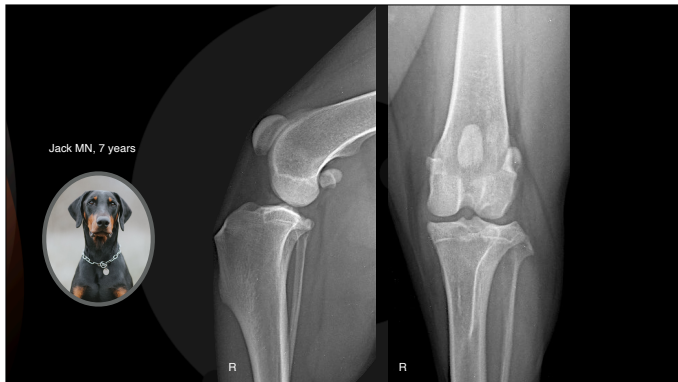
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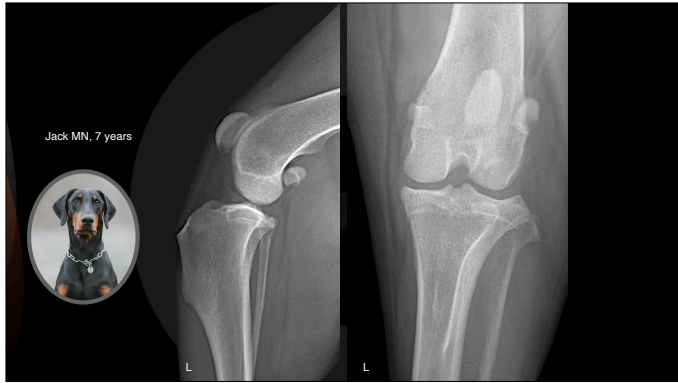
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Jack, Doberman, MN, 7 years

- Possible chronic, bilateral iliopsoas injury
- Chronic Achille's tendon injury

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Ultrasonographic technique



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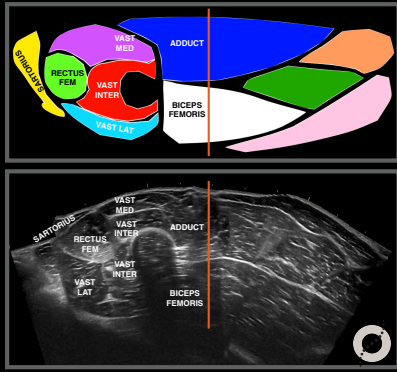
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Cranial part of medial thigh



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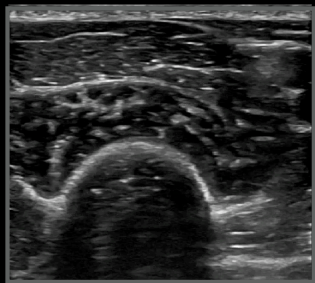
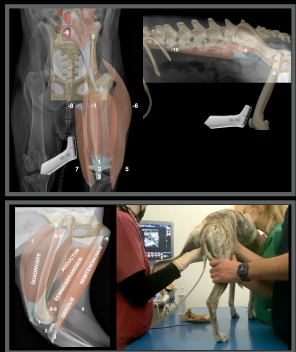
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Jack, MN, 7 years

Left thigh

Medial face transverse scan

-8



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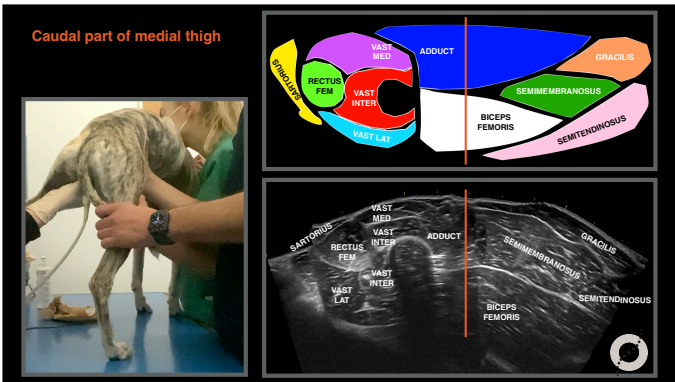
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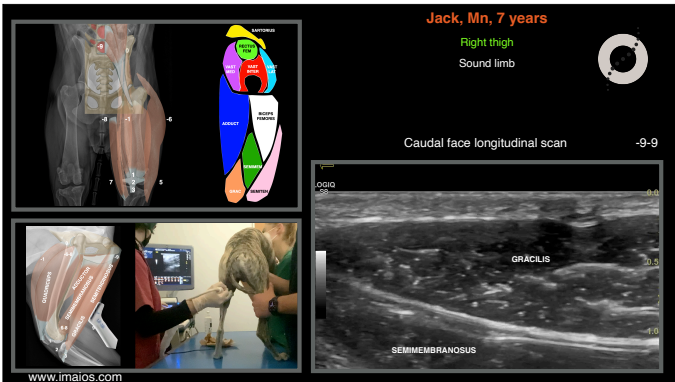
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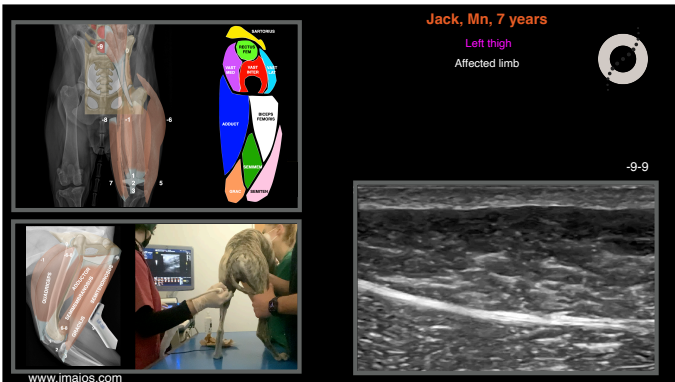
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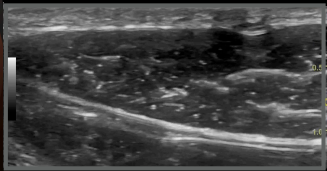
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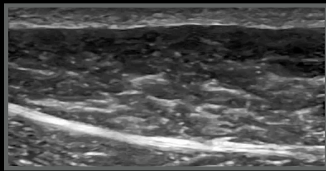
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## Jack, Doberman, MN, 7 years

Right gracilis



Left gracilis



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## How to arrive at Conclusions:

- PE examination
- Blood works
- Xray and Ultrasonographic findings
- Literature



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The screenshot shows a PubMed search results page for the query "gracilis myopathy canine". The search bar at the top contains the query and a "Search" button. Below the search bar, there are options for "Advanced", "Create alert", and "Create RSS". The results section shows "17 results" and "Page 1 of 2". The first result is titled "Gracilis or semitendinosus myopathy in 18 dogs" by Lewis DD, Shelton GD, Piras A, Dee JF, Robins GM, Herron AJ, Fries C, Glinn PE, Hulise DA, Simpson DL, Allen DA. The second result is titled "Hypophosphatemia and rhabdomyolysis" by Knoche JF, Barcnas C, Cotton JR, Fuller TJ, Haller R, Carter NW. The page also includes a "RESULTS BY YEAR" bar chart and "TEXT AVAILABILITY" options.

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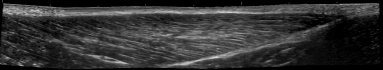

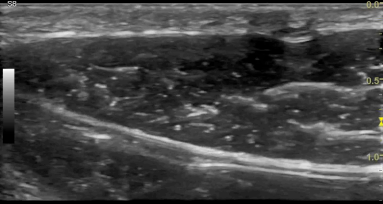
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**Normal ultrasound of the gracilis muscle**  
www.diagnosticmindset.com

"Normal" walking


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**Early phase of gracilis myopathy**  
www.diagnosticmindset.com

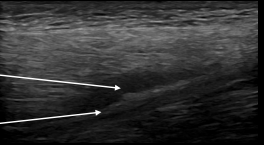
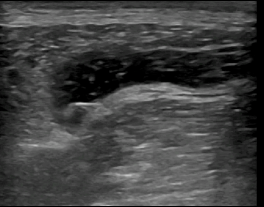

Left hind limb affected

Hypoechoic area with decreased fibrillar pattern

Irrregularly thickened fascia

Often associated with mild muscle atrophy

Scattering artifact not present


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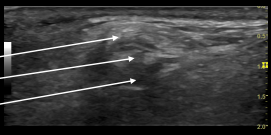
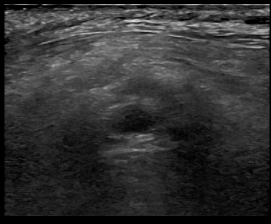

**Middle phase of gracilis myopathy**  
www.diagnosticmindset.com

Left hind limb affected

Scattering artifact

Nodular like lesion

Not homogeneous echostructure


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### Late phase of gracilis myopathy

www.diagnosticmindset.com

Left hind limb affected



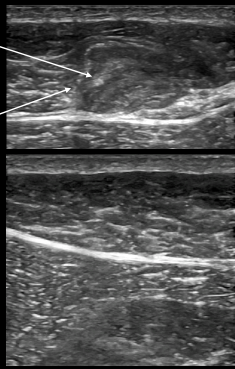
Well-defined  
echoic line-spots

No scattering  
artefacts

Well-defined  
margins

No signs of  
inflammation

Muscle fibrosis



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Jack, Doberman, MN, 7 years

Ultrasonographic diagnoses:

- Second degree left gracilis myopathy



Have we finish?

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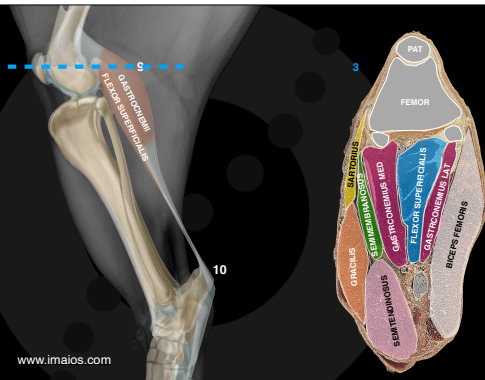
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### Achille's tendon



www.imaios.com

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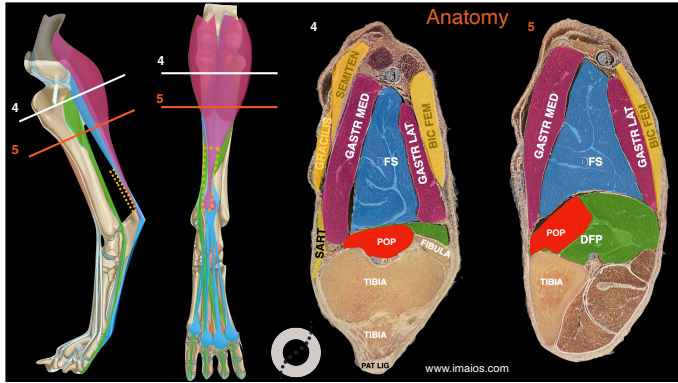
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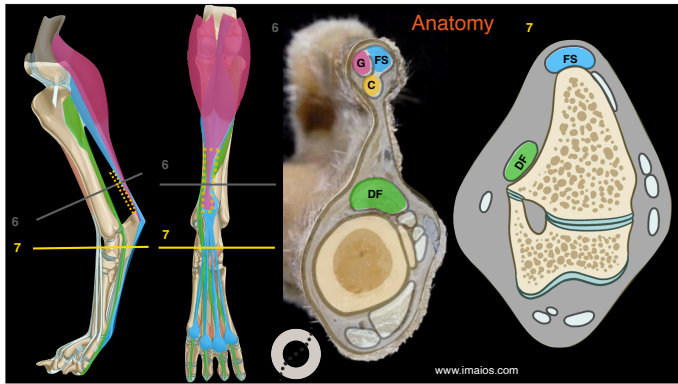
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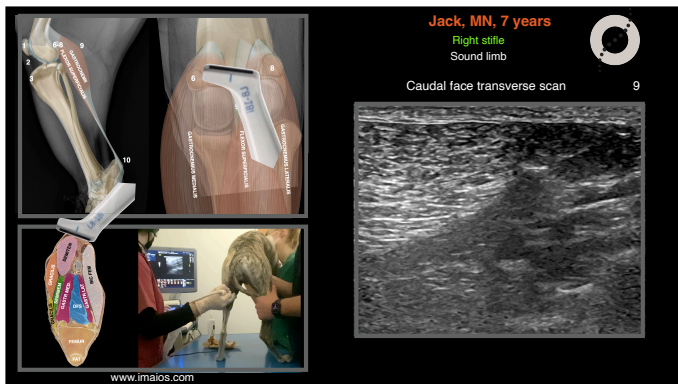
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**Jack, MN, 7 years**

Right stifle  
Sound limb

Caudal face transverse scan 9

www.imaio.com

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**Jack, MN, 7 years**

Right leg  
Sound limb

Caudal face transverse scan 9-10

www.imaio.com

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**Jack, MN, 7 years**

Left stifle

Caudal face transverse scan 9

www.imaio.com

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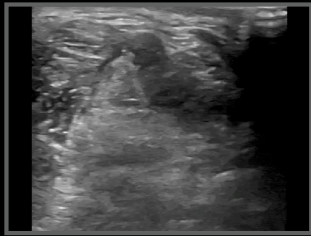
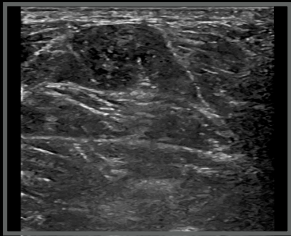
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Jack, Doberman, MN, 7 years

Right

Left



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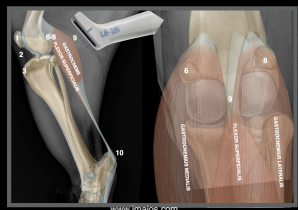
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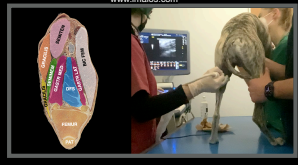
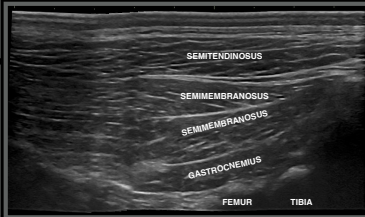
Jack, MN, 7 years

Right stifle



Caudal face longitudinal scan

9



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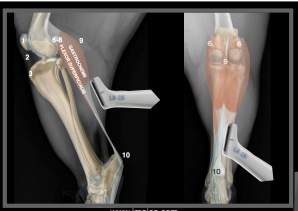
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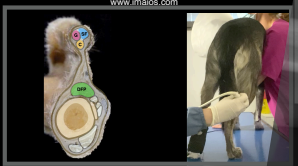
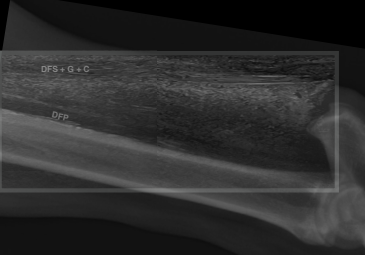
Jack, MN, 7 years

Right hock



Caudal face longitudinal scan

9-10



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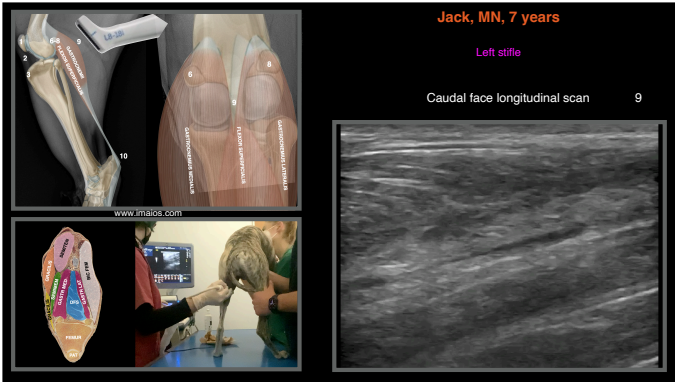
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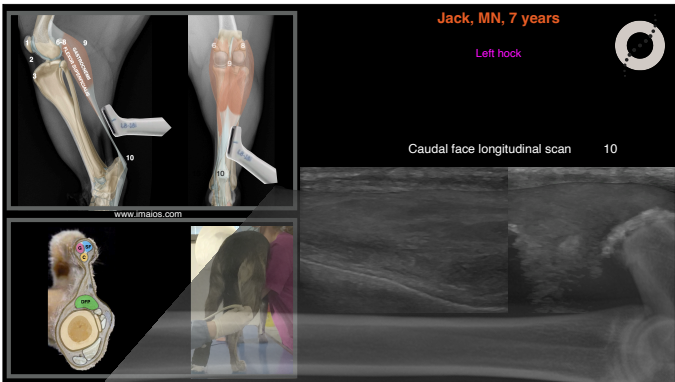
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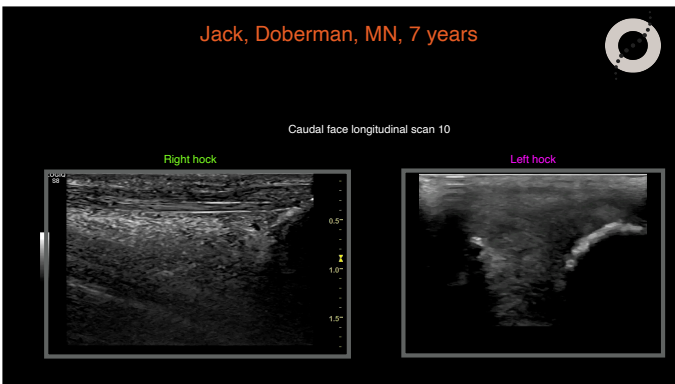
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Jack, Doberman, MN, 7 years

Ultrasonographic diagnoses:

- Left-sided middle phase gracilis myopathy
- Severe third-degree chronic tendinopathy left Achille's tendon



What next?

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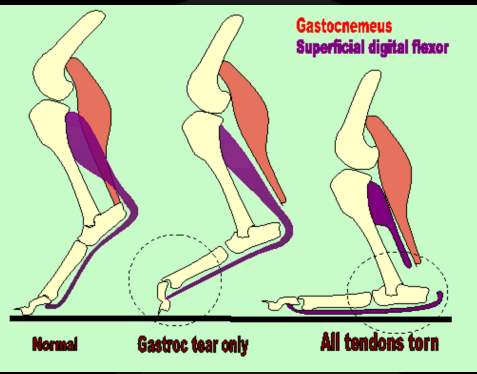
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Jack, Doberman, MN, 7 years

Follow up

- Physiotherapy:
  1. Stop the progression of gracilis myopathy
  2. Reestablish competence of left gastrocnemius muscle



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Jack, Doberman, MN, 7 years

Three months later

- Much better for the last month
- Two treatment each week



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Jack, Doberman, MN, 7 years

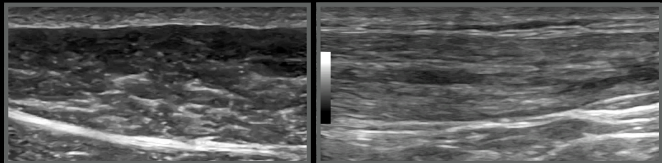
Caudal face longitudinal scan -9-9

Left gracilis

Time 0

Left gracilis

Three months later



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Jack, Doberman, MN, 7 years

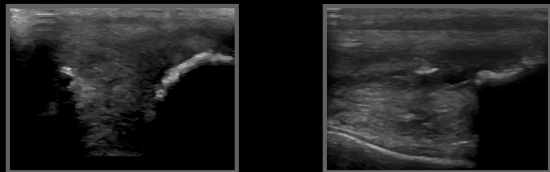
Caudal face longitudinal scan 10

Left hock

Time 0

Left hock

Three months later



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Conclusions



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Conclusions

- We cannot use ultrasound to diagnose early hp displasia in dogs
- A simplified anatomy makes the thigh and Achille's tendon fun!



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Thank you



Diagnostic Mindset

[www.diagnosticmindset.com](http://www.diagnosticmindset.com)

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