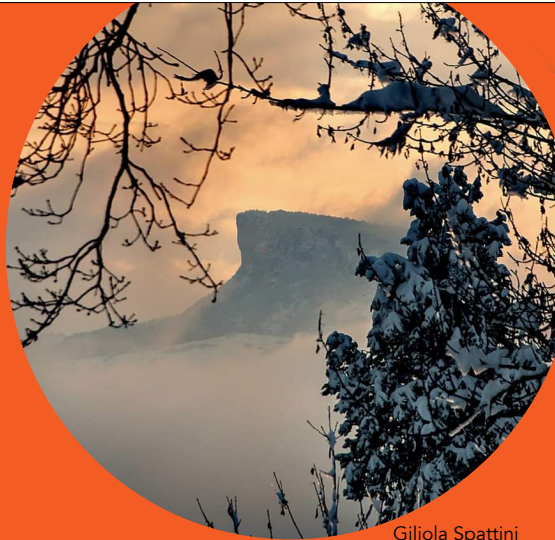


# Radiologia ed ecografia della parete addominale



Giliola Spattini  
DVM, PhD, DECVDI



Diagnostic Mindset

## Objectives

- Abdominal walls and confines do not only serve to protect but also have other rules
- It is essential to consider these structures when assessing abdominal radiographs



**Client:** [REDACTED]

<b>Patient Name</b>	Bianca	<b>Patient ID</b>	[REDACTED]
<b>Species:</b>	Canine	<b>Breed:</b>	Chihuahua
<b>Age:</b>	5 years 0 months	<b>Sex:</b>	Female
<b>Modality/Images :</b>	[REDACTED]	<b>Date Of Study:</b>	[REDACTED]

**Case History:**  
[REDACTED]


Presenting complaint and history of presenting complaint -- mass on abdomen area, been there since puppy o says

Pertinent past medical history -- none  
[REDACTED] occasional diarrhea. no v/c/s  
[REDACTED]

Exercise/activity level -- active in back yard

Behavior -- sweet

Travel history -- none



CRT - <2 sec  
Hydration - wnl  
MM - pk  
Pulse - 80  
[REDACTED]

Weight (kg) - 5.9

Body Condition Score (BCS): 6/9 -- Mildly Overweight: Ribs are palpable with slight excess fat covering. [REDACTED]


INTEG: Large soft approx. nerf football sized, possibly fluid-filled mass along left ventral abdomen, inguinal region, and medial thigh. Firmer texture near body wall. Unable to palpate a rent in body wall d/t size.  
[REDACTED]

Cardiovascular: No murmur or arrhythmia, strong synchronous pulses  
Respiratory: Clear bronchovesicular sounds, normal rate and effort, no stridor  
[REDACTED]

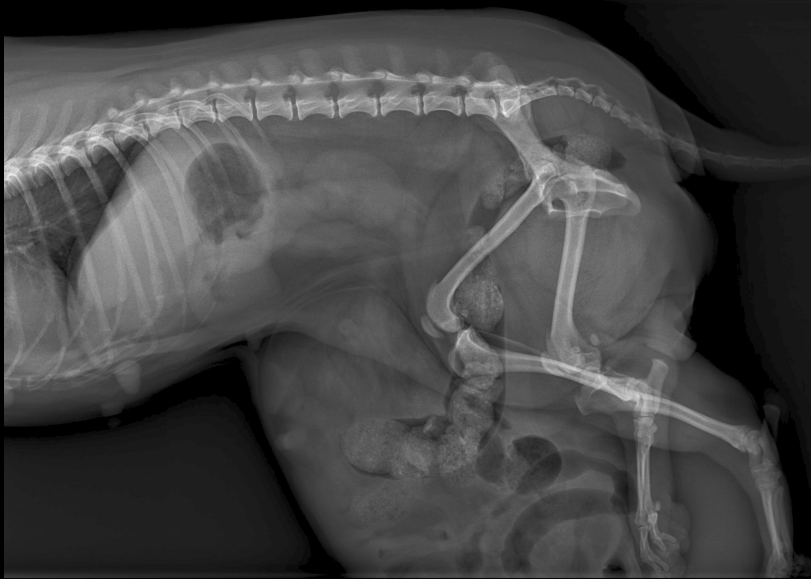
GIT: Unable to fully palpate d/t mass. When palpating mass, marked borborygmi noted.  
Genitourinary: vulva displaced by mass  
[REDACTED]

Musculoskeletal: bilat gr. 1 MPLs  
[REDACTED]

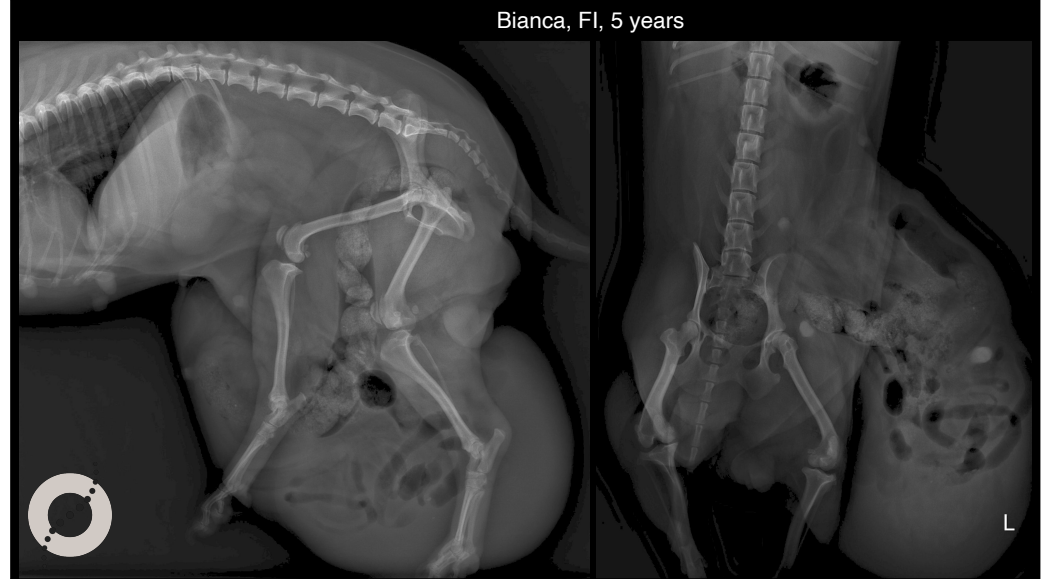
Normal - not painful, not appearing to be in any pain



Bianca,  
FI, 5 years

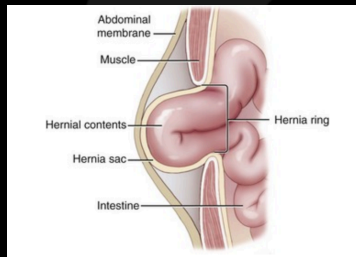


Bianca, FI, 5 years

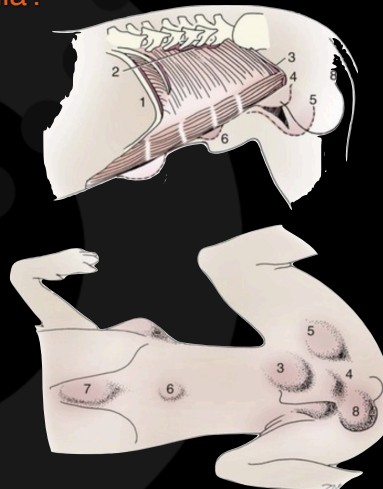


### What is the difference between an abdominal wall rupture and an abdominal hernia?

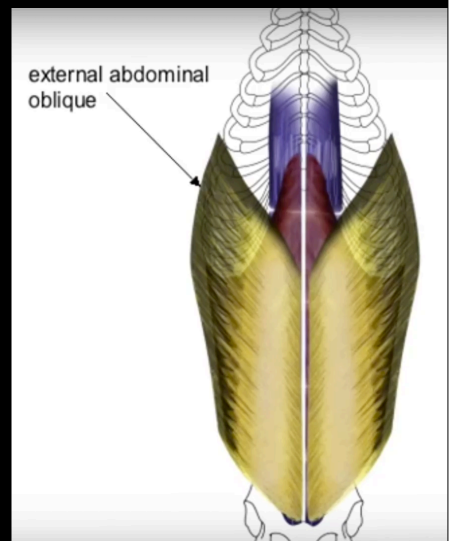
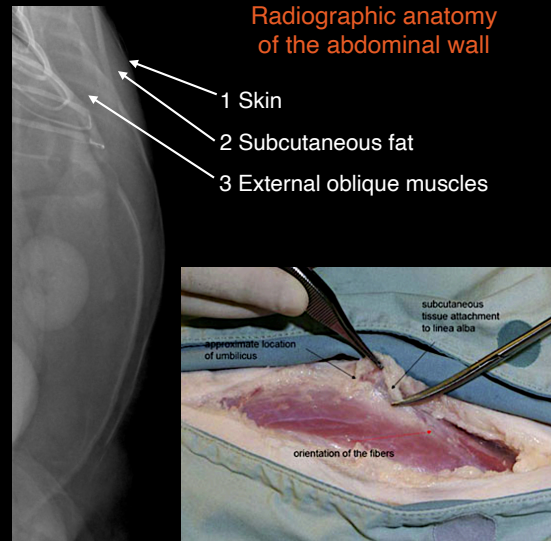
Hernia is a congenital defect and has a hernial sac and a ring

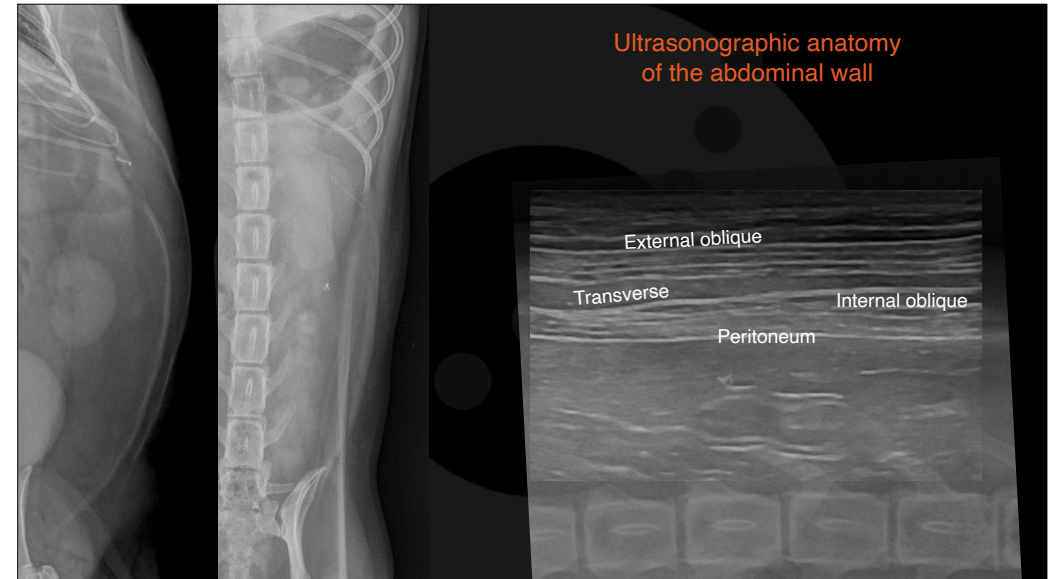
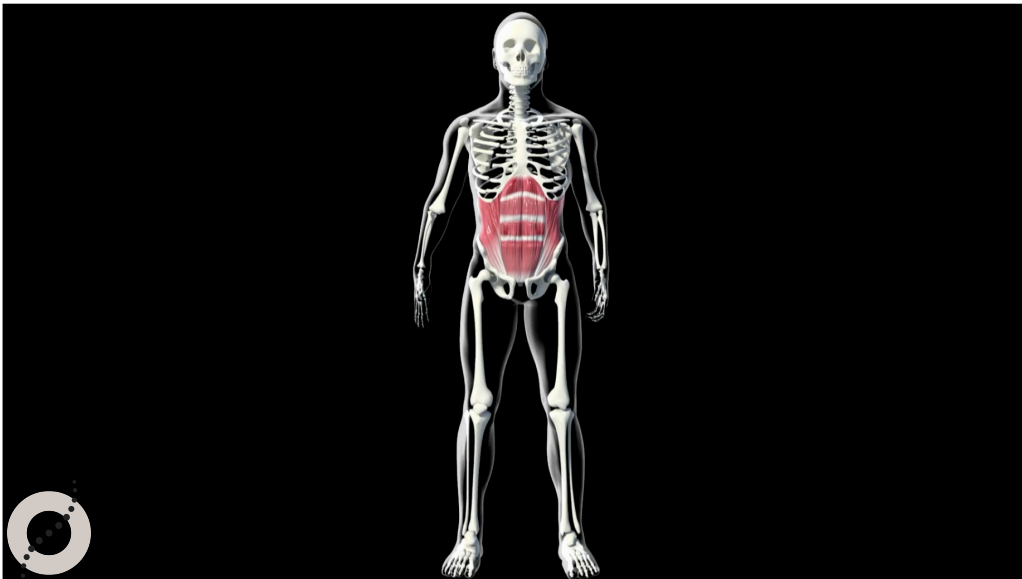
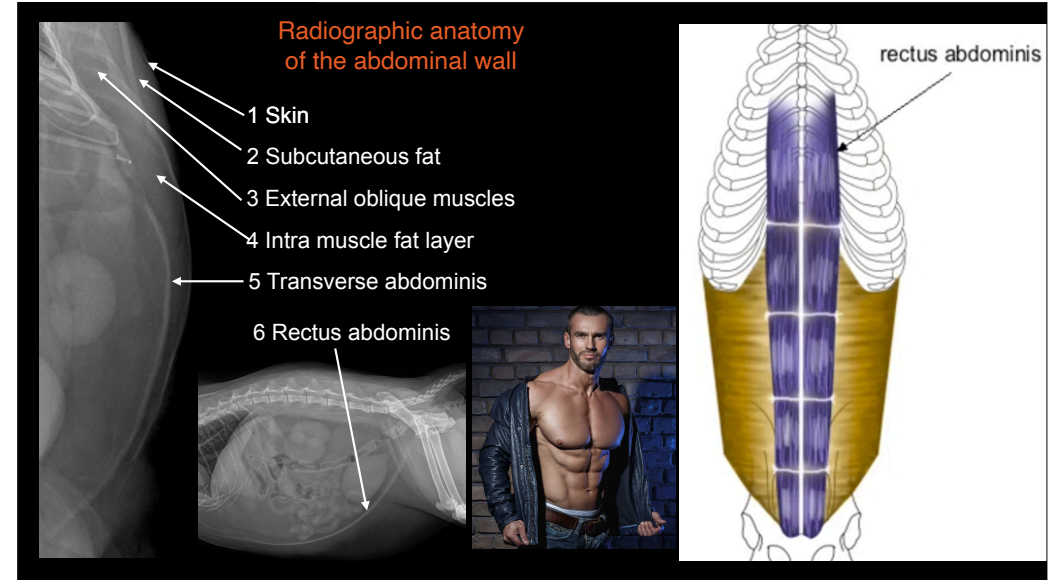
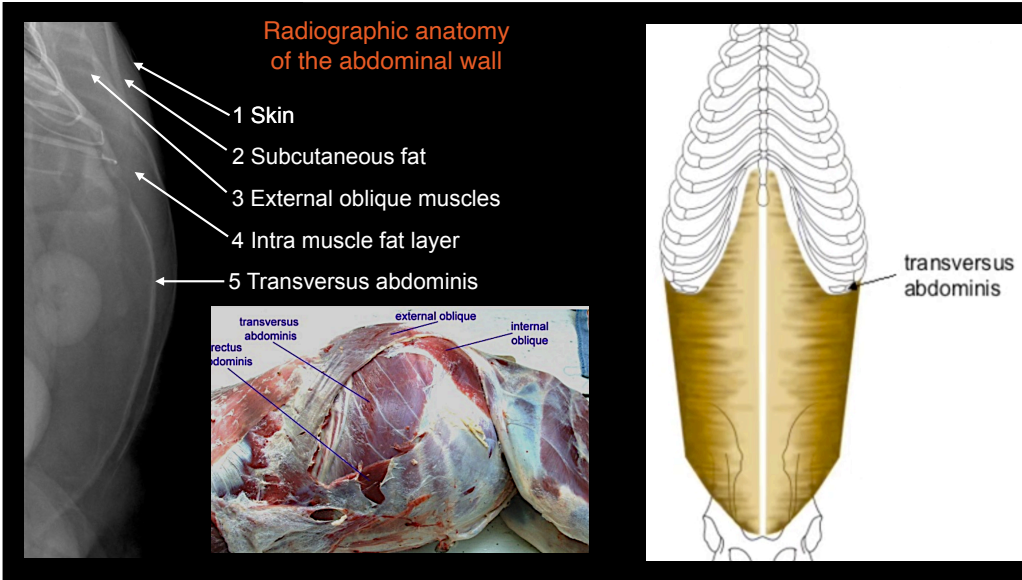


The rupture is usually a traumatic event secondary to the rupture of the wall layers

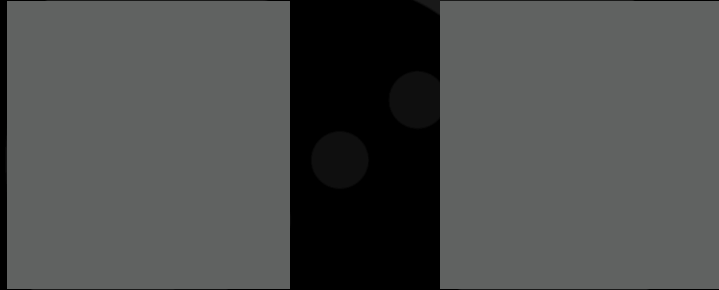


### Radiographic anatomy of the abdominal wall



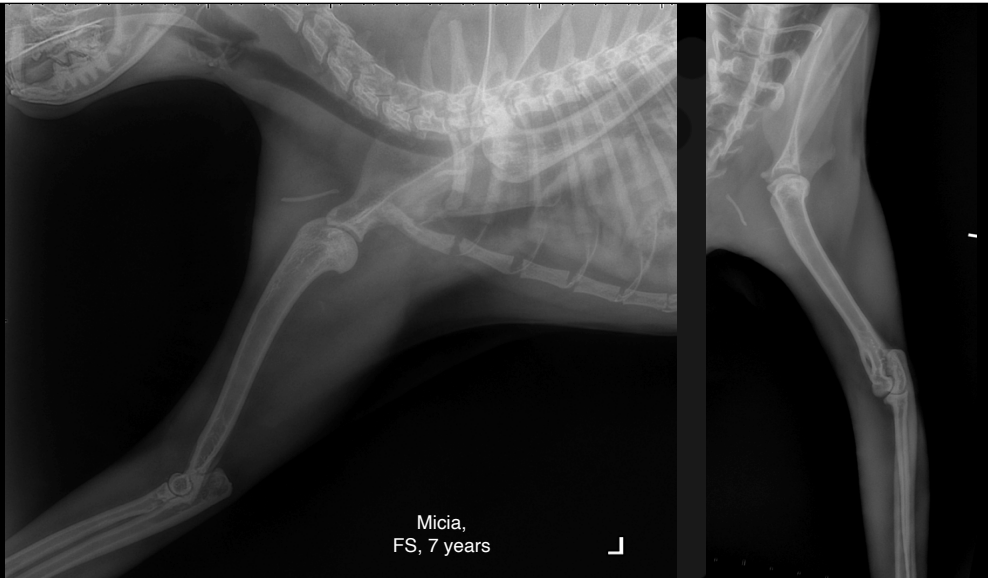


Some of the abdominal wall functions



Micia, DSH, FS, 7 years

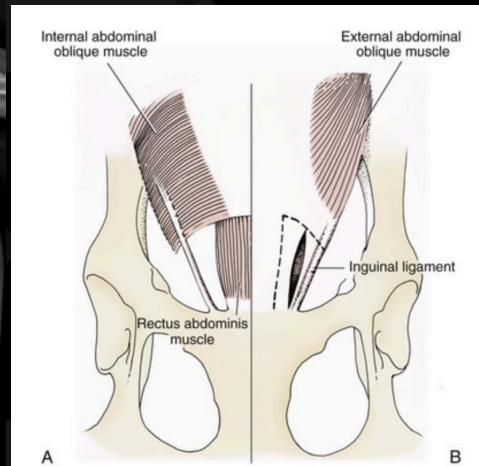
- Stray cat
- Four days of severe front leg lameness noticed
- Sedated with a gun



Micia, FS, 7 years



Micia, FS, 7 years

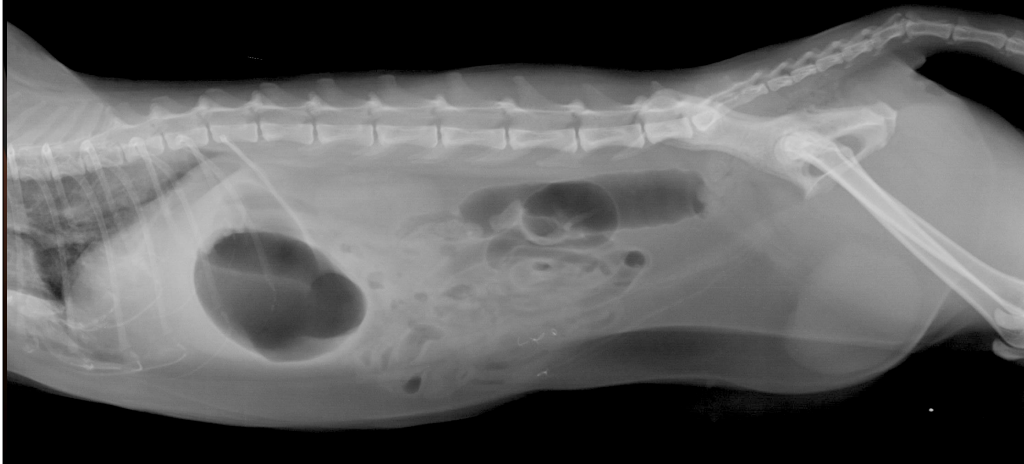


Trilly, DSH, FS, 9 years

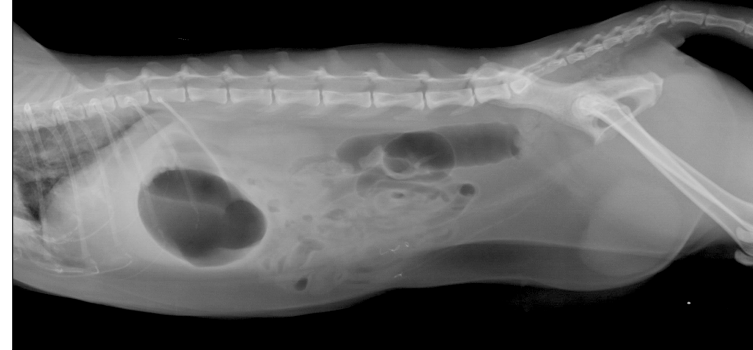
- Indoor
- Felt from the balcony
- Missing for two days
- Lethargic



Trilly, FS, 9 years



Trilly, FS, 9 years



Bacco, Beagle, MI, 4 months

In the last two weeks decreased appetite

Lethargic

A swelling was noted by the owner in the right inguinal region



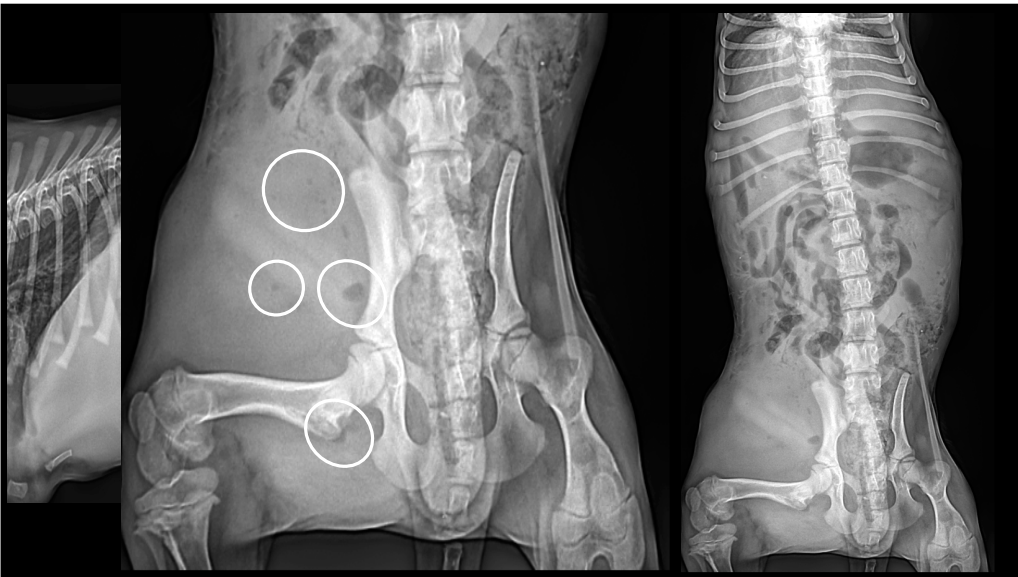
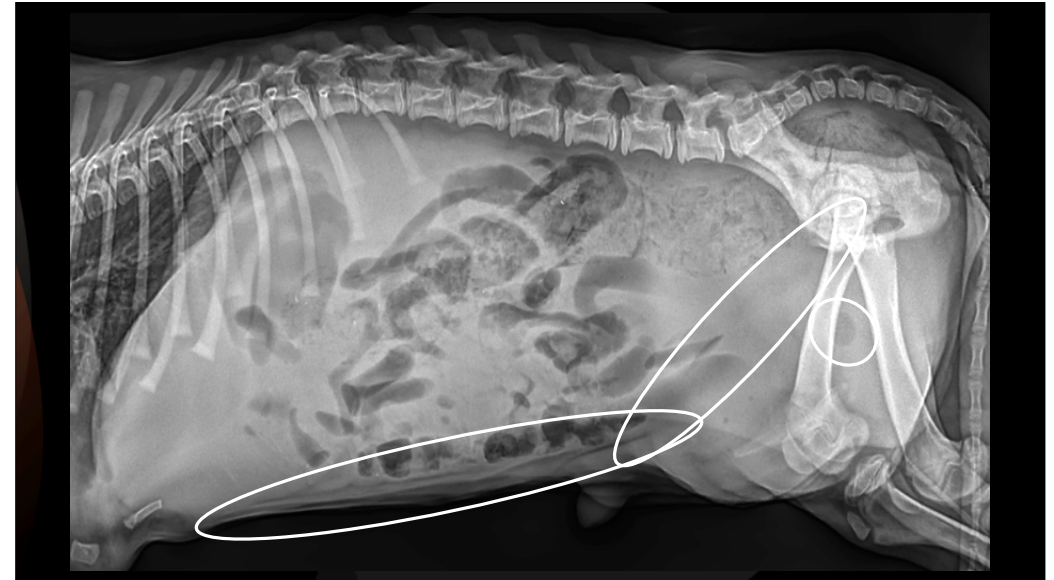
Bacco, Beagle, MI, 4 months

Blood work

BACCO , BEAGLE M, 4 MESI	PAZIENTE	RIFERIMENTO	BACCO	PAZIENTE	RIFERIMENTO
			WBC (X 10 <sup>3</sup> /ul)	39900	6000-16000
RBC	4.97	5.50 – 7.90	Neutr. Banda (/ul)	11172	0-300
Hb (g/dl)	10.1	12.0-18.0	Neutr. Segm (/ul)	17955	3600-14000
Hct (%)	29	37-55	Linfociti (/ul)	5586	720-5750
MCV (fL)	58	60-76	Monociti (/ul)	5187	0-1400
MCH(pg)	20	20-25	Morfologia	Linfociti attivati +	Neutr. Tossici ++
MCHC (g/dl)	35	32-39			
RDW (%)	17.6	10.0-16.0			
Morfologia	Codociti +				
			BACCO	PAZIENTE	RIFER.
			N PLT (X 1000/ul)	211	120-350
			MPV (fL)	9.7	8.0-12.3
			PCT (%)	0.206	0.120-0.300
			PDW (%)	23.9	10.0-27.0
			Stima a vetrino	Adeguate	

Bacco, Beagle, MI, 4 months

BACCO			BACCO		
ALT (u/L)	11	15-50	Crea (mg/dl)	0.30	0.75-1.30
ALP (u/L)	157	20-105	Glu (mg/dl)	75	60-100
PROT. TOT.	6.4	5.5-7.7	Calcio (mg/dl)	9.3	8.0-12.0
ALB (mg/dl)	2.5	2.6-3.8	Fosforo (mg/dl)	6.9	2.1-6.2
GLOB (mg/dl)	3.9	2.6-4.5	Sodio (mEq/dl)	139	140-150
Rapp. A/G	0.6	0.7-1.2	Potassio (mEq/dl)	3.2	3.9-4.8
Colesterolo (mg/dl)	269	120-255	Rapporto Na/K	43	> 30
Trigliceridi (mg/dl)	52	30-95	Cloro (mEq/dl)	107	107-115
Urea (mg/dl)	20	15-55			



Bacco, Beagle, MI, 4 months

Radiographic diagnoses:

Suspected abscess in the right thigh  
 Not possible to define if the  
 abdominal wall is intact

Next step

- Ultrasound

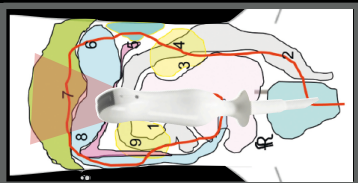




Bacco, MI, 4 months

Another patient, to show the position of the probe

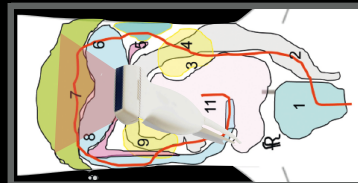
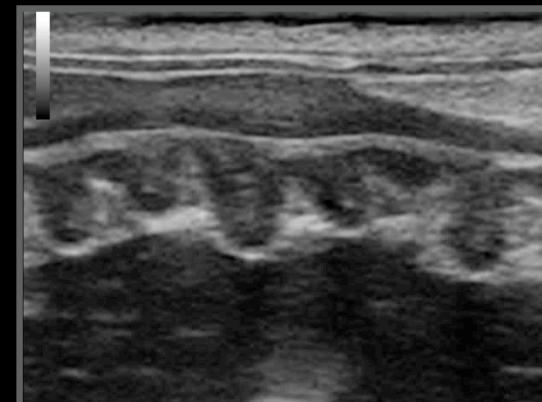
7



Bacco, MI, 4 months

Another patient, to show the position of the probe

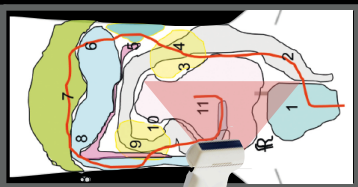
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Bacco, MI, 4 months

Another patient, to show the position of the probe

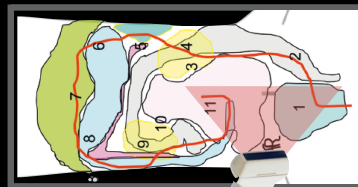
11



Bacco, MI, 4 months

Another patient, to show the position of the probe

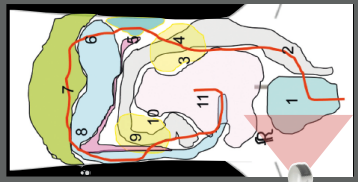
11-1



Bacco, MI, 4 months

Another patient, to show the position of the probe

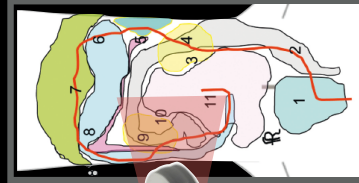
1



Bacco, MI, 4 months

Another patient, to show the position of the probe

9



Bacco, Beagle, MI, 4 months

Ultrasonographic diagnoses:

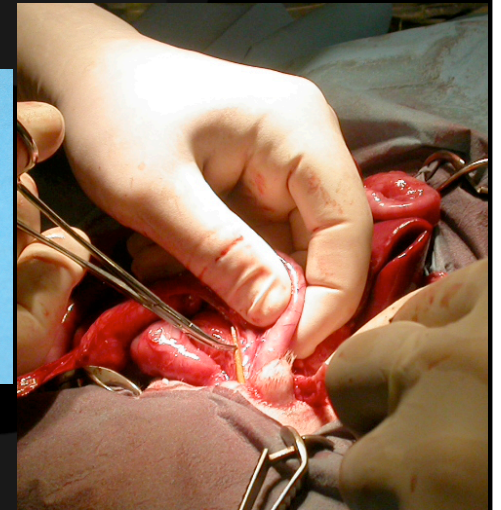
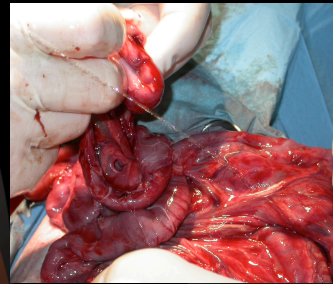
- Linear foreign body perforating the small intestine
- Possible abscess due to migration of the FB
- Possible right ureter obstruction due to inflammation

Next step

Laparotomy



Bacco, MI, 4 months

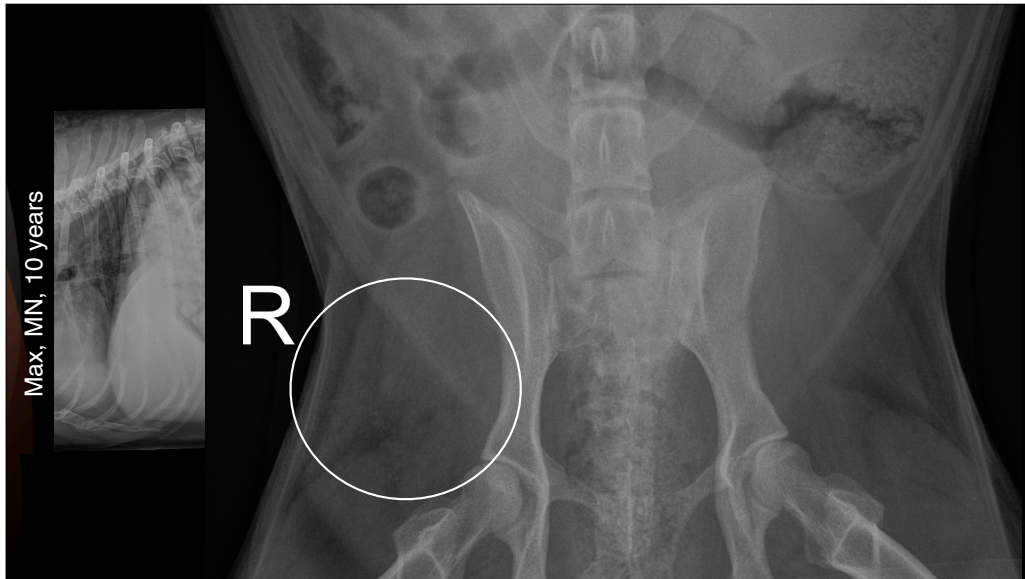
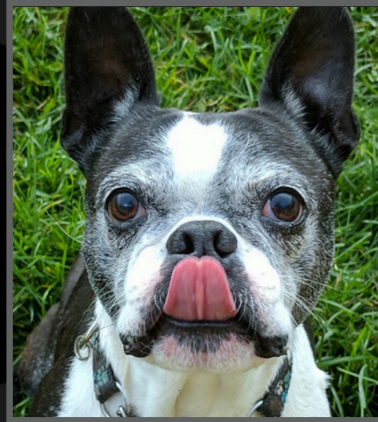


He recovered well, discharged in three days

Mac, Boston Terrier, MN, 10 years

PU/PD for three months

Cutaneous papules seen lately



### Most common causes for Calcinosis Cutis

Secondary to a previous damage

Secondary to high level of calcium and P in the serum eg renal failure

Steroid injection

Unknown causes



### Marcus, Doberman, MI, 4 years

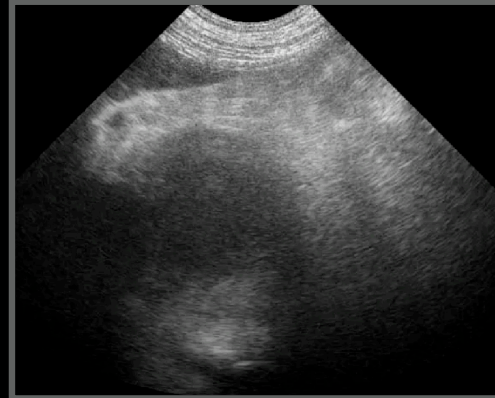
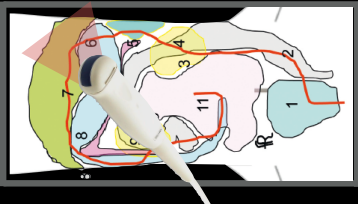
- Not eating since yesterday
- A warm and painful lump is visible on his right flank
- Painful abdomen and fever



### Marcus, Mi, 4 years

Another patient, to show the position of the probe

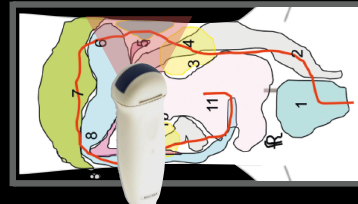
6



### Marcus, Mi, 4 years

Another patient, to show the position of the probe

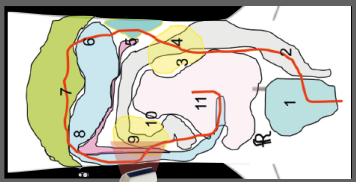
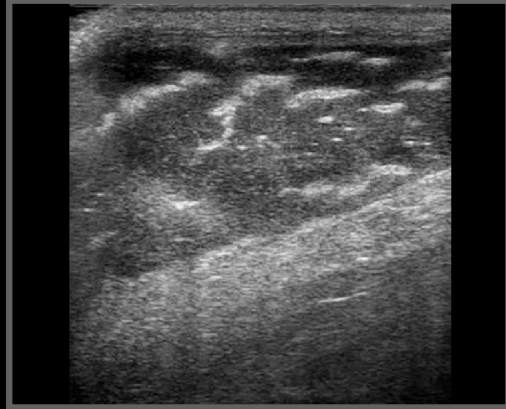
5



Marcus, Mi, 4 years

Another patient, to show the position of the probe

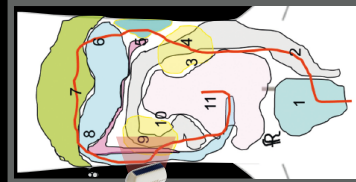
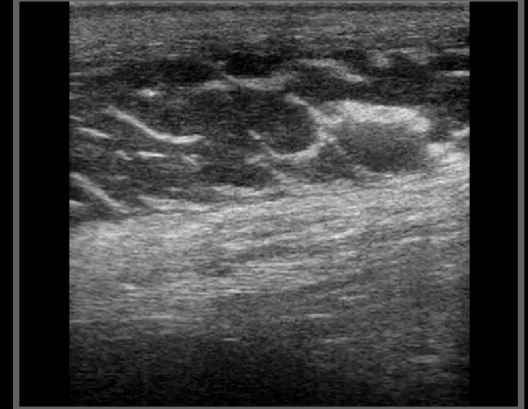
9



Marcus, Mi, 4 years

Another patient, to show the position of the probe

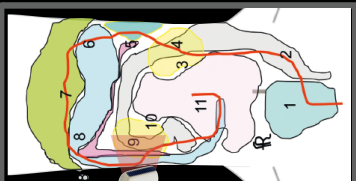
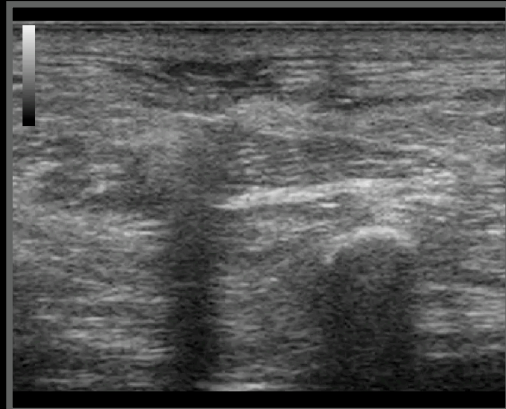
9



Marcus, Mi, 4 years

Another patient, to show the position of the probe

9



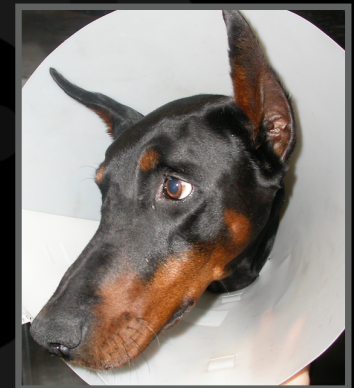
Marcus, Doberman, MI, 4 years

Ultrasonographic diagnoses:

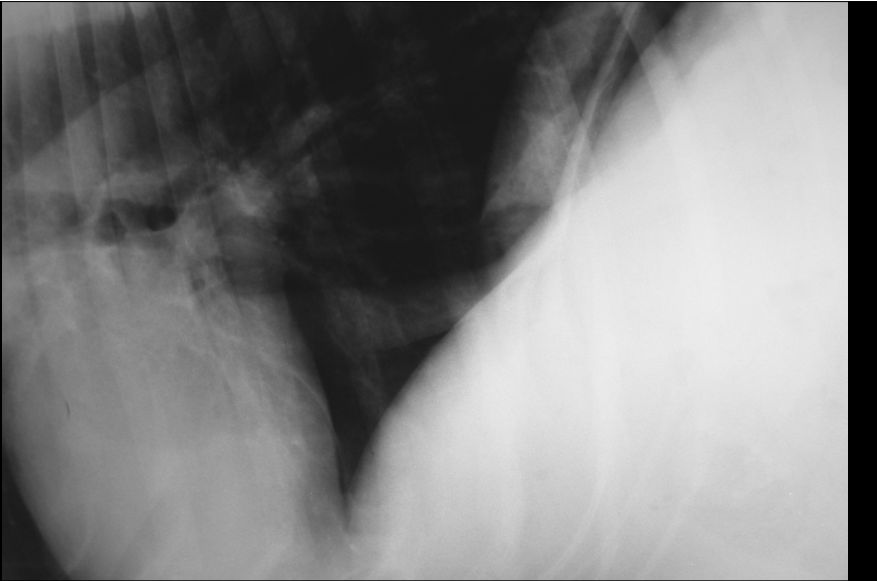
- Peritonitis
- Severe phlegmonous subcutaneous process

Next step

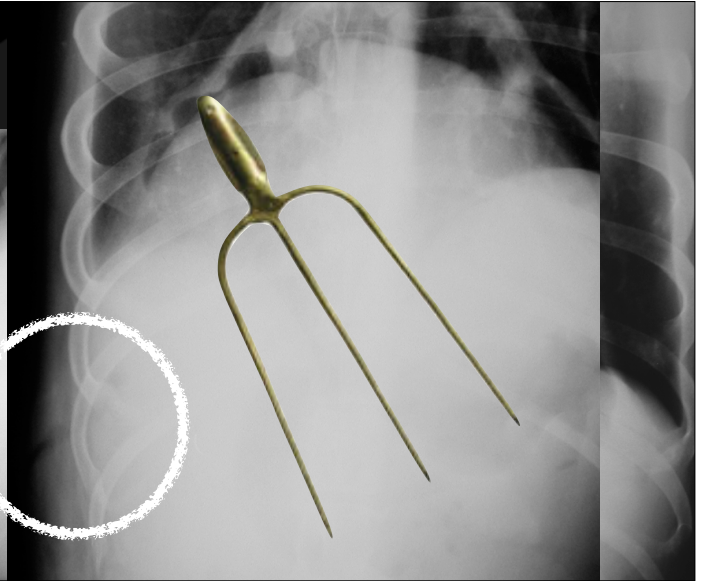
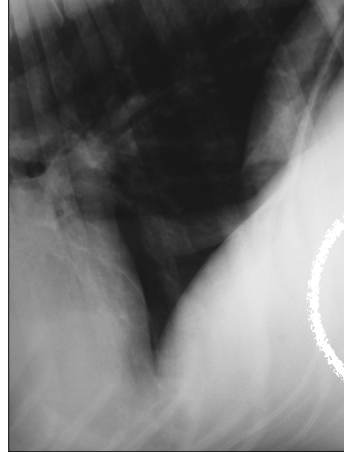
Radiology



Marcus, MI, 4 years



Marcus, MI, 4 years

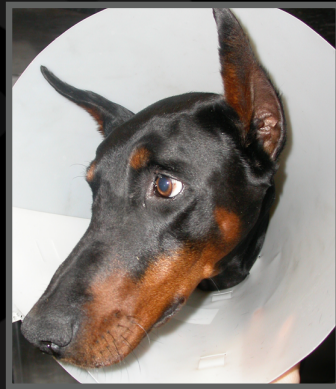


Marcus, Doberman, MI, 4 years

Conclusions

- Abdominal wall perforation and retained vegetal FB
- Diaphragmatic focal perforation
- Focal lung contusion

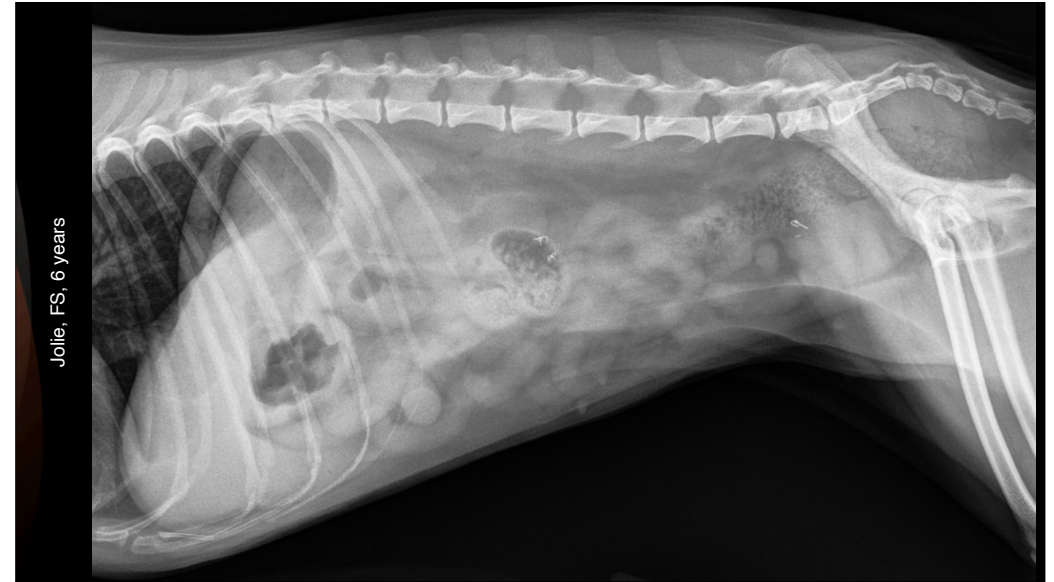
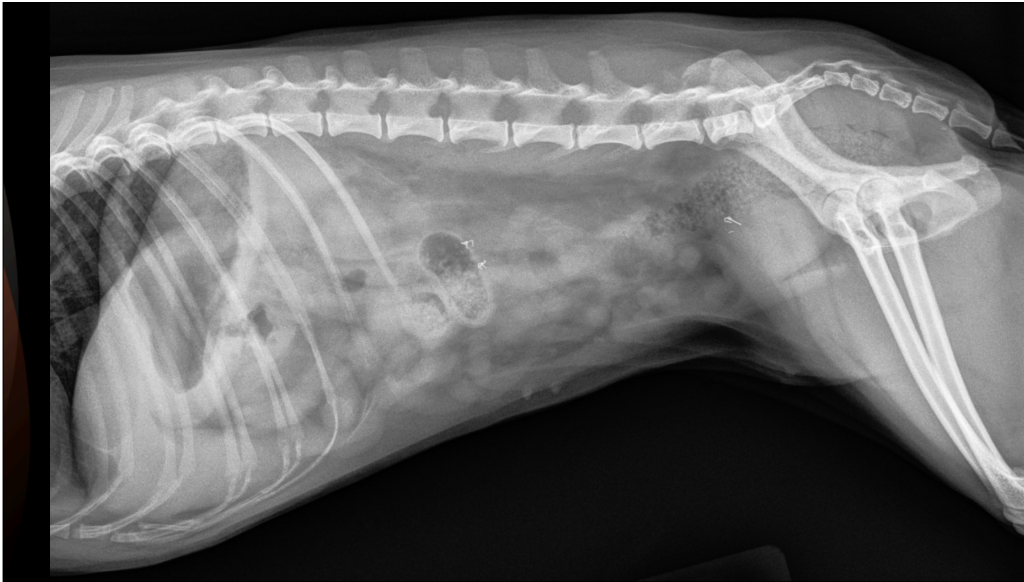
Recovered in 10 days  
Considered an hero!



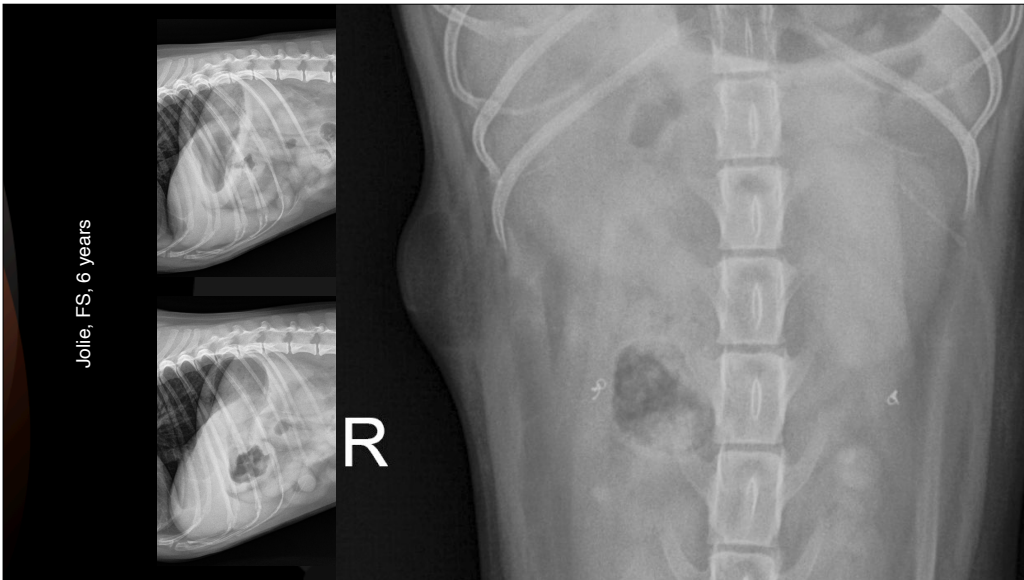
Julie, Mongrel, FS, 6 years

- Bit by a larger dog 2 hours ago
- Splinting abdominal pain
- 2 punctures on the right caudal rib cage





Jolie, FS, 6 years



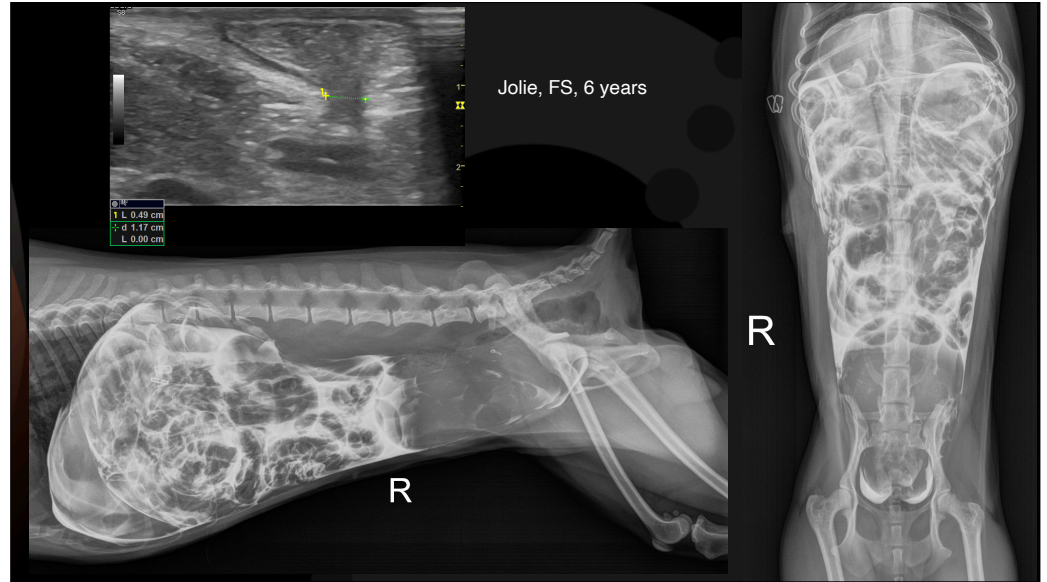
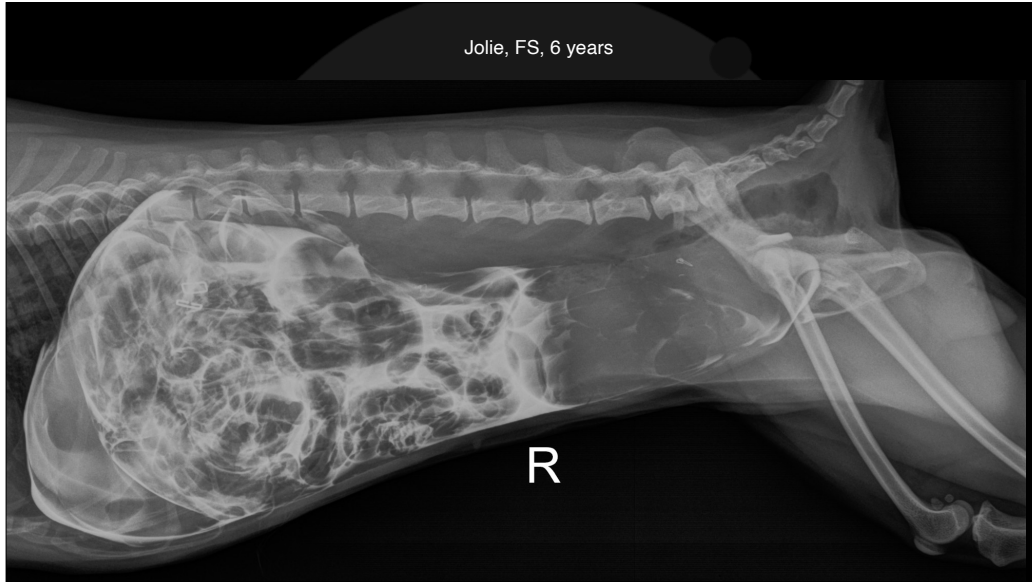
Jolie, FS, 6 years

### Peritoneography—Dog and Cat

This procedure can be used as an aid in the diagnosis of diaphragmatic hernia.

**Barium must never be used for this study or injected into the peritoneal space. Only iodinated contrast is to be used for this study.**

- 1) Obtain survey right lateral and V/D projections of the thorax including the cranial abdomen.
- 2) Place the patient in right lateral or dorsal recumbency.
- 3) Clip and aseptically prepare a small area on midline near the umbilicus in preparation for the injection. Pleural fluid should be drained prior to the procedure.
- 4) Prepare contrast for injection: Iodinated contrast: 200-400 mgI/ml at a dosage of **1.1 ml/kg**. If abdominal fluid is present then the dosage should be increased to **2.2 ml/kg**. The contrast media can be prewarmed prior to injection but this is not mandatory.
- 5) Place a needle aseptically into the abdomen. Prior to injection, aspirate the needle to ensure that a viscus structure was not penetrated. Once proper needle placement is confirmed slowly inject the contrast media.
- 6) Following injection, elevate the hind end for 5 minutes to distribute the contrast into the cranial abdomen.
- 7) After 5 minutes right and left lateral, V/D and D/V radiographs of the thorax including the cranial abdomen should be obtained.
- 8) Contraindications for this study are hypovolemia and hypersensitivity to iodinated contrast media.
- 9) Thoracic and abdominal ultrasound should be performed if this study is inconclusive.



## IMAGING DIAGNOSIS—POSITIVE CONTRAST PERITONEOGRAPHIC FEATURES OF TRUE DIAPHRAGMATIC HERNIA

JIHYE CHOI, HYUNWOOK KIM, MIEUN KIM, JUNGHEE YOON

A true diaphragmatic hernia is a congenital diaphragmatic malformation that can appear identical to a peritoneopericardial diaphragmatic hernia (PPDH). True diaphragmatic hernias are rare in dogs. Herein we describe the use of positive contrast peritoneography for diagnosis of a true diaphragmatic hernia in two dogs. *Veterinary Radiology & Ultrasound*, Vol. 50, No. 2, 2009, pp 185–187.

**Key words:** dog, peritoneopericardial diaphragmatic hernia, positive peritoneography, true diaphragmatic hernia.

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ORIGINAL ARTICLE - RESEARCH

WILEY

### Ability of positive and negative contrast computed tomographic peritoneography to delineate canine liver lobe fissures

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Ian D. Robertson BVSc, DACVR<sup>1</sup> | Hongyu Ryu PhD<sup>2</sup> |  
Kyle G. Mathews DVM, MS, DACVS<sup>3</sup>

## Conclusions

A systematic approach for abdominal radiographs should always include the abdominal wall and the diaphragm



Santiago Calatrava

Thank you



Diagnostic Mindset

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