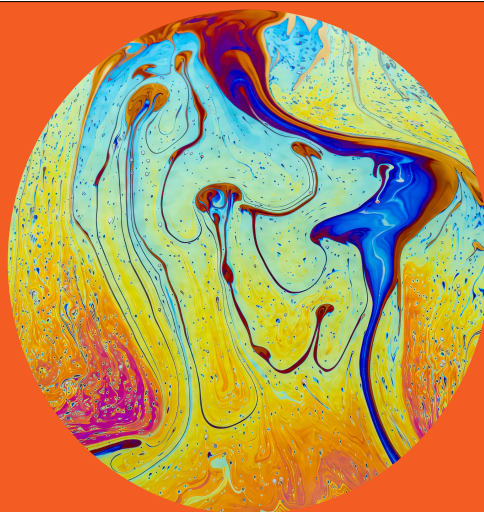


Mini cases round: diagnosi in tre minuti

Girola Spattini
DVM, GP Cardio, CCRT, PhD, DECVI



Diagnostic Mindset



Exprit, Belgian Shepherd, FI, 5 years

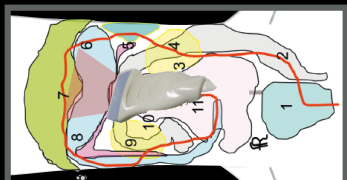
- She vomited three time in the last week
- Less active



Exprit, FI, 5 years

Probe position in a different patient

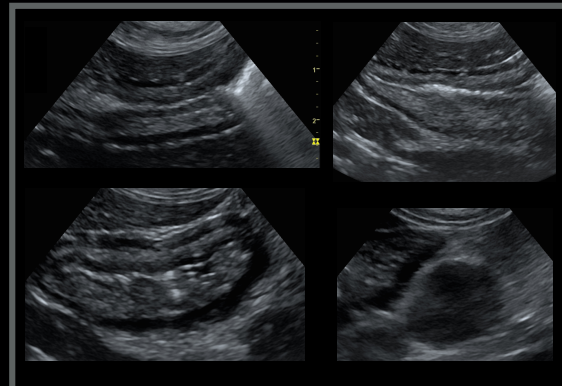
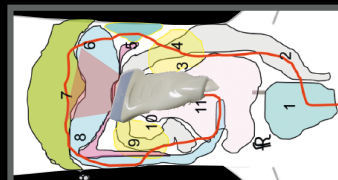
7 trans

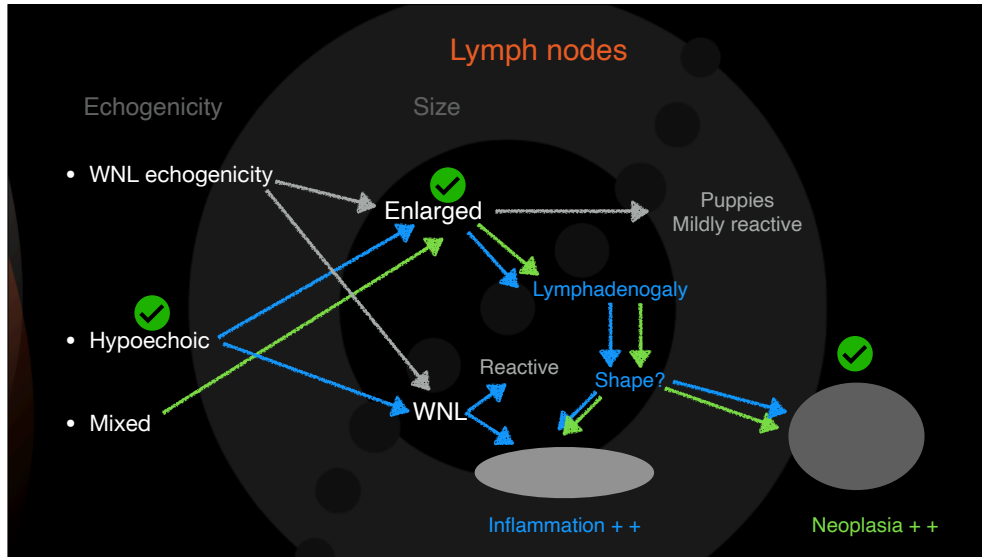


Exprit, FI, 5 years

Probe position in a different patient

7 trans



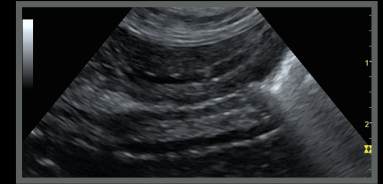


Exprit, Belgian Shepherd, FI, 5 years

Ultrasonographic diagnoses:

- Pseudolayering
- Enlarged splenic LN

Final diagnosis: gastric carcinoma



Cândido et al. *Acta Vet Scand* (2021) 53:7
<https://doi.org/10.1186/s13028-021-00570-6>

Acta Veterinaria Scandinavica

RESEARCH

Open Access

Gastric mucosal pathology in Belgian Shepherd dogs with and without clinical signs of gastric disease

Marcus Vinicius Cândido^{1*}, Pernilla Syrjä², Mohsen Hanifeh¹, Jaan Lepajõe¹, Kati Salla¹, Susanne Kilpinen¹, Peter-John Mäntylä Noble³ and Thomas Spillmann¹

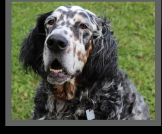
Background: Gastric carcinoma (GC) is uncommon in dogs, except in predisposed breeds such as Belgian Shepherd dogs (BSD) of the Tervuren and Groenendaal varieties. When GC is diagnosed in dogs it is often late in the disease, resulting in a poorer prognosis. The aim of this prospective clinical study was to investigate possible associations of gastric mucosal pathologies with clinical signs, laboratory test results and GC in BSD. An online survey gathered epidemiological data to generate potential risk factors for vomiting as the predominant gastric clinical sign, and supported patient recruitment for endoscopy. Canine Chronic Enteropathy Clinical Activity Index (CCECAI) score and signs of gastroesophageal reflux (GER) were used to allocate BSD older than five years to either Group A, with signs of gastric disease, or Group B, without signs. Findings in the clinical history, laboratory tests and gastric histopathology of endoscopic biopsies were statistically analysed in search of associations.

Conclusions: GC can develop as an occult disease, associated with metaplasia and dysplasia of the gastric mucosa. Suggestive clinical signs, notably vomiting, should warrant timely endoscopy in BSD. Extensive endoscopic screening of asymptomatic dogs remains, however, unrealistic. Therefore, biomarkers of mucosal pathology preceding clinical illness are needed to support an indication for endoscopy and enable early diagnosis of GC.

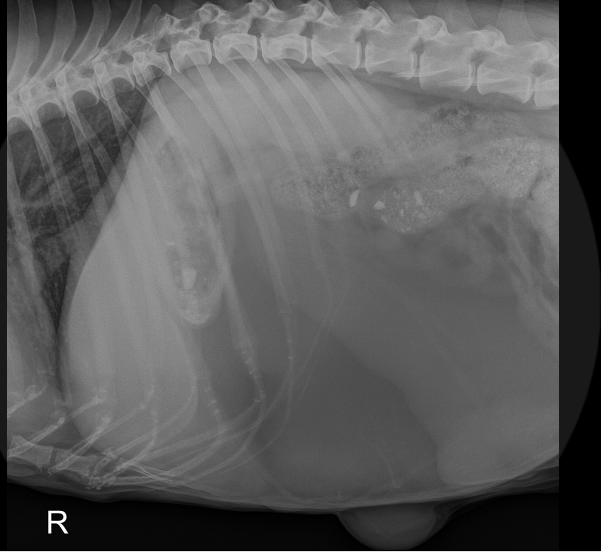
Bear, English setter, MN, 10 years

- Weight loss
- Distended abdomen
- PU/PD
- Unremarkable labworks

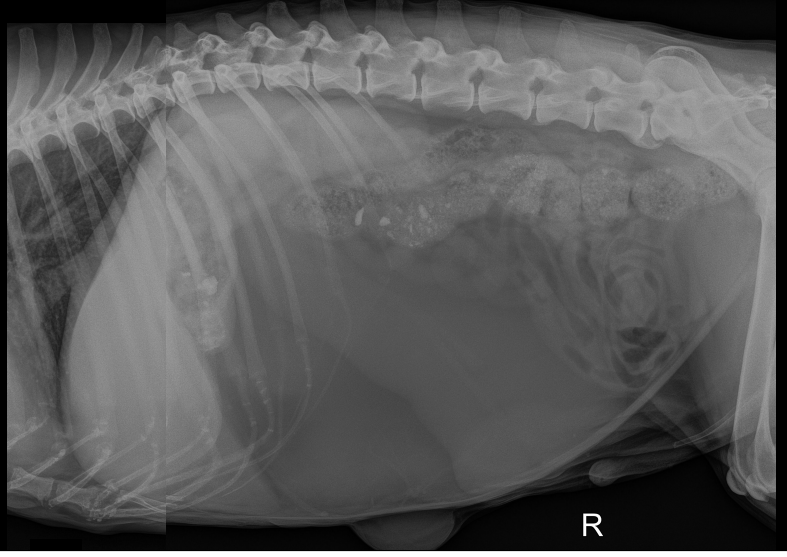




Bear, MN, 10 years



R



R



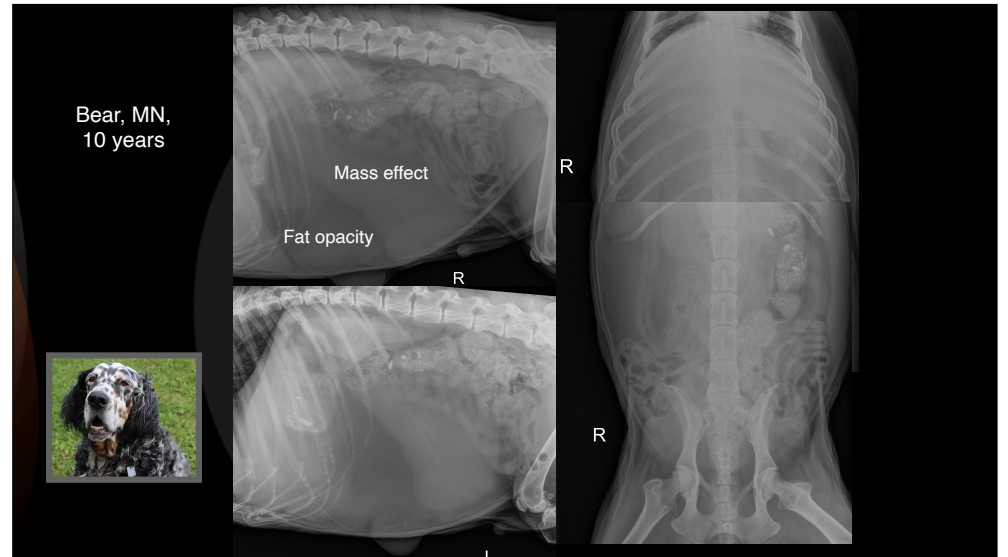
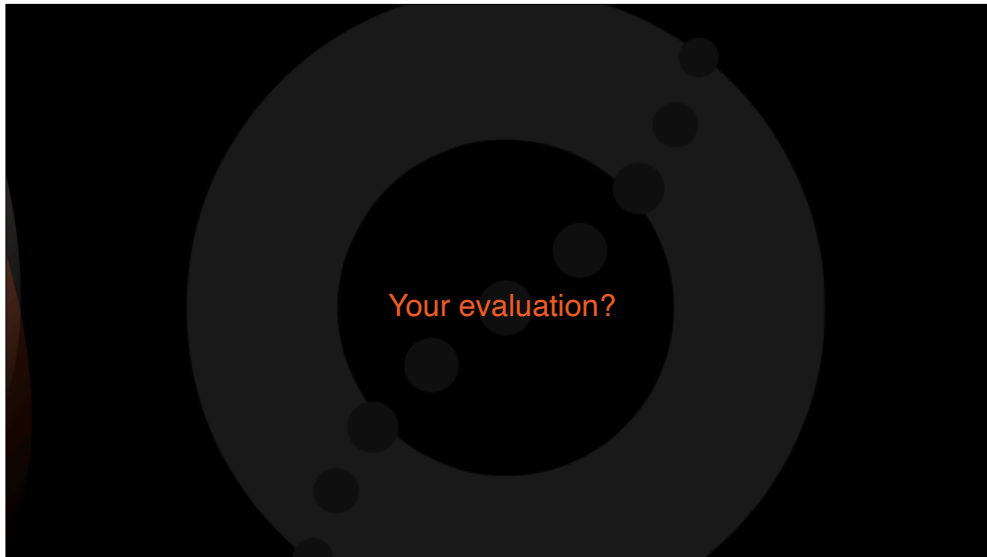
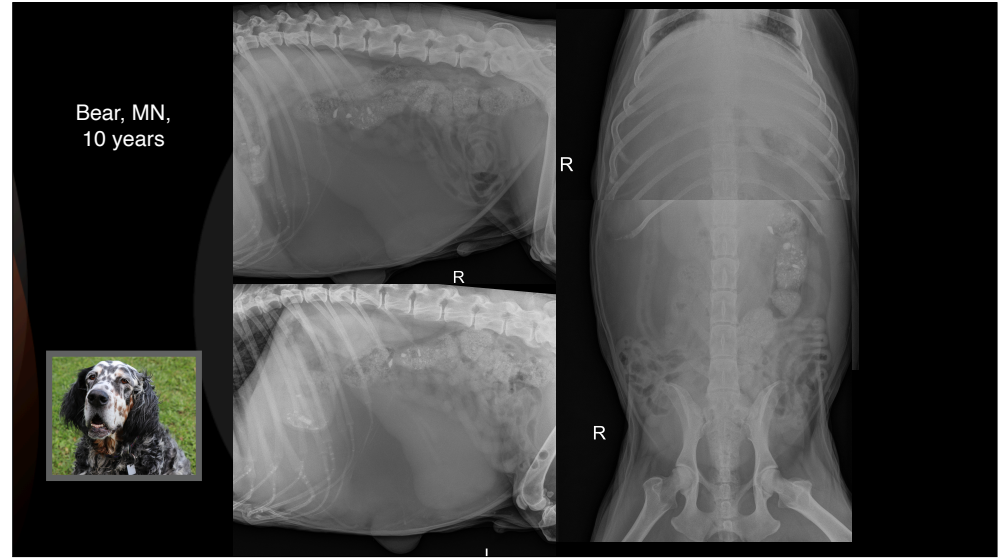
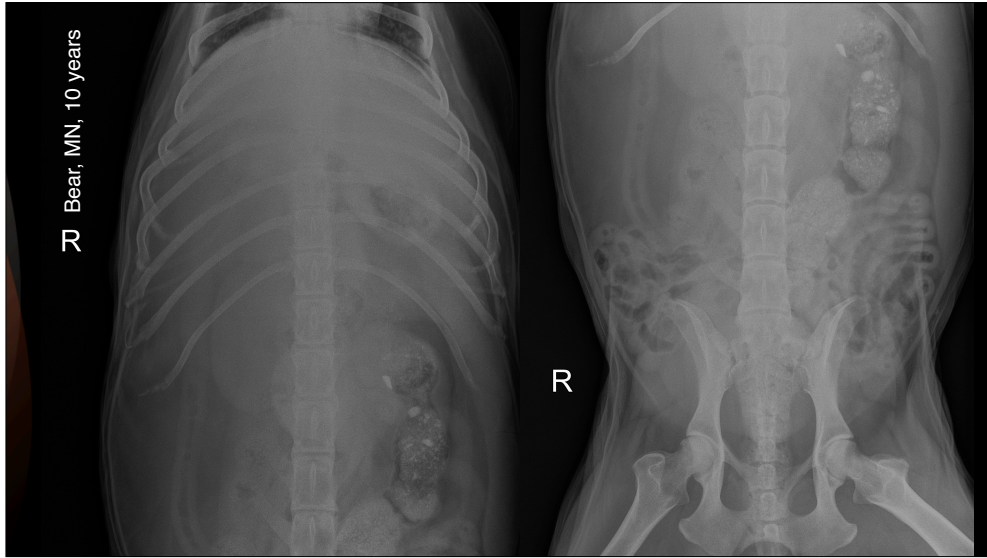
Bear, MN, 10 years



Bear, MN, 10 years



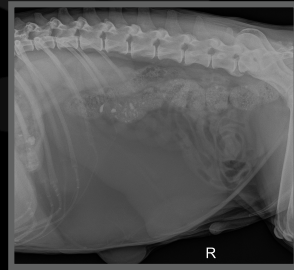
L



Bear, English setter, MN, 10 years

Radiographic diagnoses:

- Large fat-opaque mass effect



Conclusions

- Surgically removed a large lipoma

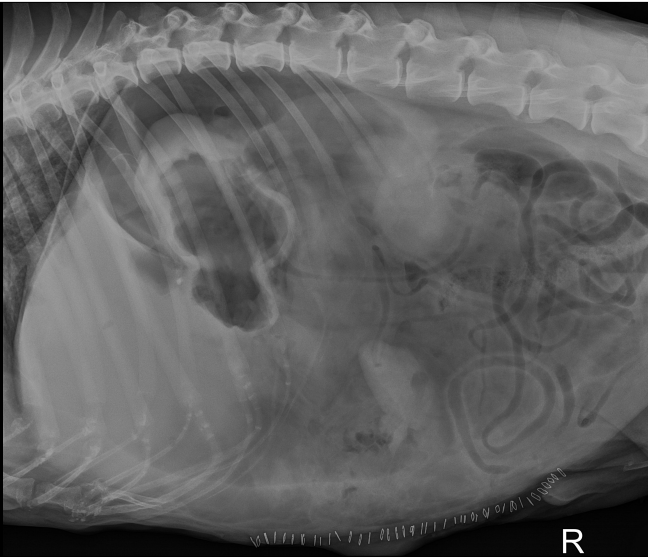
Bear, English setter, MN, 10 years

Three months later

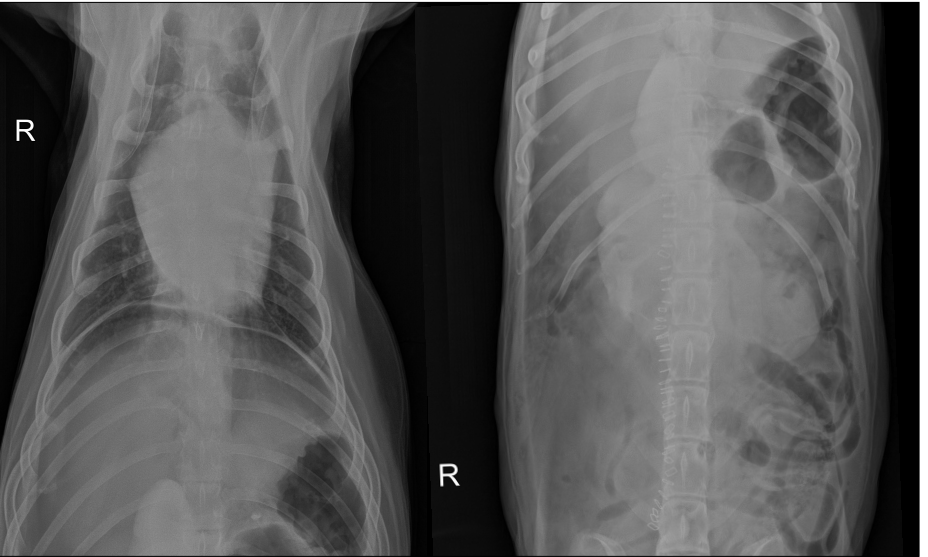
- Had surgery 4 days ago, removed large lipoma and liver biopsy
- Anorexic and lethargic since surgery
- Decreased ALB/TP
- Severe thrombocytopenia

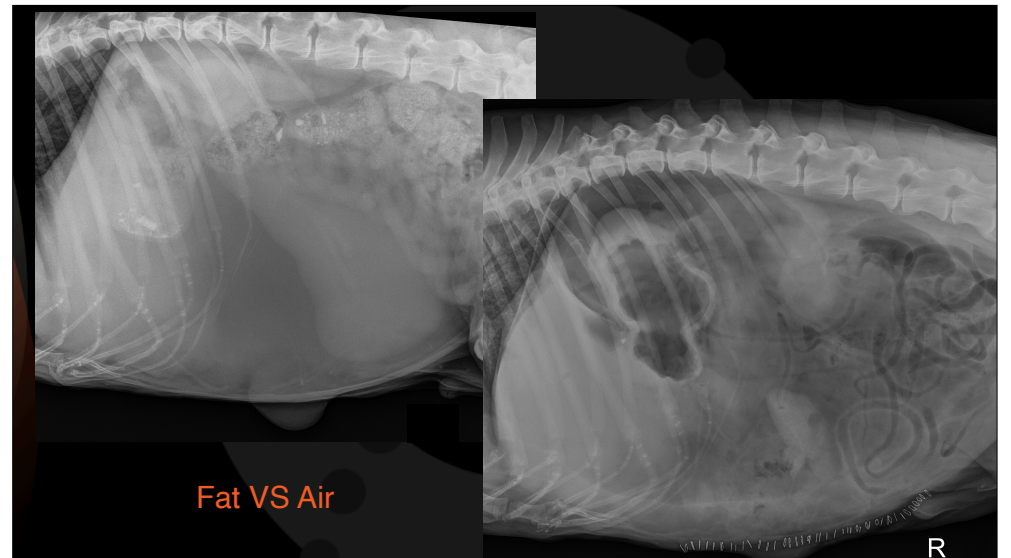
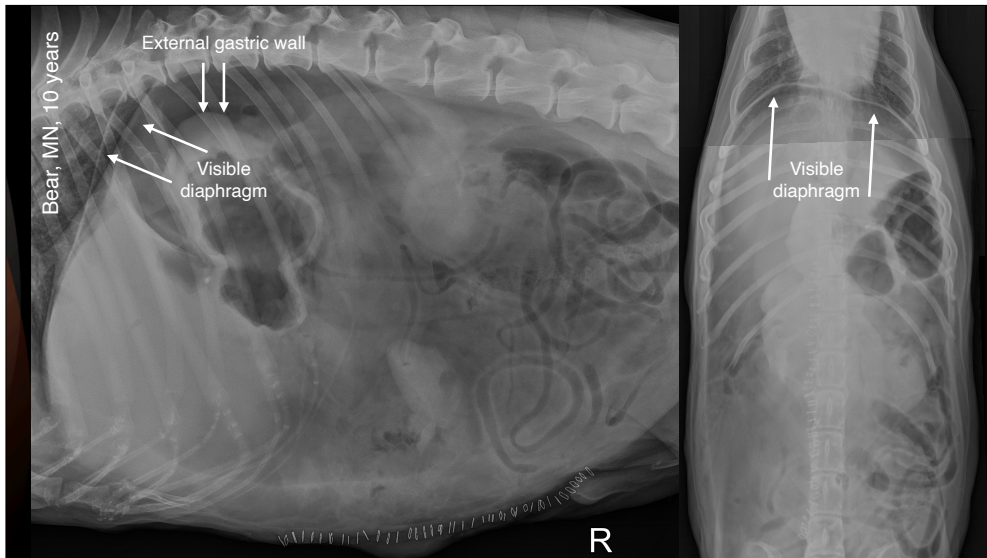
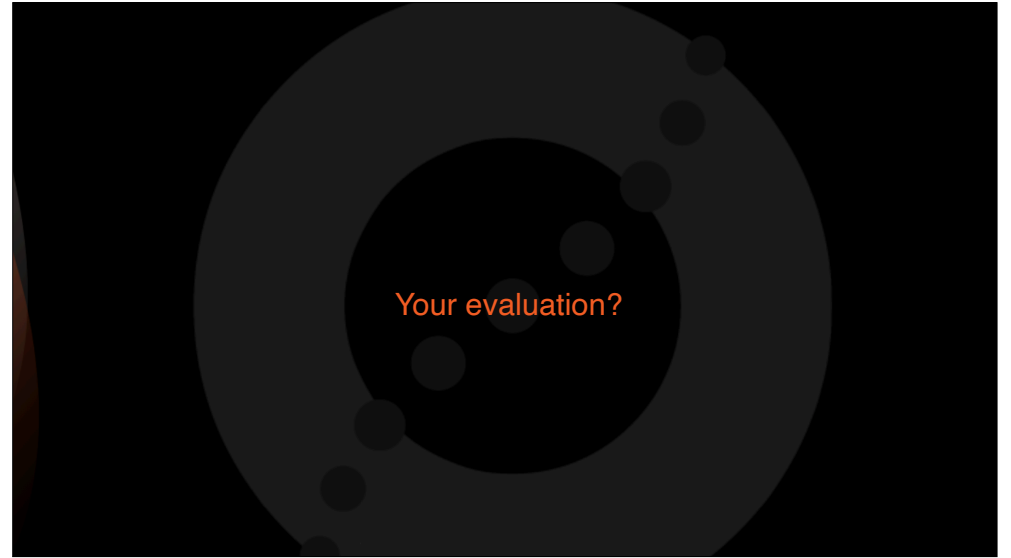
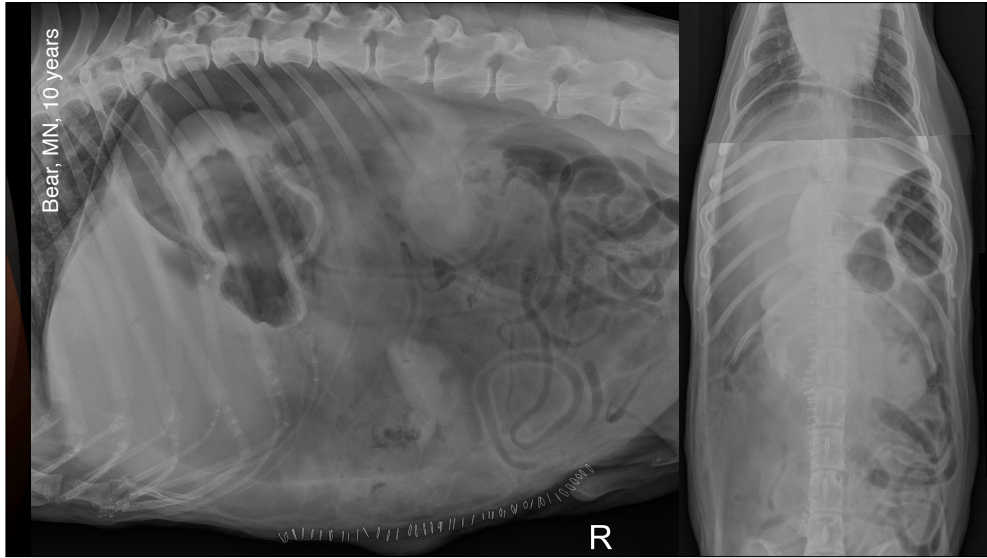


Bear, MN, 10 years



Bear, MN, 10 years





Bear, English setter, MN, 10 years

Three months later

Radiographic diagnoses:

- Pneumoperitoneum
- Mildly decreased peritoneal detail



Conclusions

- All compatible with a post surgical procedures
- Suspected surgery induced acute enteritis on a chronic enteritis basis

Chanel, CKC, FS, 10 years

- Seizures
- Dysorexia
- Lethargy



Chanel, FS, 10 years

Blood works



RBC (milioni / μ L) :	7.71	5.70	8.56	Acantociti:	Eliplociti:
HGB (g/dL) :	16.3	14.1	21.2	Anisocitosi:	Ipocromia:
HCT (%) :	48.3	39.0	59.2	Agglutinazione:	Macroцитi:
MCV (fL) :	62.6	63.1	72.6	Codociti:	Microцитi:
MCH (pg) :	21.2	21.8	25.4	Cheratociti:	Parassiti eritrocitari:
MCHC (g/dL) :	33.8	33.3	36.8	Cnizociti:	Policromasia:
CHCM (g/dL) :		34.3	37.8	Corpi di Heinz:	Punteggiature basofile:
MCHC/CHCM:		0.94	1.01	Corpi di Howell-Jolly:	Rouleaux:
CH (pg) :		22.0	26.0	Cristalli di Hb:	Schistociti:
CHDW (pg) :		2.72	3.34	Dacriociti:	Selenociti:
RDW (%) :	15.3	11.6	14.7	Drepanociti:	Sferociti:
HDW (g/dL) :		1.63	2.22	Eccentricociti:	Stomatociti:
NRBC/100 WBC:	0	0	0	Echinociti:	Torociti:
Varie RBC:					
WBC (x 1000 / μ L) :	7.2	5.45	12.98	Linfociti attivati:	
Conta corr. WBC (x 1000 / μ L) :		5.45	12.98	Linfociti atipici:	
Mielociti (/ μ L) :	0	0	0	Neutrofili tossici:	
Metamielociti (/ μ L) :	0	0	0	Corpi di Doehle:	
Neutrofili banda (/ μ L) :	0	0	286	Schiumosità citopl.:	
Neutrofili segmentati (/ μ L) :	4392	3555	9314	Vacuolizzazione citopl.:	
Linfociti (/ μ L) :	2080	1169	3810	Basofilia citopl.:	
Monociti (/ μ L) :	504	186	798	Granuli tossici:	
Eosinofili (/ μ L) :	216	104	1164	Neutrofili giganti:	
Basofili (/ μ L) :	0	0	106	Macropoliciti:	
Danneggiate (/ μ L) :	0	0	0		
Indifferenziate (/ μ L) :	0	0	0		
Altre (/ μ L) :	0	0	0		
Varie WBC:					
PLT (1000 / μ L) :	79	176	479	Stima PLT:	ADEG.: <input checked="" type="checkbox"/> INADEG.: <input type="checkbox"/> AUMENT.: <input type="checkbox"/>
MPV (fL) :	10.5	8.9	15.0	Varie:	Piastrine attivate: <input type="checkbox"/> Macroplastrine: <input checked="" type="checkbox"/>
PCT (%) :	0.082	0.21	0.52		Piastrine allungate: <input type="checkbox"/> Inclusi piastrinici: <input type="checkbox"/>
PDW (%) :	16.5	51.8	74.5		

Chanel, FS, 10 years

Blood works



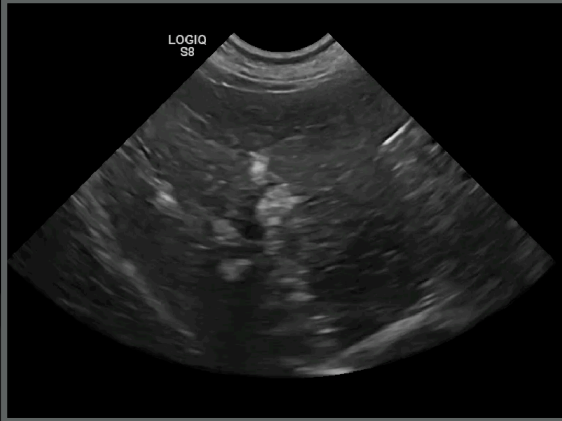
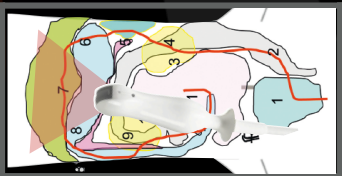
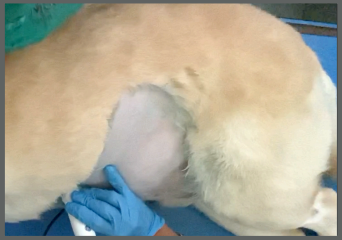
- Exclude liver pathology
- Causes for anorexia
- DDX: hepatitis, enteritis

CPK (IU/L):	108	42-155
AST (IU/L):	15	20-50
ALT (IU/L):	33	15-50
ALP (IU/L):	515	20-110
GGT (IU/L):	8.0	1-11
Colinesterasi (IU/L):		3347-7074
Bilirubina Totale (mg/dL):	0.29	0.15-0.4
Proteine Totali (g/dL):	8.2	5.5-7.5
Albumine (g/dL):	3.3	2.7-3.6
Globuline (g/dL):	4.9	2.6-3.9
Rapporto A/G:	0.67	0.7-1.2
Colesterolo (mg/dL):	324	150-350
Trigliceridi (mg/dL):	261	30-110
AMILASI (IU/L):	1558	300-1800
LIPASI (IU/L):		121-725
Urea (mg/dL):	16	18-45
Creatinina (mg/dL):	0.89	0.75-1.3
Glucosio (mg/dL):	111	60-100
Calcio (mg/dL):	11.0	8.2-12
Fosforo (mg/dL):	3.4	2.1-6.2
Magnesio (mg/dL):		0.67-0.94
Sodio (mEq/L):	147	143-151
Potassio (mEq/L):	4.5	3.9-5.1
Rapporto Na/K:	32.7	28.5-37.4
Cloro (mEq/L):	108	109-118
Cloro corretto (mEq/L):	107.3	109.1-115.9
HCO-3 (mmol/L):		18.4-24.8
Divario Anionico:		13.1-19.4
Osmol. sier. calc. (mOsm):	285	277-291
Ferro totale (μ g/dL):	179	100-200

Chanel, FS, 10 years

Another patient, to show the position of the probe

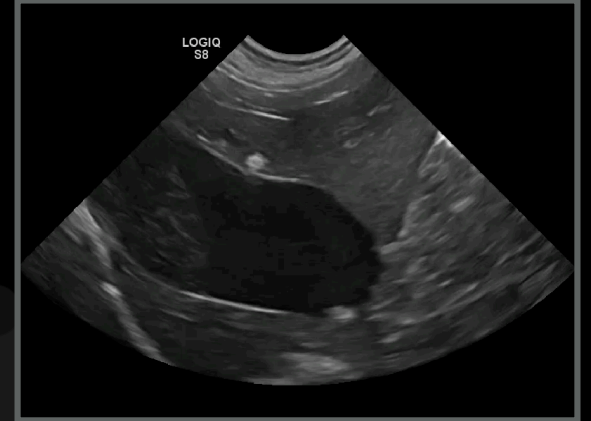
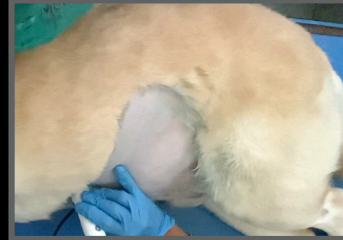
6-7-8 long



Chanel, FS, 10 years

Another patient, to show the position of the probe

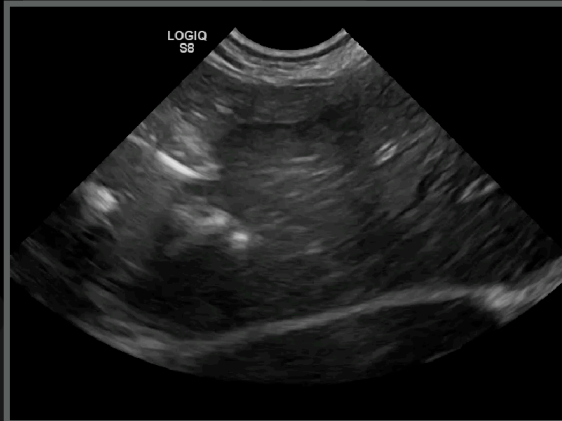
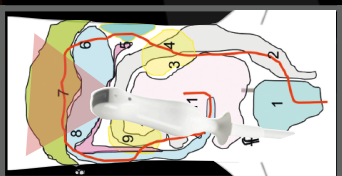
6-7-8 long



Chanel, FS, 10 years

Another patient, to show the position of the probe

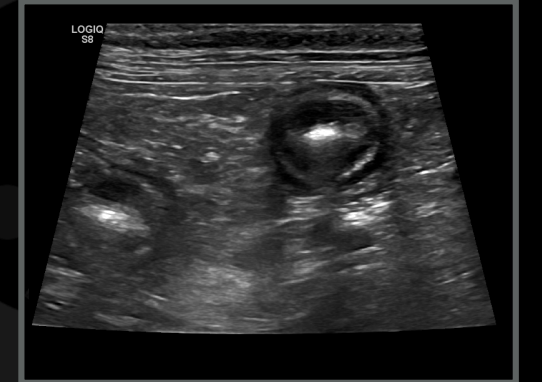
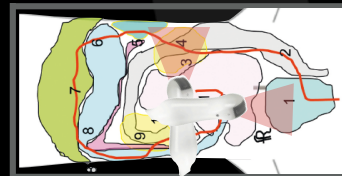
6-7-8 trans



Chanel, FS, 10 years

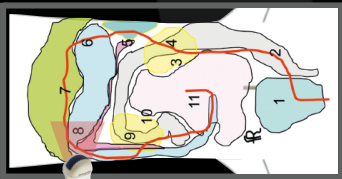
Another patient, to show the position of the probe

4-1-7-10

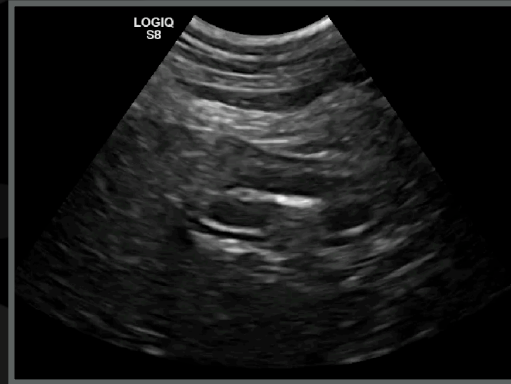


Chanel, FS, 10 years

Another patient, to show the position of the probe



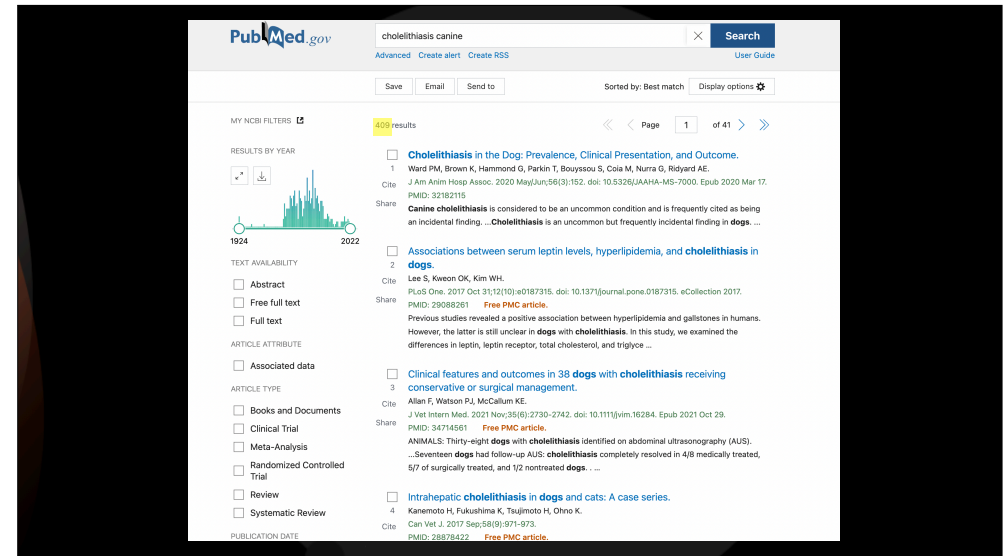
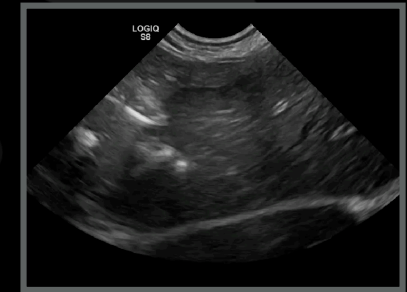
8' trans



Chanel, CKC, FS, 10 years

Ultrasonographic diagnoses:

- Hepatopathy
- Cholangiopathy
- Enteropathy (?)



PubMed.gov search results for "cholelithiasis canine". The page shows 409 results. The top results are:

- Cholelithiasis in the Dog: Prevalence, Clinical Presentation, and Outcome.** Ward PM, Brown K, Hammond G, Parkin T, Bouysrou S, Cola M, Nurra G, Ridyard AE. *J Am Anim Hosp Assoc.* 2020 May;56(3):152. doi: 10.5326/JAHA-MS-7000. Epub 2020 Mar 17. PMID: 32182115
- Canine cholelithiasis is considered to be an uncommon condition and is frequently cited as being an incidental finding. ...Cholelithiasis is an uncommon but frequently incidental finding in dogs. ...**
- Associations between serum leptin levels, hyperlipidemia, and cholelithiasis in dogs.** Lee S, Kwon OK, Kim WH. *PLoS One.* 2017 Oct 31;12(10):e0187315. doi: 10.1371/journal.pone.0187315. eCollection 2017. PMID: 29088261 **Free PMC article.** Previous studies revealed a positive association between hyperlipidemia and gallstones in humans. However, the latter is still unclear in dogs with cholelithiasis. In this study, we examined the differences in leptin, leptin receptor, total cholesterol, and triglyce ...
- Clinical features and outcomes in 38 dogs with cholelithiasis receiving conservative or surgical management.** Allan F, Watson PJ, McCallum KE. *J Vet Intern Med.* 2021 Nov;35(6):2730-2742. doi: 10.1111/jvim.16284. Epub 2021 Oct 29. PMID: 34714561 **Free PMC article.** ANIMALS: Thirty-eight dogs with cholelithiasis identified on abdominal ultrasonography (AUS). ...Seventeen dogs had follow-up AUS; cholelithiasis completely resolved in 4/8 medically treated, 5/7 of surgically treated, and 1/2 nontreated dogs. ...
- Intrahepatic cholelithiasis in dogs and cats: A case series.** Kanemoto H, Fukushima K, Tsujimoto H, Ohno K. *Can Vet J.* 2017 Sep;58(9):971-973. PMID: 28878422 **Free PMC article.**

Cholelithiasis in the Dog: Prevalence, Clinical Presentation, and Outcome

Patricia M. Ward, MVB, MRCVS, Kieran Brown, BVM&S, MRCVS, Gawain Hammond, MA, VetMB, MVM, CertVDI, DECVDI, FHEA, MRCVS, Tim Parkin, BSc, BVSc, PhD, DECVPH, FHEA, FRCVS, Sarah Bouyssou, MRCVS, Mark Coia, BVMS, MRCVS, Genziana Nurra, MRCVS, Alison E. Ridyard, BVSc, DSAM, DECVIM-CA, MRCVS

ABSTRACT

Canine cholelithiasis is considered to be an uncommon condition and is frequently cited as being an incidental finding. However, there is a paucity of contemporary literature to support these assertions. The aim of this retrospective cross-sectional study was to report the prevalence, clinical presentation, and long-term follow-up of cholelithiasis in dogs. The electronic database at the Small Animal Hospital, University of Glasgow was searched to identify dogs that were diagnosed with cholelithiasis on ultrasound between 2010 and 2018. Sixty-eight dogs were identified, giving an overall prevalence of cholelithiasis in our hospital of 0.97% (confidence interval 0.76–1.22%). Medical records of 61 dogs were available for review. Cholelithiasis was classified as an incidental finding in 53 (86.9%) dogs, with 8 (13.1%) dogs being classified as symptomatic, having complications of cholelithiasis that included biliary duct obstruction, biliary peritonitis, emphysematous cholecystitis, and acute cholecystitis. Follow-up was available for 39 dogs, with only 3 dogs (7.7%) developing complications attributed to cholelithiasis, including biliary duct obstruction and acute cholecystitis, within the subsequent 2 yr. Cholelithiasis is an uncommon but frequently incidental finding in dogs. Within the follow-up period, few of the dogs with incidental cholelithiasis went on to become symptomatic. (*J Am Anim Hosp Assoc* 2020; 56:■■■■■■. DOI 10.5326/JAAHA-MS-7000)

Received: 16 March 2021 | Accepted: 1 October 2021
DOI: 10.1111/jvim.16284

J Vet Intern Med 2021;35:2730–2742.

STANDARD ARTICLE

Journal of Veterinary Internal Medicine
ACVIM
American College of Veterinary Internal Medicine

Clinical features and outcomes in 38 dogs with cholelithiasis receiving conservative or surgical management

Frederik Allan | Penny J. Watson | Katie E. McCallum

Results: Symptomatic cases had higher alkaline phosphatase ($P = .03$), gamma-glutamyl transferase ($P = .03$), and alanine transferase ($P = .02$) activities than did incidental cases. A higher proportion of symptomatic cases (44.4%) had choledocholithiasis than did incidental cases (0%; $P = .003$). Seventy percent of surgically managed dogs, 7.7% of medically managed dogs, and 0% of nontreated dogs had choledocholithiasis at presentation. Seventeen dogs had follow-up AUS: cholelithiasis completely resolved in 4/8 medically treated, 5/7 of surgically treated, and 1/2 nontreated dogs. Median survival time was 457.4 days, with no significant difference between incidental and symptomatic dogs.

Conclusions and Clinical Importance: Medical treatment can be effective for management of cholelithiasis in dogs, with clinical presentation and cholelith location playing important roles in treatment decision-making.

Received: 29 September 2020 | Accepted: 11 May 2021
DOI: 10.1111/jvim.16176

Journal of Veterinary Internal Medicine
ACVIM
American College of Veterinary Internal Medicine

STANDARD ARTICLE

Choledochal stenting for treatment of extrahepatic biliary obstruction in cats

Maureen A. Griffin¹ | William T. N. Culp¹ | Michelle A. Giuffrida¹ | Laura E. Selmic² | Jordan C. Denitz¹ | James A. Perry³ | Alexander C. Schoelkopf² | Milan Milovancev⁴ | Heidi Phillips⁵ | Mandy L. Wallace⁶ | Michele A. Steffey¹ | Ingrid M. Balsa¹ | Phillip D. Mayhew¹

Results: Median age of cats was 10.1 years (range, 2–16), and all cats had at least 2 clinical signs. Most common clinical signs were vomiting in 20/22 (90.9%), inappetence in 19/22 (86.4%), and lethargy in 19/23 (82.6%). Procedural complications were uncommon and rarely related to the stenting procedure. Clinical signs improved postoperatively in 15/20 (75.0%) cats and serum total bilirubin concentration decreased postoperatively in 13/19 (68.4%) cats. Eighteen (78.3%) cats survived to discharge. Recurrence of EHBO was documented in 7/18 (38.9%) cats that survived to discharge. Cholelithiasis was associated with recurrence of EHBO. Median survival time for cats that survived to discharge was 931 days (range, 19–3034). Absence of peritoneal effusion was associated with survival to discharge.

Chanel, CKC, FS, 10 years

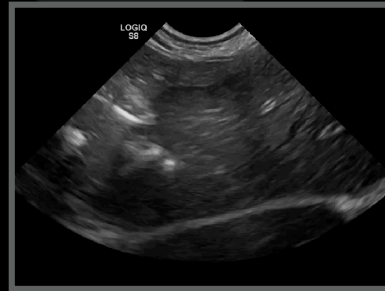
Conclusions:

- Biliary cholelithiasis
- No clear abdominal reasons for the reported seizure

Next steps:

Acidi Biliari Urinari (mmol/L) :	19.4	1.4-11.2
Ac. Biliari Normalizzati Creatinina:	16.6	0.6-17.3
Creatinina (mg/dL) :	117	74-276

- Glioma diagnosed on MRI



Key points Biliary choleliths

- Often caused by bacteria
- Often incidental, but location is relevant
- Check for cholestasis
- Monitor liver enzymes overtime

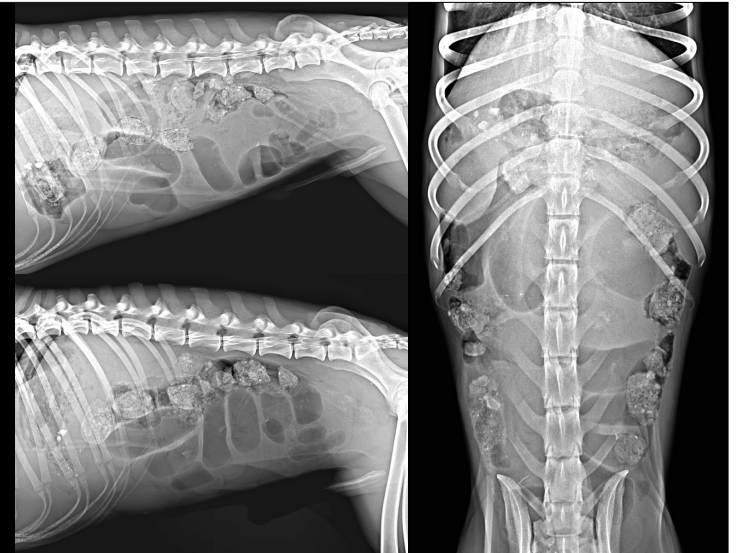


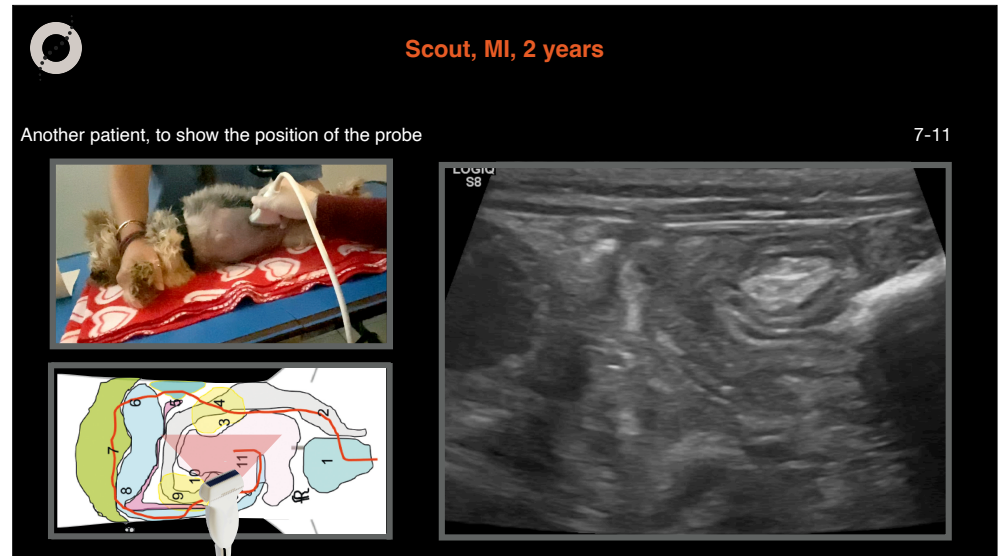
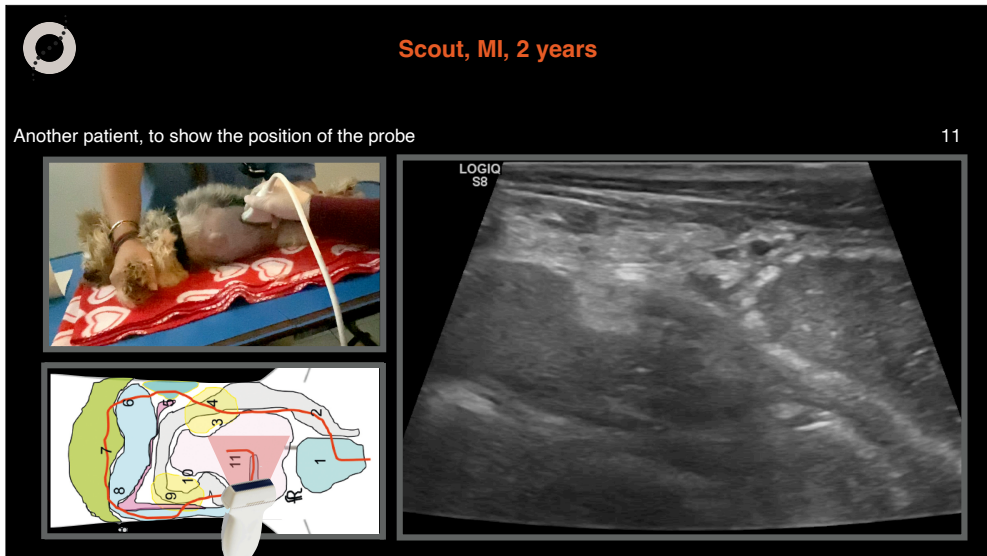
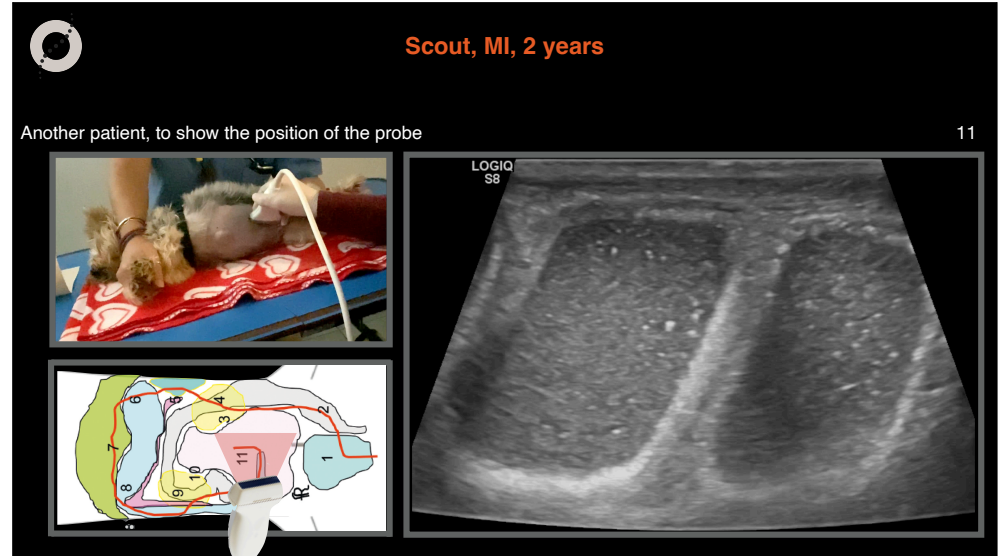
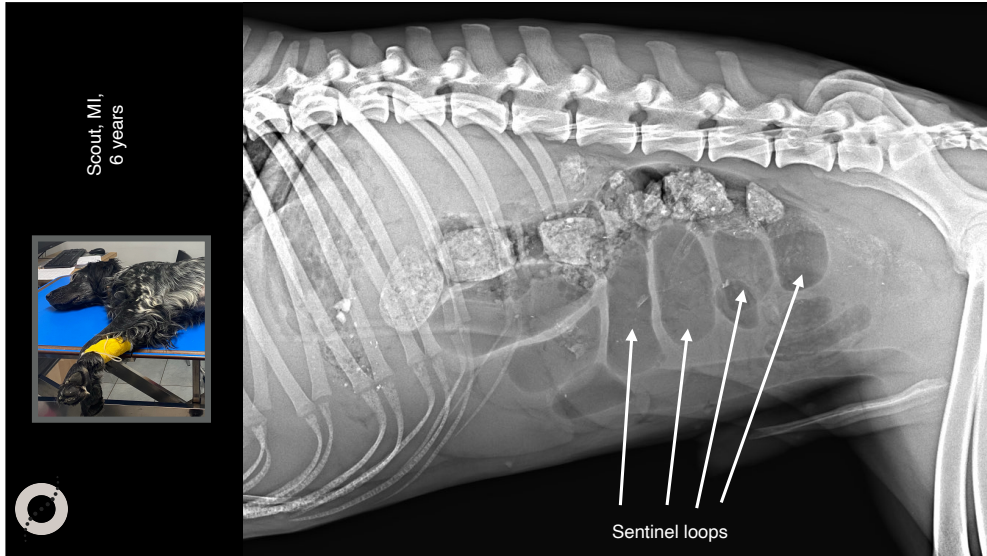
Scout, English setter, MI, 2 years

- Dysorexia
- Eat grass
- Generalises tremor
- Abdominal pain



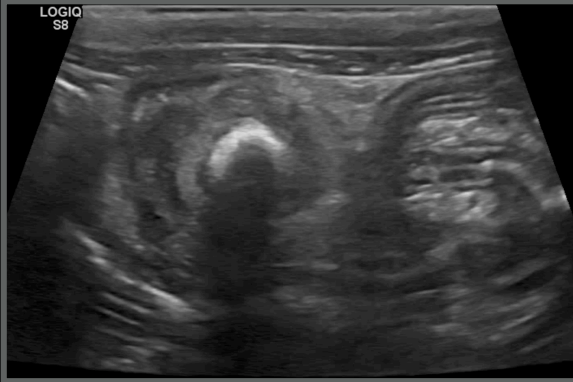
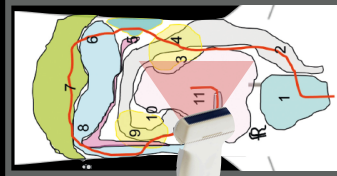

Scout, MI,
6 years





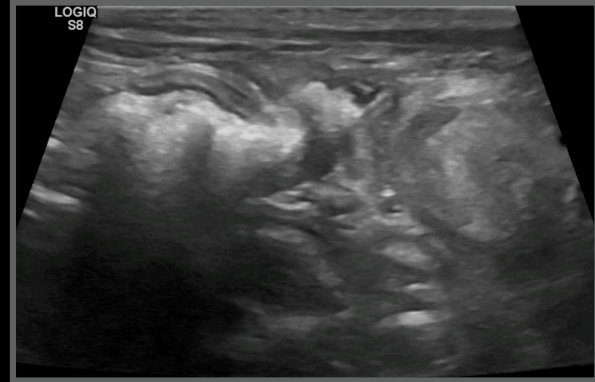
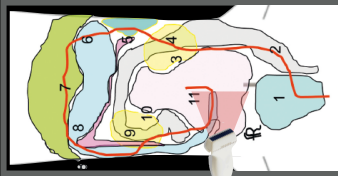

Scout, MI, 2 years

Another patient, to show the position of the probe 7-11

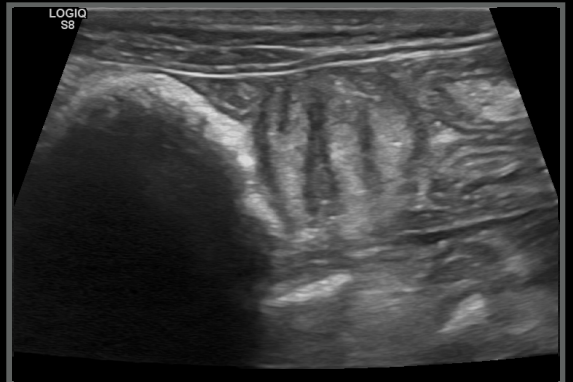


Scout, MI, 2 years

Another patient, to show the position of the probe 7-11


Scout, MI, 2 years

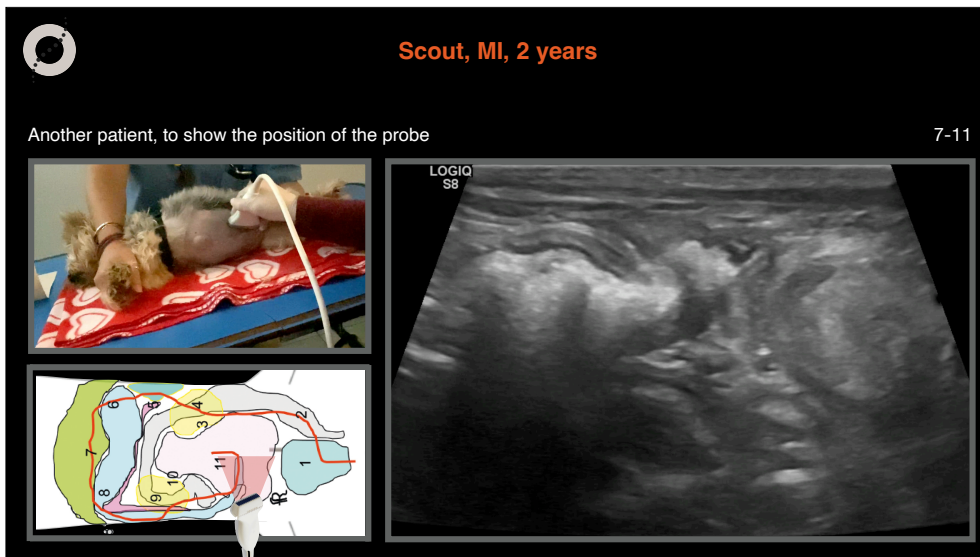
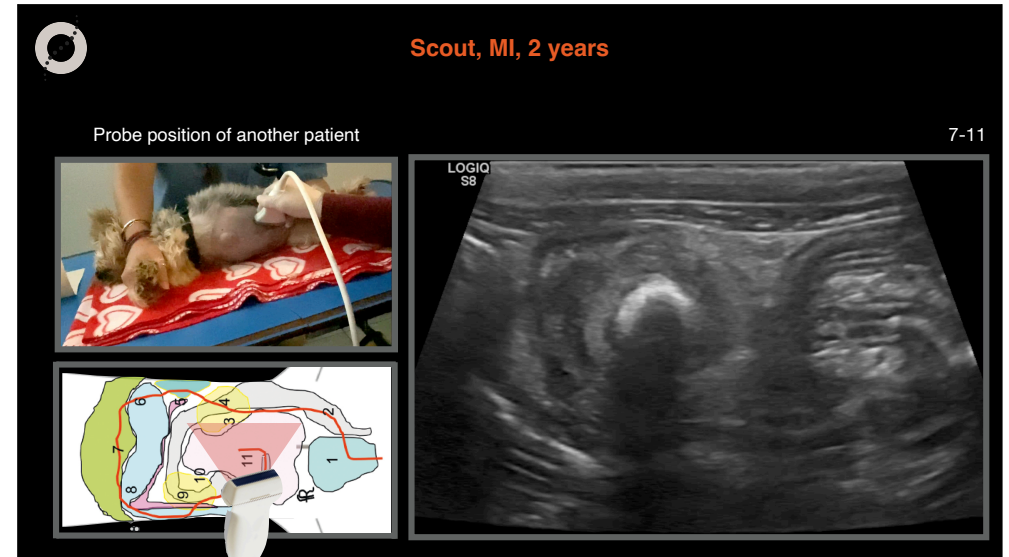
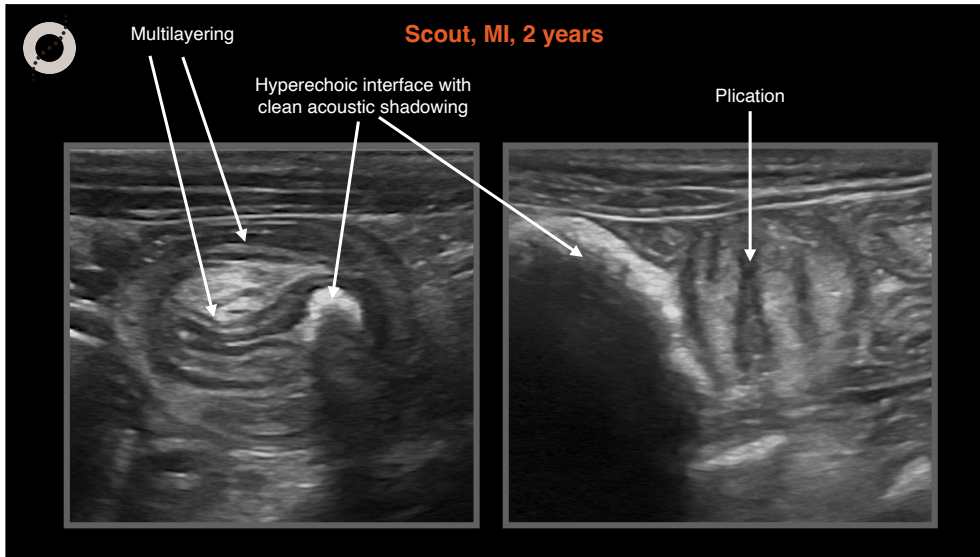
Another patient, to show the position of the probe 7-11

Your evaluation

- Is there an intestinal foreign body?
- Is there intussusception?
- Is there acute gastroenteritis?





PubMed.gov

intestinal intussusception foreign body canine

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Save Email Send to

Sorted by: Best match Display options

MY NCBI FILTERS 16 results

RESULTS BY YEAR

TEXT AVAILABILITY

Abstract Free full text Full text

ARTICLE ATTRIBUTE

1 **Duodenogastric intussusception with concurrent gastric foreign body in a dog: a case report and literature review.**
 Cite Allman DA, Pastori MP.
 J Am Anim Hosp Assoc. 2013 Jan-Feb;49(1):64-9. doi: 10.5326/JAAHA-MS-5827. Epub 2012 Nov 12.
 Share PMID: 23148141 Review.
 Endoscopic removal of the **foreign** object was unsuccessful. A large soft-tissue mass (duodenogastric **intussusception**) was visualized with endoscopy, but was not correctly diagnosed until surgery. ...The dog in this report is the sixth documented case of duodenogastric ...

2 **Clinical cases of intestinal obstruction with foreign bodies and intussusception in dogs.**
 Cite Koike T, Otomo K, Kudo T, Sakai T.
 Jpn J Vet Res. 1981 Apr;29(1-2):8-15.
 Share PMID: 7321356 No abstract available.

Associated data

3 **Foreign body intestinal perforation and intra-abdominal abscess formation as a complication of enteroplication in a dog.**
 Cite Kyles AE, Schneider TA, Clare A.
 Vet Rec. 1998 Jul 25;143(4):112-3. doi: 10.1136/vr.143.4.112.
 Share PMID: 9725179 No abstract available.

Books and Documents

Clinical Trial

Meta-Analysis

Randomized Controlled Trial

Review

Systematic Review

4 **Incomplete tracheal intussusception in a dog.**
 Cite Kim JH, Park C, Moon SJ, Kang MH, Park HM.
 Vet Radiol Ultrasound. 2012 May-Jun;53(3):333-5. doi: 10.1111/j.1740-8261.2011.01896.x. Epub 2011 Dec 5.
 Share PMID: 22136394
 An 18-year-old male miniature poodle had a chronic nonproductive cough. On radiographic examination, an opacification resembling a **foreign body** was noticed within the trachea at the level of the sixth cervical vertebra. ...There was cranial displacement and invagina ...

PUBLICATION DATE

1 year

5 years

10 years

Custom Range

5 **Diagnosis and management of intestinal obstruction.**
 Cite Palminteri A.
 Vet Clin North Am. 1973 Jan;2(1):131-40. doi: 10.1016/s0091-0279(72)50009-6.
 Share PMID: 4570535 Review. No abstract available.

Review > Top Companion Anim Med. 2019 Dec;37:100360. doi: 10.1016/j.tcam.2019.100360. Epub 2019 Sep 11.

Current Views in the Diagnosis and Treatment of Intestinal Intussusception

Michail N Patsikas¹, Lysimachos G Papazoglou², George K Paraskevas³

Affiliations + expand

PMID: 31837757 DOI: 10.1016/j.tcam.2019.100360

Intestinal intussusceptions most often occur in young dogs and cats. Common locations for intestinal intussusceptions include enterocolic, enteroenteric or colocolic. Ultrasonography is highly reliable for diagnosing of intussusception and for prediction of its reducibility. Abdominal structures that may mimic intussusception can be seen ultrasonographically. Intussusceptions is a surgical emergency. Immediate stabilization of the animal followed by manual reduction or intestinal excision of the affected intestine through midline celiotomy are required. Recurrence is a common postsurgical complication. Enteroplication may be considered for recurrence prevention but is not without complications. Prognosis is good in uncomplicated cases.

ORIGINAL ARTICLE *Veterinary Surgery*. 2020;1-9. WILEY

Clinical findings and outcomes of 153 dogs surgically treated for intestinal intussusceptions

Results: Dogs had a median age of 10 months (range, 2-156), and the most common location for intussusception was ileocolic (66/153 [43%]). Most cases had no identifiable cause (104/155 [67%]). Intestinal resection and anastomosis (IRA) was performed in 129 of 153 (84%) dogs; enteroplication was performed in 28 of 153 (18%) dogs, including 13 with and 15 without IRA. Intraoperative complications occurred in 10 of 153 (7%) dogs, all involving intestinal damage during attempted manual reduction. The median duration of follow-up after discharge was 334 days (interquartile range, 15-990; range, 1-3302). Postoperative complications occurred in 53 of 153 (35%) dogs, including 22 of 153 (14%) with severe (grade 3 or 4) events. Diarrhea, regurgitation, and septic peritonitis were the most common postoperative complications; intussusception recurred in four of 153 (3%) dogs, all within 72 hours postoperatively. Fourteen-day postoperative mortality rate was 6%.

Conclusion: Surgical treatment of intestinal intussusception was curative in most dogs, even when an underlying cause was not identified. Surgical complications were common, including a 14% risk of life-threatening short-term complications.

Clinical significance: Surgical treatment of intestinal intussusception offers an excellent prognosis, but the potential life-threatening complications should be considered.


Philippe Chagnon Larose DVM¹ | Ameet Singh DVM, DVSc, DACVS-SA¹ | Michelle A. Giuffrida VMD, MSCE, DACVS² | Galina Hayes PhD, DACVECC, DACVS³ | James Franklin Moyer BSc³ | Janet A. Grimes DVM, MS, DACVS-SA⁴ | Jeffrey Runge DVM, DACVS⁵ | Chiara Curcillo DVM⁶ | Christopher B. Thomson DVM^{6,7} | Philipp D. Mayhew BVMS&S, DACVS-SA² | Ross Bernstein DVM² | Christopher Dominic DVM¹ | Kelley Thieman Mankin DVM, DACVS-SA⁸ | Penny Regier DVM, MS, DACVS-SA⁹ | J. Brad Case DVM, MS, DACVS-SA⁹ | Shiori Arai DVM, PhD, DACVS-SA⁷ | Mathieu Gatineau DMV, IPSAV, MSc, DACVS, DECVS, DACVSMR¹⁰ | Julius M. Liptak BVSc, MVetClinStud, FACVSc, DACVS-SA, DECVS, ACVSc Founding Fellow in Surgical Oncology¹¹ | Charles Bruce DVM, DVSc, DACVS¹¹

	Manual reduction	MR + enteroplication	Resection + Anastomosis
Complications	MR, n = 10, n (%)	MR + EP, n = 9, n (%)	IRA, n = 105, n (%) ^a
Grade 3—Severe complication^o			
Septic peritonitis due to intestinal dehiscence	0	0	4 (4)
Recurrent intussusception	0	2 (22)	1 (1)
Intestinal obstruction due to adhesions	0	0	2 (2)
Colonic torsion	1 (10)	0	1 (1)
Colonic stricture	0	0	1 (1)
Cardiopulmonary arrest due to hypotension	0	0	1 (1)
Grade 4—Death^f			
Septic peritonitis due to intestinal dehiscence	0	0	3 (3)
Septic peritonitis due to original intussusception	0	0	1 (1)
Septic peritonitis due to mesenteric abscess	0	0	1 (1)
Septic bile peritonitis due to iatrogenic injury	0	0	1 (1)
Recurrent intussusception	0	0	1 (1)
Cardiopulmonary arrest due to pneumonia	0	0	1 (1)
Mesenteric volvulus	0	1 (11)	0
Death at home due to unknown	0	0	1 (1)

Scout, English setter, MI, 2 years

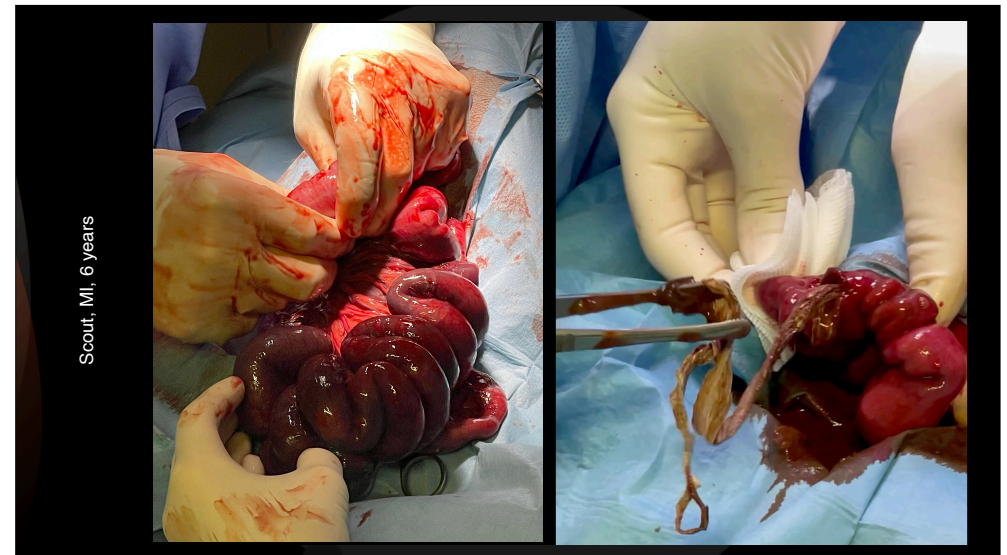
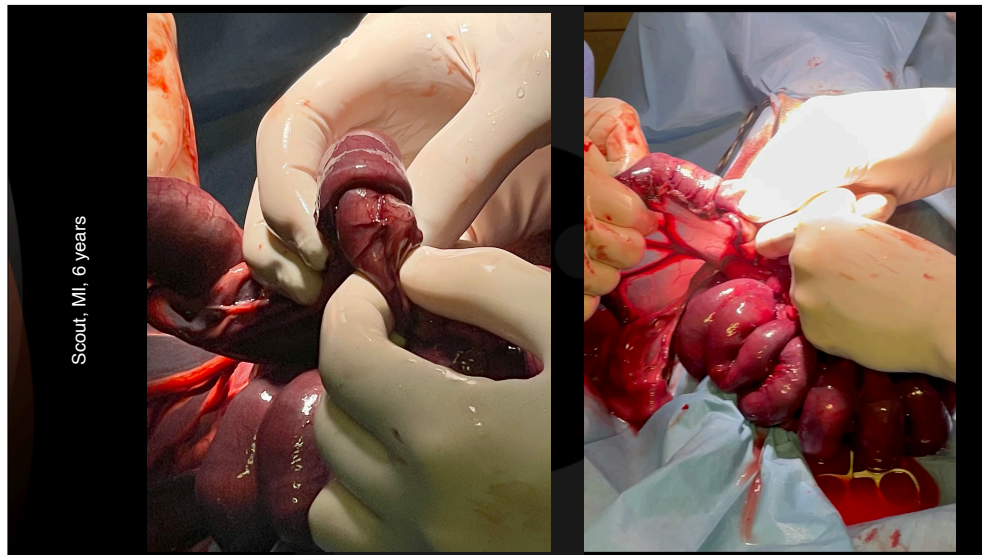
Conclusions:

- Intestinal intussusception with linear foreign body and severe acute enteritis
- Minimal peritonitis and abdominal effusion



Next steps:

- Laparotomy



Scout, MI, 6 years



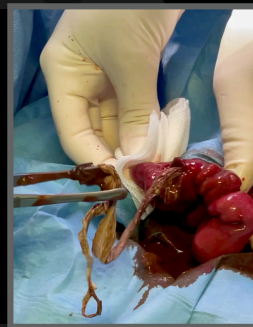
Scout, English setter, MI, 2 years

- Plastic bag containing pig bones



Scout, English setter, MI, 2 years

- Intussusception on a linear foreign body
- High risk of surgical dehiscence due to intestinal wall distress

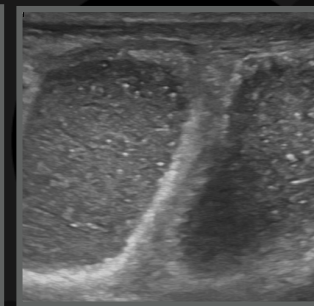


Scout, English setter, MI, 2 years

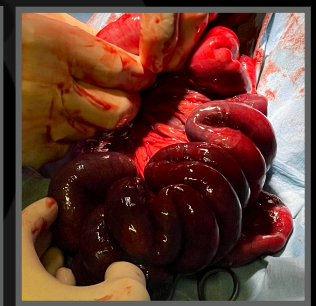
Radiology



Ultrasound



Surgery

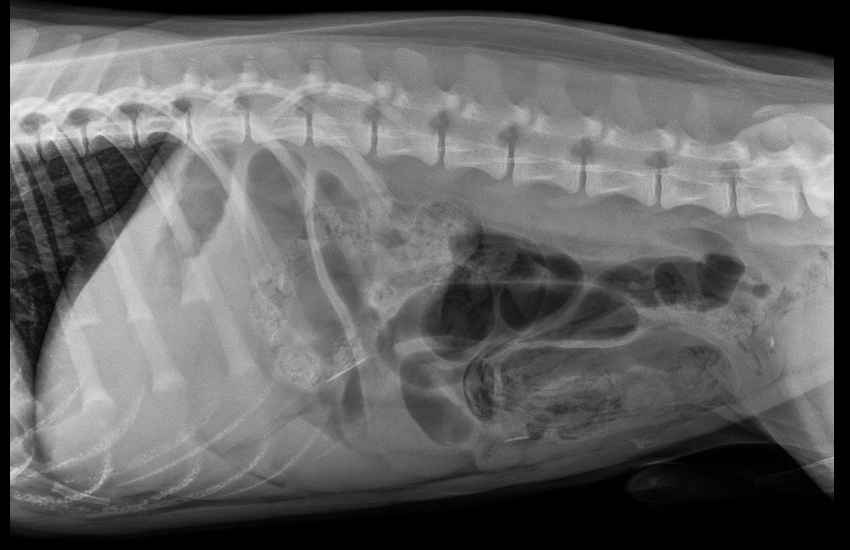


Luke, Retriever, MI, 6 months

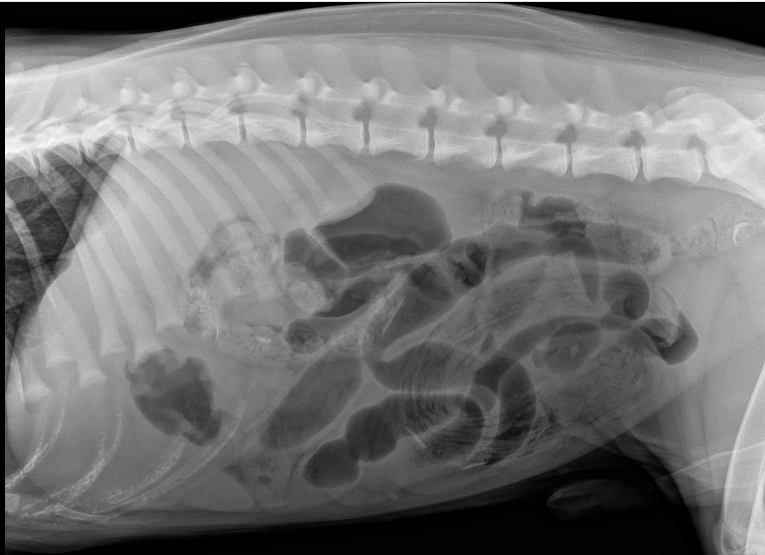
- Vomiting since this morning
- Not eating
- FB eater



Luke, MI, 6 months



Luke, MI, 6 months



Luke, MI, 6 months



Your evaluation?



Luke, Retriever, MI, 6 months

Seven days later

- Surgically removed two socks
- Severe swelling at surgical incision
- Anorexic and vomiting since yesterday



Luke, M, 6 months

Seven day later



Luke, M, 6 months

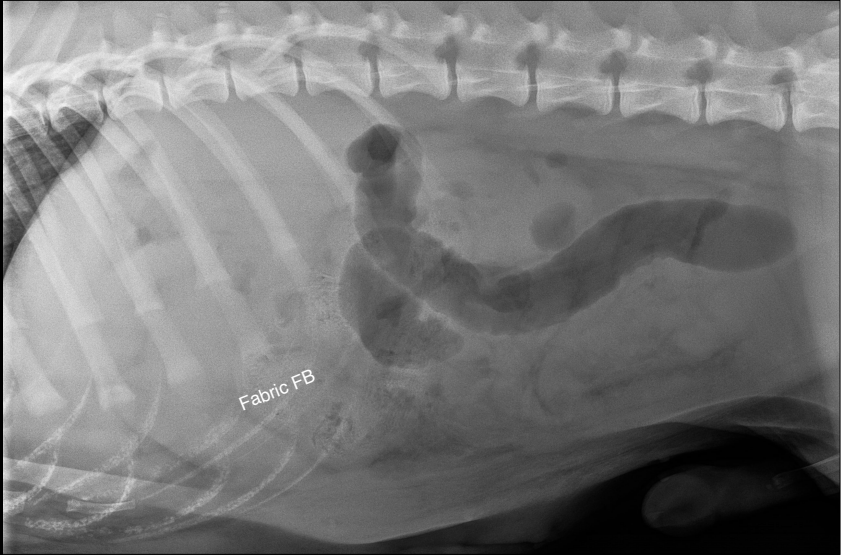
Seven day later

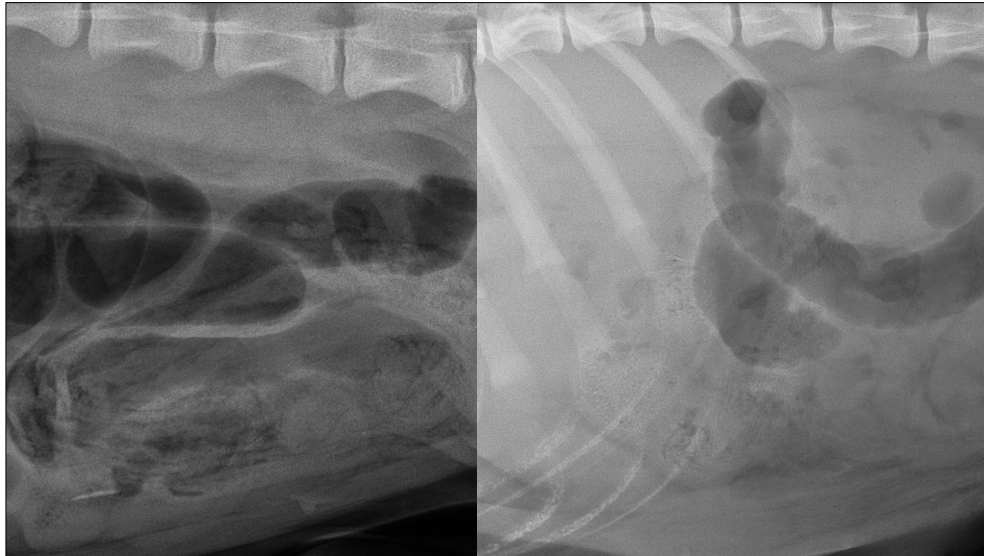


Your evaluation?

Luke, M, 6 months

Seven day later





Luke, Retriever, MI, 6 months

Seven days later

Radiographic diagnoses:

- Loss of peritoneal detail
- Fabric FB (SI?)

Conclusions

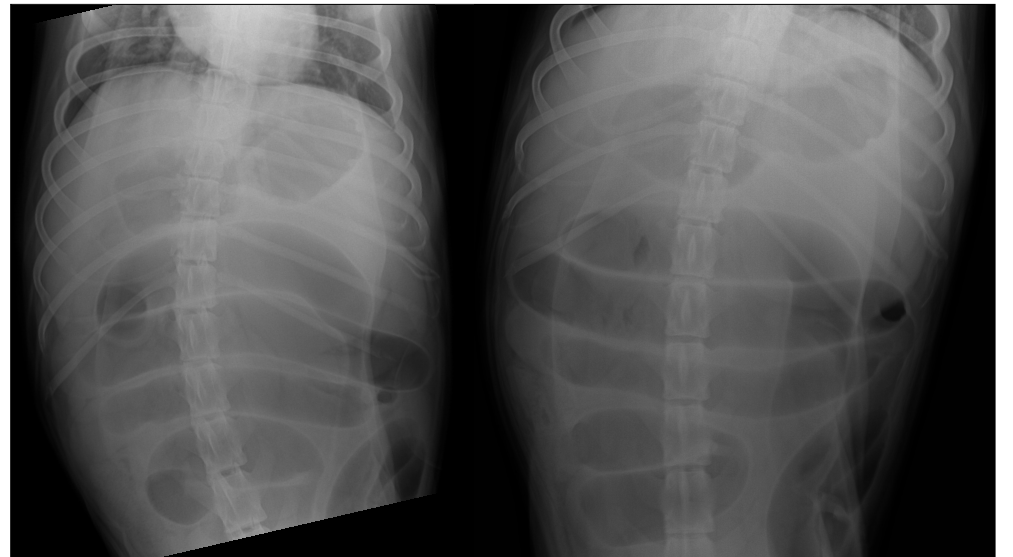
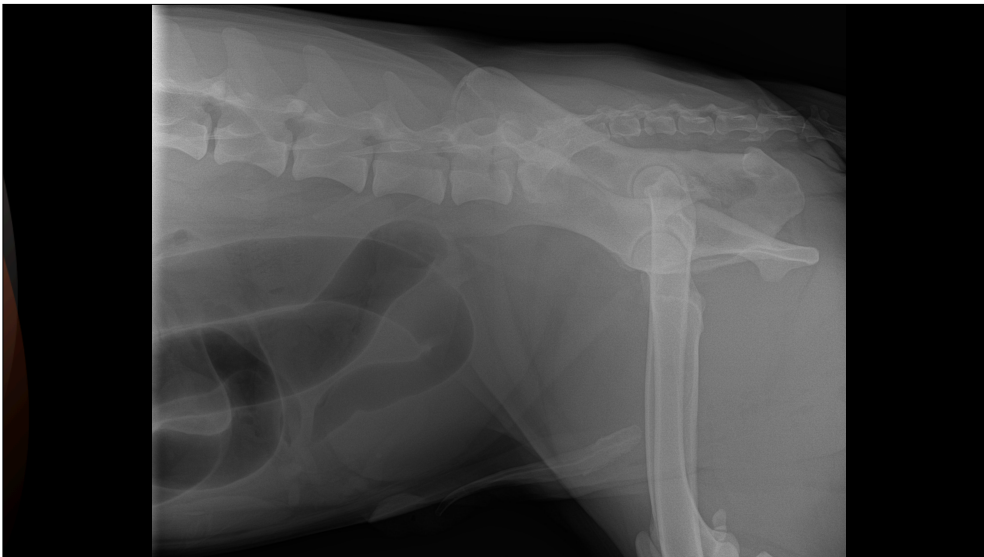
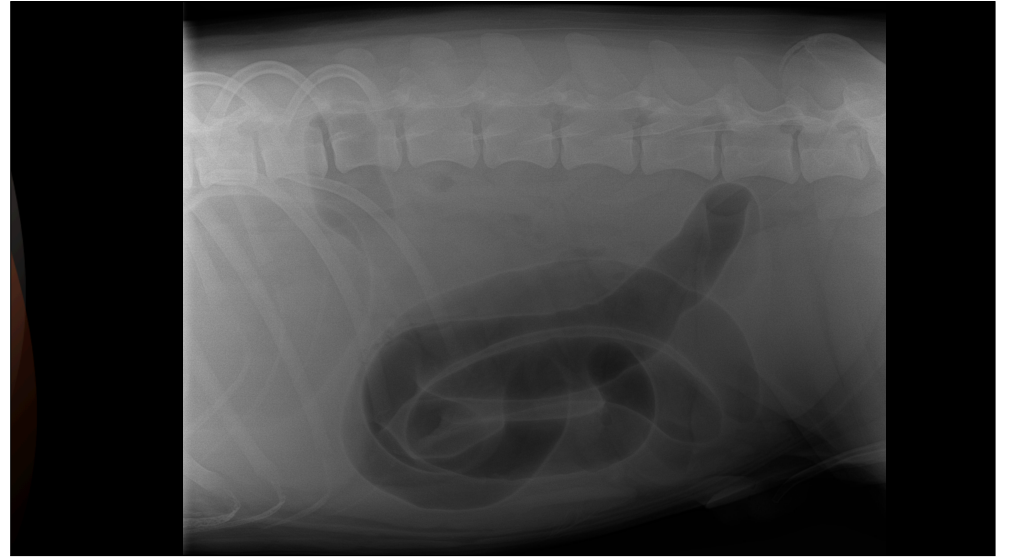
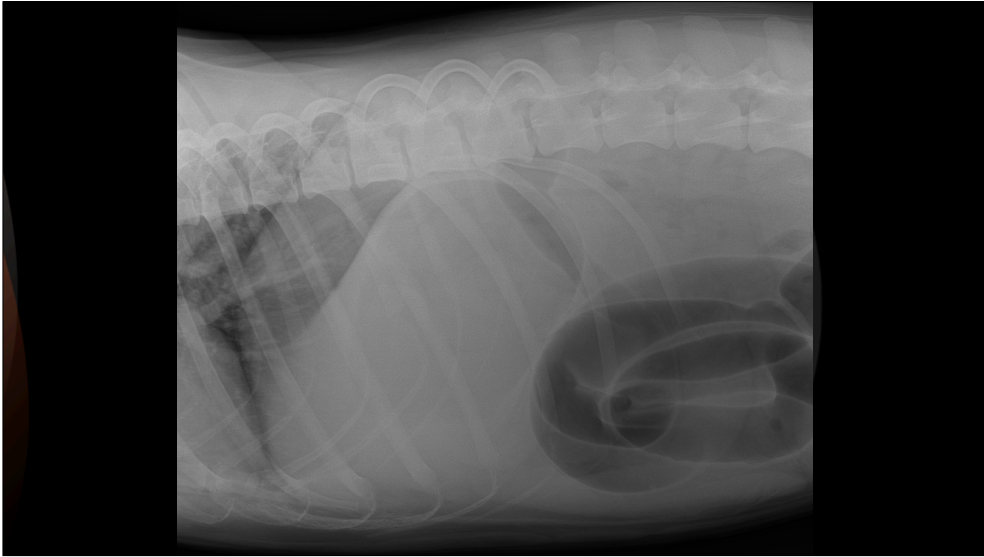
- Septic peritonitis. Surgical removal of the FB



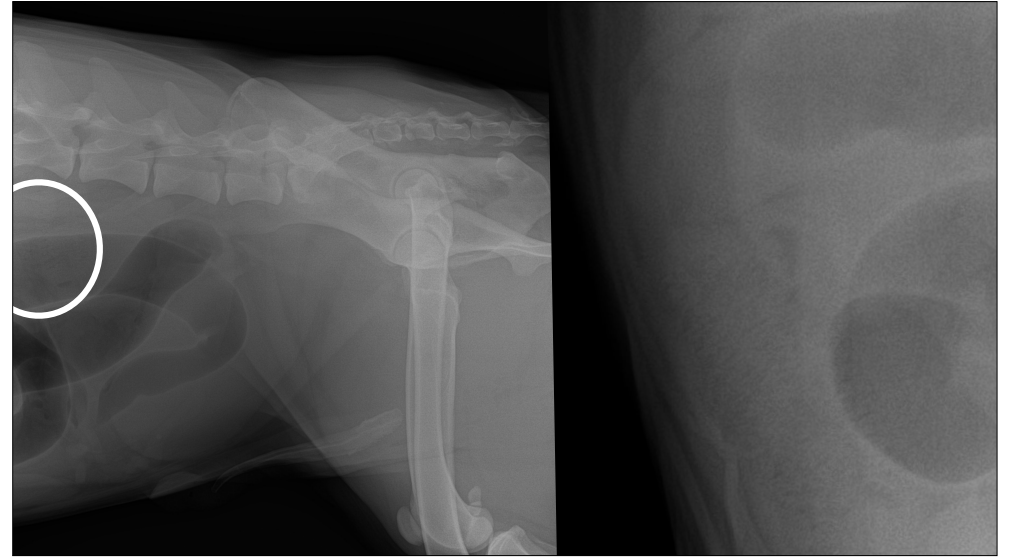
Rhino, Bullmastiff, MN, 8 years

- Anorexic for three days
- Diarrhoea
- Now vomiting





Your evaluation?



Radiographic diagnoses:

- Sentinel loops
- Corn cob FB

Conclusions

- Surgical removal of the FB



Basky, Mongrel, MN, 13 years

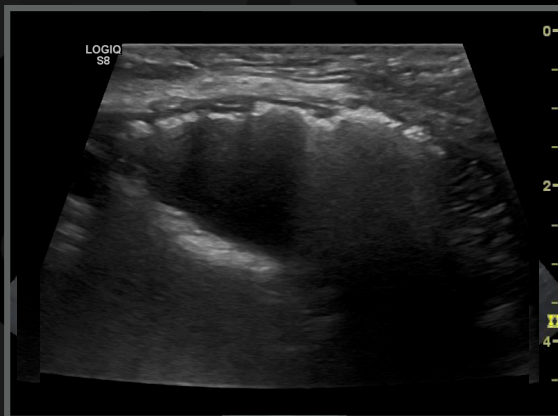
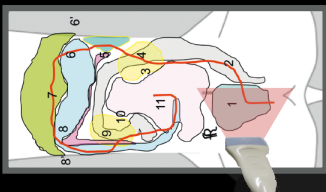
- Dysuria
- Sporadic diarrhea
- History of an hepatic mass
- Possible sock ingestion



Basky, MN, 13 years

Probe position in a different patient

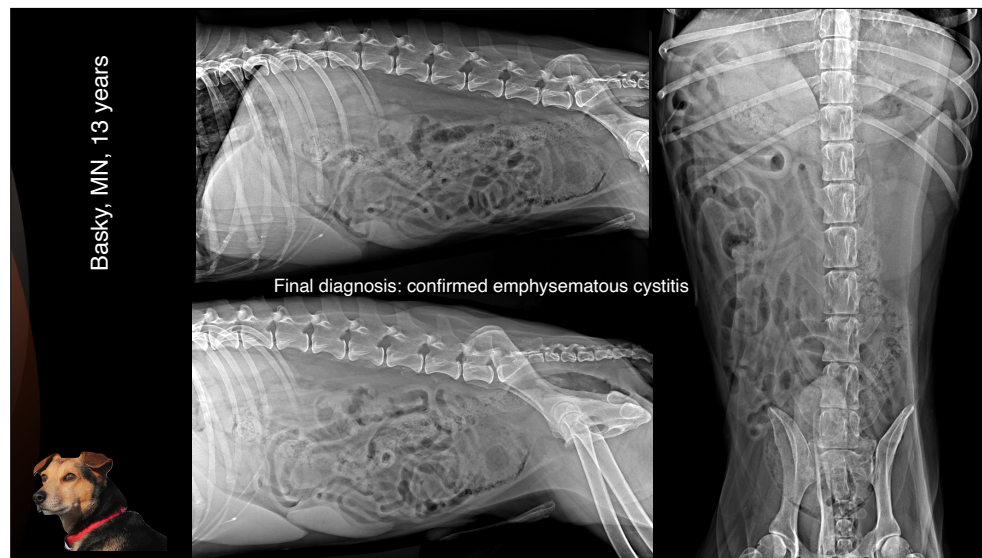
1



Basky, MN, 13 years



Basky, MN, 13 years



Basky, MN, 13 years

Final diagnosis: confirmed emphysematous cystitis

Urinary bladder and urethra

1. Margin
2. Number
3. (O) Parenchyma - Wall layering
4. Position
5. Size
6. Shape
7. Content
8. Vascularisation
9. Surrounding peritoneum

Urinary bladder content

Urinary bladder and urethra

1. Margin
2. Number
3. (O) Parenchyma - Wall layering
4. Position
5. Size
6. Shape
7. Content
8. Vascularisation
9. Surrounding peritoneum

Functional VS Mechanical obstruction

Always check with radiology

Rita, Maine Coon, FI, 4 months

- Diarrhoea for the last 10 days
- Enrofloxacin for seven
- Acute abdominal distention



Rita, FI, 4 months

Blood works



RBC (milioni μ L):	6.70	6.35	9.50	Acantociti:	+	Eliptociti:	
HGB (g/dL):	10.0	9.6	14.3	Anisocitosi:		Ipcromia:	
HCT (%):	27.5	28.0	42.5	Agglutinazione:		Macroci:	
MCV (fL):	40.0	38.0	49.5	Codociti:		Microci:	
MCH (pg):	14.9	12.6	16.0	Cheratociti:		Parassiti eritrocitari:	
MCHC (g/dL):	36.2	31.0	35.0	Cnizociti:		Policromasia:	
CHCM (g/dL):		30.0	33.5	Corpi di Heinz:		Punteggiature basofile:	
CH (pg):		12.0	15.5	Corpi di Howell-Jolly:		Rouleaux:	
CHDW (pg):		1.70	2.70	Cristalli di Hb:		Schistociti:	
RDW (%):	23.0	14.2	17.4	Dacriociti:		Selenociti:	
HDW (g/dL):		1.60	2.50	Drepanociti:		Sferociti:	
NRBC/100 WBC:	0	0	0	Eccentricociti:		Stomatociti:	
				Echinociti:		Torociti:	
Varie RBC:							
WBC (x 1000 μ L):	21.2	5.0	11.0	Linfociti attivati:			
Conta corr. WBC (x 1000 μ L):		5.0	11.0	Linfociti atipici:			
Mielociti (μ L):	0	0	0	Neutrofilii tossici:	+		
Metamielociti (μ L):	0	0	0	Corpi di Doehle:			
Neutrofilii banda (μ L):	0	0	300	Schiumosità citopl.:			
Neutrofilii segmentati (μ L):	15.264	2500	7000	Vacuolizzazione citopl.:			
Linfociti (μ L):	5936	1300	5500	Basofilia citopl.:			
Monociti (μ L):		65	250	Granuli tossici:			
Eosinofili (μ L):		70	800	Neutrofilii giganti:			
Basofili (μ L):	0	0	110	Macropoliciti:			
Danneggiate (μ L):	0	0	0				
Indifferenziate (μ L):	0	0	0				
Altre (μ L):	0	0	0				
Varie WBC:							
PLT (1000 μ L):	473	130	430	Stima PLT:	ADEG.: <input type="checkbox"/>	INADEG.: <input type="checkbox"/>	AUMENT.: <input checked="" type="checkbox"/>
MPV (fL):		7.9	17.5	Varie:	Plastrine attivate: <input type="checkbox"/>	Macroplastrine: <input type="checkbox"/>	
PCT (%):		0.20	0.50		Plastrine allungate: <input type="checkbox"/>	Inclusi plastrinici: <input type="checkbox"/>	
PDW (%):		55.0	70.0				
MPC (g/dL):		17.0	28.0	Note:			

Rita, FI, 4 months

Blood works

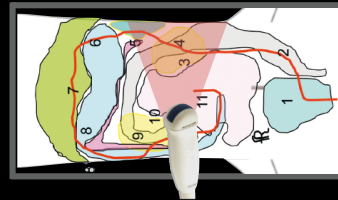
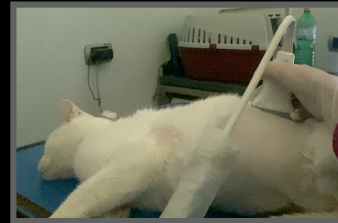


Proteine Totali (g/dL):	6.8	5.8-8
Albumine (g/dL):	2.5	2.5-4.0
Globuline (g/dL):	4.3	2.8-5.5
Rapporto A/G:	0.6	0.4-1.3
Colesterolo (mg/dL):		70-200
Trigliceridi (mg/dL):		30-100
AMILASI (IU/L):		350-1800
Urea (mg/dL):	120	20-65
Creatinina (mg/dL):	0.9	0.7-1.6
Glucosio (mg/dL):		80-145
Calcio (mg/dL):	12.3	8.0-11.2

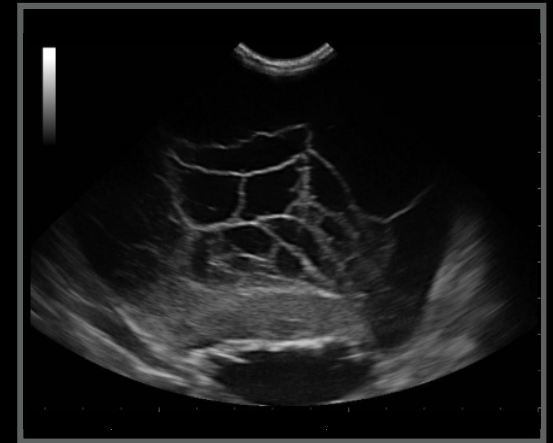
US to check the causes for elevated azotemia and calcium



Probe position in a different patient



Rita, FI, 4 months



Probe position in a different patient

Rita, FI, 4 months

9

Your evaluation

- Is there a polycystic kidney?
- Is there a bilateral renal abscess?
- Is there bilateral renal lymphoma?

Rita, FI, 4 months

Subcapsular fluid and septa

Not visible renal capsule

Renal recesses

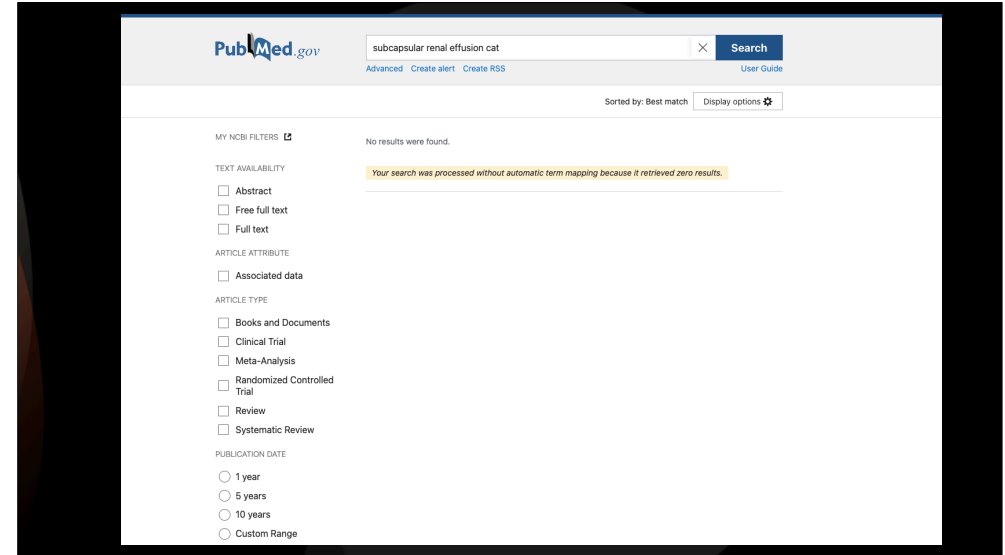
Rita, Maine Coon, FI, 4 months

Ultrasonographic diagnoses:

- Bilateral severe renal subcapsular effusion
- No cortical cysts
- Septa

How to arrive at Conclusions:

- PE examination
- Blood works
- Ultrasonographic findings
- Literature



11.15 PERIRENAL ABNORMALITIES ON ULTRASONOGRAPHY

Abnormal perirenal material may be identified on ultrasonography or IVU. On ultrasonography, the material is usually anechoic to hypoechoic but in

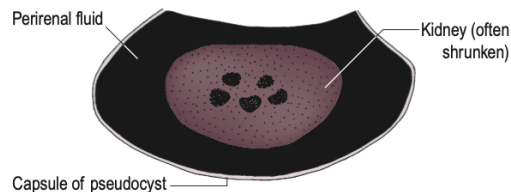


Figure 11.7 Perirenal fluid on ultrasonography: anechoic fluid outlines the kidney, which is often shrunken and hyperechoic with loss of corticomedullary definition.

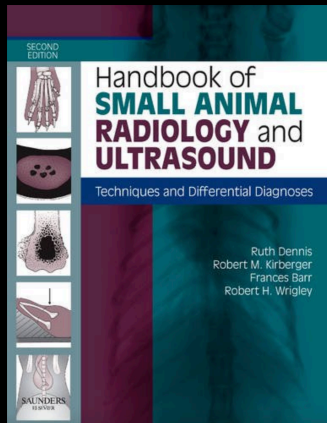
some cases contains debris or is complex in echogenicity. Sonographically, subcapsular fluid may be difficult to distinguish from perirenal retroperitoneal fluid (Fig. 11.7), and both types of abnormality are considered in this section.

1. **Perirenal or perinephric pseudocyst** – especially elderly cats, usually unknown aetiology, although in one cat transitional cell carcinoma affecting the capsule was identified. Usually large amounts of unilateral or bilateral anechoic, subcapsular transudate. The kidneys are also often abnormal.
2. **Perirenal abscess** – affects cats more often than dogs; usually associated with pyelonephritis. Anechoic to hypoechoic perirenal fluid containing small specks of echogenic debris; usually unilateral.
3. **Perirenal haemorrhage** – unilateral or bilateral, depending on cause.
 - a. Trauma.
 - b. After renal biopsy.
 - c. Coagulopathy.
 - d. Neoplastic erosion of a blood vessel.
 - e. Chronic expanding haematoma (rare) – complex sonographic appearance.

4. **Neoplasia.**

- a. Renal lymphoma in cats – a subcapsular hypoechoic rim is due to lymphoma infiltrate rather than free fluid; usually bilateral.
- b. Transitional cell carcinoma has been reported as producing unilateral subcapsular transudate in a cat.

5. **Urinoma** – anechoic fluid, secondary to rupture of the kidney or proximal ureter; usually unilateral.
6. **Acute renal failure** – anechoic fluid, ± renal abnormalities depending on the cause; usually bilateral.
7. **Retroperitoneal fluid** secondary to trauma or urethral obstruction with very full bladder.



PubMed.gov search results for "urinoma cat".

4 results

RESULTS BY YEAR: 2002, 2023

TEXT AVAILABILITY: Abstract, Free full text, Full text

ARTICLE ATTRIBUTE: Associated data

ARTICLE TYPE: Books and Documents, Clinical Trial, Meta-Analysis, Randomized Controlled Trial, Review, Systematic Review

PUBLICATION DATE: 1 year, 5 years

1 **Nontraumatic Paraureteral Urinoma in a Cat with Urolithiasis.**
 Tabbi M, Rifci C, Cicero L, Macri F, Mazzullo G, Sfacteria A, Cassara G, De Majo M, Di Pietro S. *Animals (Basel)*. 2022 Oct 26;12(21):2984. doi: 10.3390/ani12212984. PMID: 36330056. [Free PMC article.](#)
 Urinoma is an encapsulated collection of urine due to a disruption in the collection system of the urinary tract. ...The aim of this study is to describe the clinical and diagnostic findings of a well-encapsulated paraureteral urinoma associated with urinary tract s...

2 **Post-traumatic paraureteral urinoma in a cat.**
 Worth AJ, Tomlin SC. *J Small Anim Pract*. 2004 Aug;45(8):413-6. doi: 10.1111/j.1748-5827.2004.tb00258.x. PMID: 16382412
 A retroperitoneal urinoma (uriferous pseudocyst) was diagnosed in a domestic shorthair cat exhibiting a sublumbar swelling two weeks after a road traffic accident. ...

3 **Urinoma (para-ureteral pseudocyst) as a consequence of trauma in a cat.**
 Moores AP, Bell AM, Costello M. *J Small Anim Pract*. 2002 May;43(5):213-6. doi: 10.1111/j.1748-5827.2002.tb00060.x. PMID: 12038604
 A two-year-old cat was involved in a road traffic accident. Survey abdominal radiographs and urinary function were considered unremarkable. ...The cat was clinically well three months postoperatively....

4 **Feline ureteral rupture with para-ureteral urinomas following blunt trauma: clinical presentation and long-term outcome after treatment by urinary diversion for five cases from 2012 to 2019.**
 Dekker B, Fournet A, Maurice F, Viteau V, Maurey C, Manassero M. *N Z Vet J*. 2022 Nov 12;1-8. doi: 10.1080/00480169.2022.2139606. Online ahead of print. PMID: 36281507
 Unilateral cyst-like retroperitoneal fluid consistent with para-ureteral urinoma was observed in all cats and a diffuse retroperitoneal haematoma was noticed in four cats. No immediate major complications occurred, and all cats had post-operative serum creatinine concentra...

PubMed.gov search results for "renal pseudocysts cat".

11 results

RESULTS BY YEAR: 1986, 2023

TEXT AVAILABILITY: Abstract, Free full text, Full text

ARTICLE ATTRIBUTE: Associated data

ARTICLE TYPE: Books and Documents, Clinical Trial, Meta-Analysis, Randomized Controlled Trial, Review

1 **Perinephric pseudocysts in the cat: a retrospective study and review of the literature.**
 Ochoa VB, DiBartola SP, Chew DJ, Westropp J, Carothers M, Biller D. *J Vet Intern Med*. 1999 Jan-Feb;13(1):47-55. PMID: 10052064. [Free article.](#)
 Perinephric pseudocysts (PNPs) are fluid-filled fibrous sacs that surround the kidney and are not lined by an epithelium. In cats, PNPs are idiopathic, but they usually occur in association with chronic renal failure (CRF). Thirteen cats with PNPs were examined. PNP ...

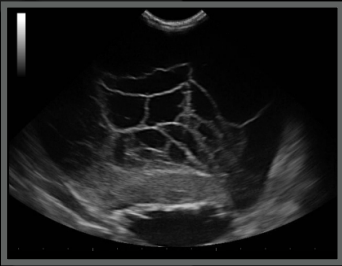
2 **Perirenal pseudocysts in 26 cats.**
 Beck JA, Bellenger CB, Lamb WA, Churcher RK, Hunt GB, Nicoll RG, Malik R. *Aust Vet J*. 2000 Mar;78(3):166-71. doi: 10.1111/j.1751-0813.2000.tb10585.x. PMID: 10860154
 OBJECTIVE: To evaluate clinical features, anatomical location, nature of pseudocyst fluid, results of surgical treatment and links with underlying renal disease in cats with perirenal pseudocysts. ...Pseudocyst formation can occur at variable stages of ...

3 **Case series: Pleural effusion caused by urinary ultrafiltrate in two cats without evidence of urinary obstruction, trauma, or simultaneous perinephric pseudocysts.**
 Griffin MA, Stetley MA, Phillips XL, Mayhew PD, Woolard KD, Della Maggiore A. *Front Vet Sci*. 2022 Nov 21;9:1039278. doi: 10.3389/fvets.2022.1039278. eCollection 2022. PMID: 36478950. [Free PMC article.](#)
 METHODS: Multiphase contrast CT scan revealed leakage of contrast media from the kidneys bilaterally into the retroperitoneal spaces in both cats. Renal scintigraphy performed in one cat revealed progressive accumulation of (99m)Tc diethylenetriamine penta-acetic ac ...

Rita, Maine Coon, FI, 4 months

Conclusions:

- Bilateral perirenal pseudocysts
- No clear predisposing causes
- Severe IRIS III renal disease

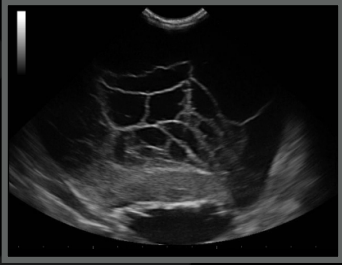


Next steps:

US drainage of the pseudocysts or laparotomic removal of the renal capsule

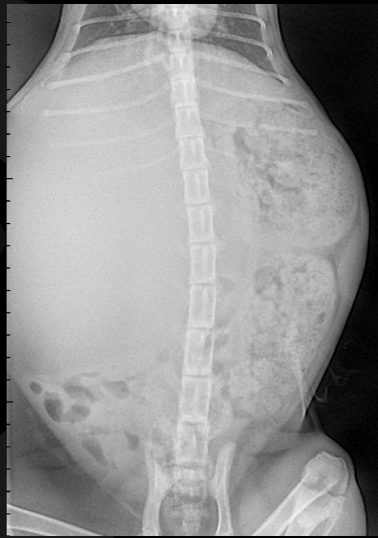
Key points to diagnose perirenal pseudocysts

- Renal capsular detachment
- Can be septated
- Not always possible to differentiate with urinoma
- Check for underlying causes



Rita, Maine Coon,
FI, 8 months

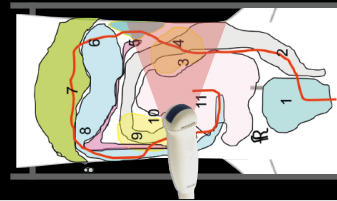
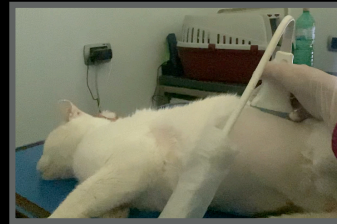
- Recurrent respiratory signs
- After the first estrus, partially reduced abdominal distention



Probe position in a different patient

Rita, FI, 8 months

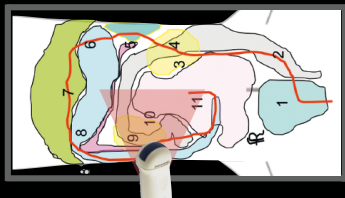
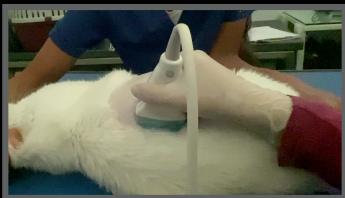
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Probe position in a different patient

Rita, FI, 8 months

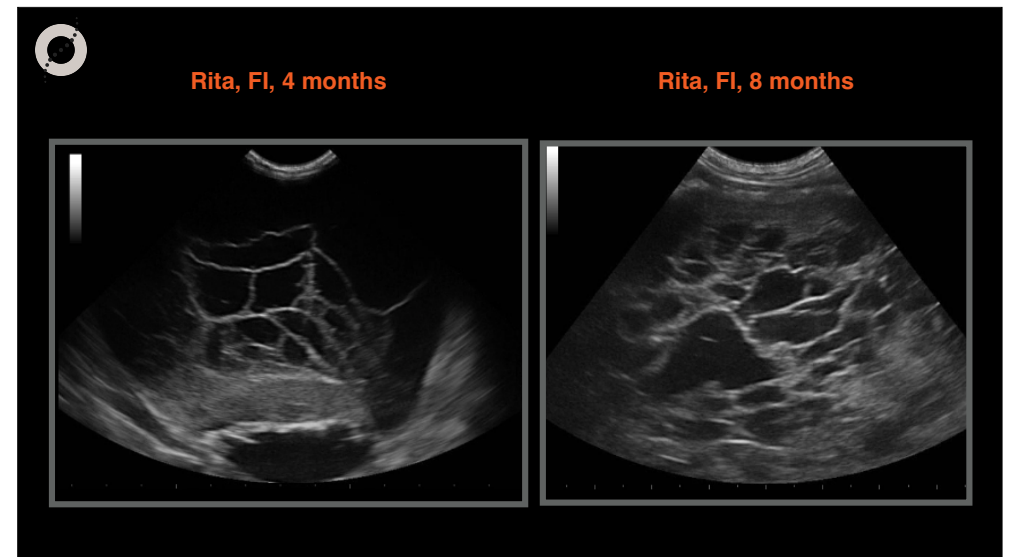
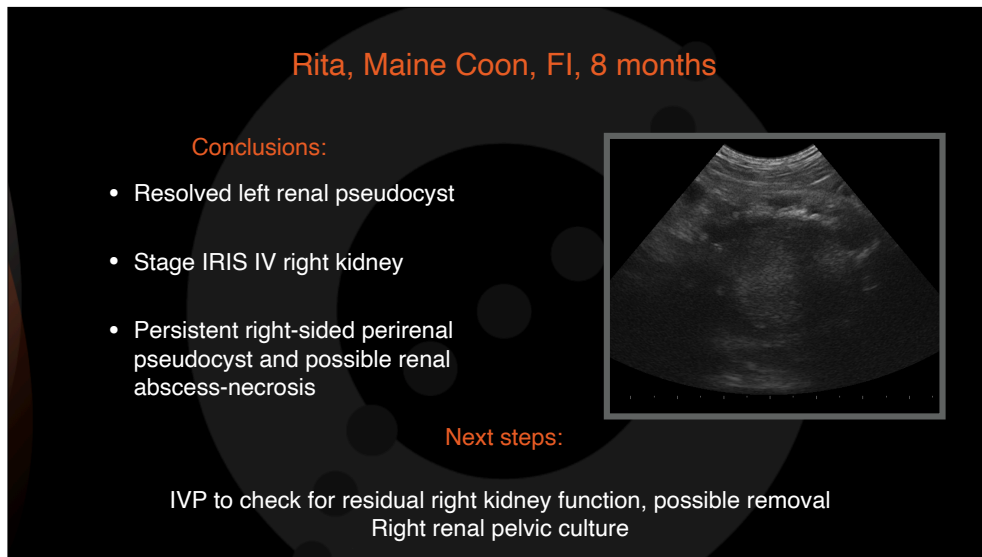
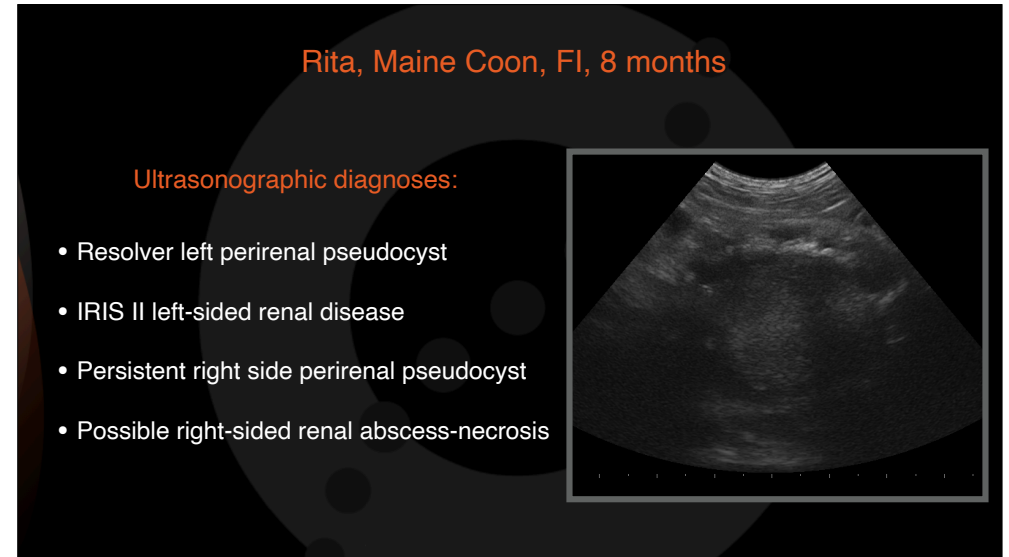
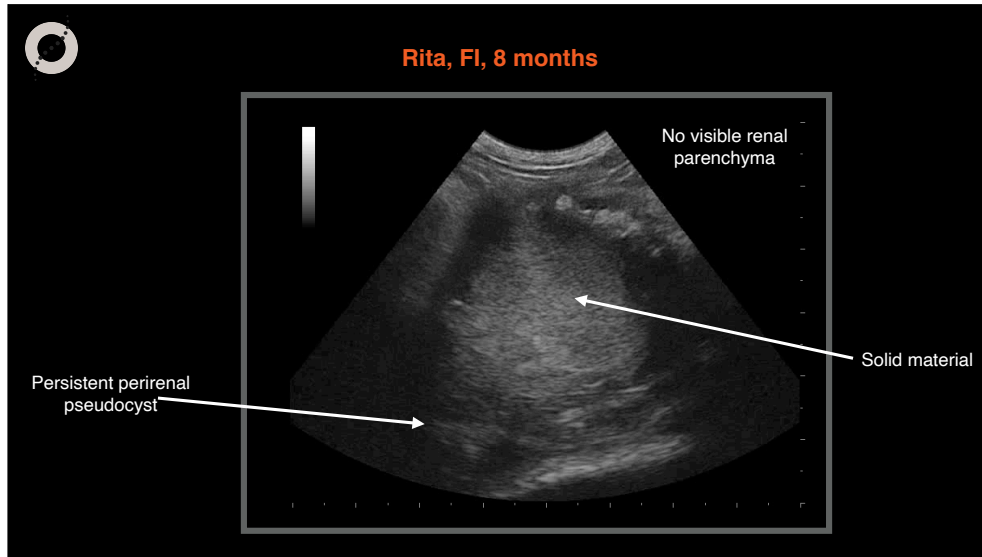
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Your evaluation

- Is Rita healed?
- Is there a right renal abscess?
- Is there a right renal tumor?



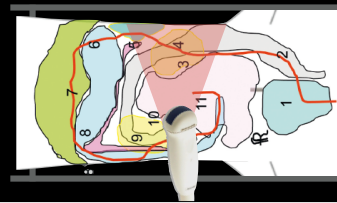
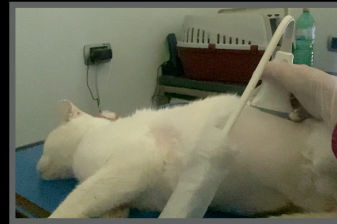


Rita, Maine Coon, FI, 12 months

- Brought to the clinic for neutering
- After every estrus reduced abdominal distention

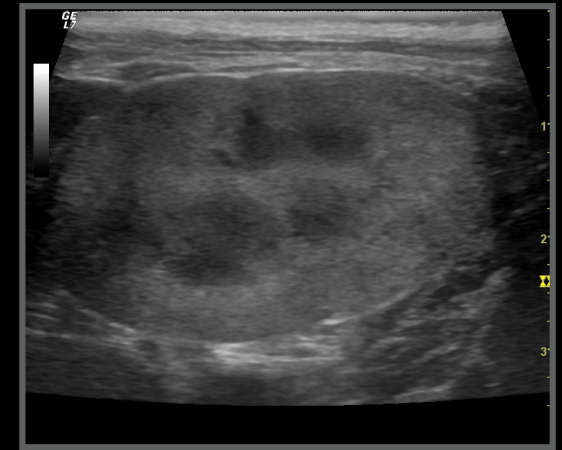


Probe position in a different patient



Rita, FI, 12 months

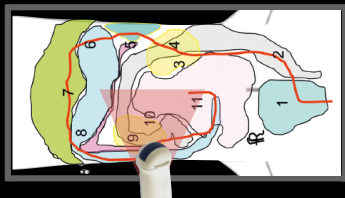
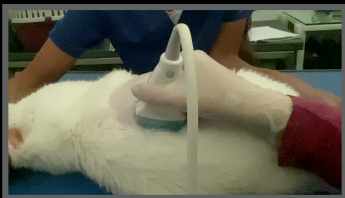
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Probe position in a different patient

Rita, FI, 12 months

9



Your evaluation

- Resolved bilateral perirenal pseudocyst. Is everything fine?
- Is there a right renal mass?
- Is there a right renal abscess?





Rita, FI, 8 months



Rita, FI, 12 months



Rita, Maine Coon, FI, 12 months

Conclusions:

- Suspected right renal abscess or necrosis
- Can we remove the right kidney?

Next steps:

IVP to check for renal function



T0



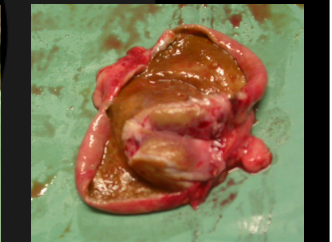
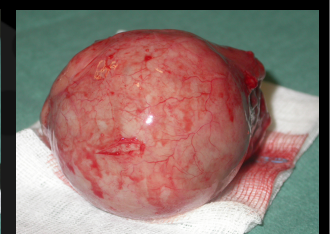
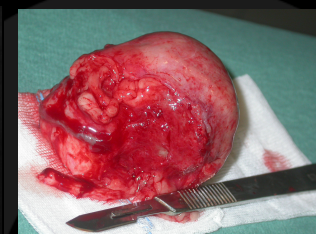
T3'



T7'



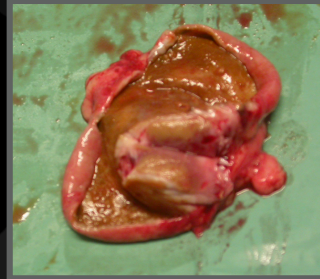
T10



Rita, Maine Coon, FI, 12 months

Conclusions:

- Removed right kidney
- Cultured, infected with Escherichia coli
- Rita is still doing fine, she is 8 years now



Thank you



Diagnostic Mindset

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