

## IT'S YOUR CASE

Species: Canine      Breed: Labrador Retriever      Sex: Male Neutered      Age: 2 years

### Clinical History:

He was shocky on presentation following vehicular trauma earlier in the day

He responded to fluids and analgesia however progressive abdominal effusion is documented with concurrent moderate to marked abdominal pain.

Initial thoracic radiographs revealed significant pulmonary contusions

**Anatomic regions:** Neck, Thorax, and Abdomen

### Details of study and technical comments:

Right lateral and ventrodorsal projections (6 total) of the thorax and abdomen are provided for interpretation. Also available are two right lateral projections and a single ventrodorsal projection of the cervical spine. A collar is superimposed with the C1-2 intervertebral disc space in all cervical projections.

In a separate series, left lateral projections (4) and single ventrodorsal projection of the caudal abdomen for positive contrast retrograde cystogram are provided for interpretation. The patient is moderately rotated in the lateral projections.

Given 20mls of contrast (iohexol) diluted with 20mls of saline

1st image-no contrast

2nd image-10mls

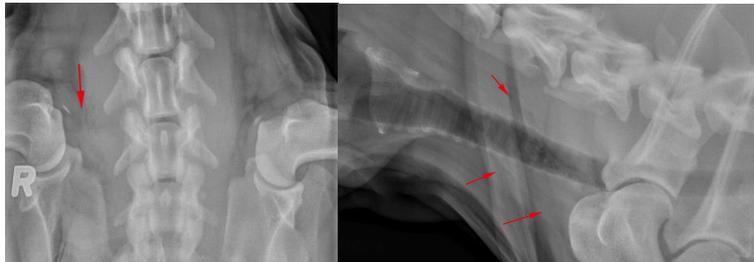
3rd image-20mls

4th and 5th images-40mls

### Diagnostic interpretation:

#### CERVICAL VERTEBRAL COLUMN:

There are no obvious skeletal abnormalities associated with the cervical vertebral column. There is mild, wispy soft tissue overlying the caudal cervical region that corresponds to the right cranial axillary region (red arrows). Subjectively, the tympanic bullae are mildly thickened and the ear canal tapers narrowly, bilaterally. A thin, linear to slightly crescent-shaped, well-defined, faint mineral opacity is at the base of each ear canal.



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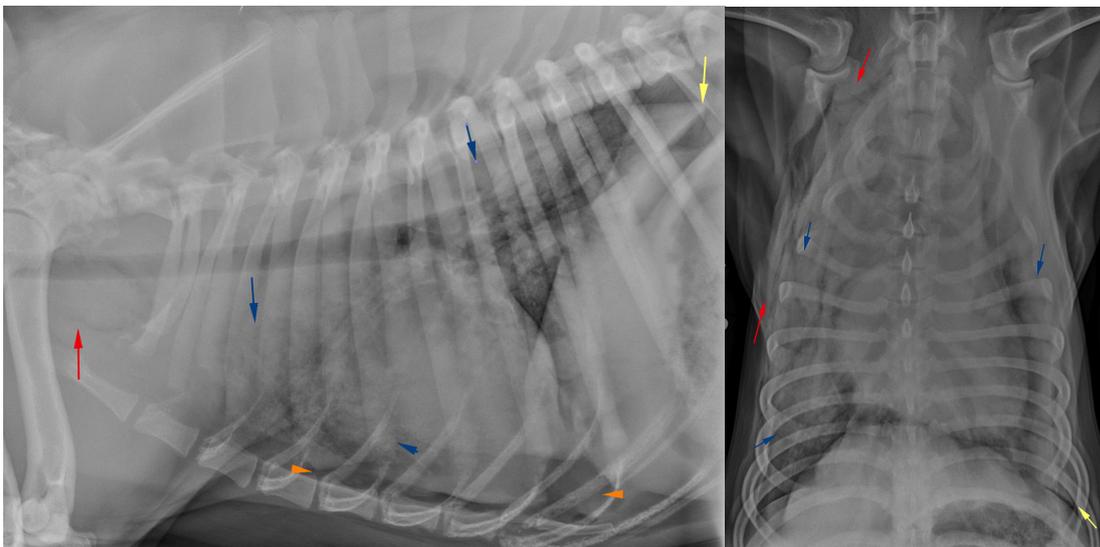
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## THORAX:

A moderate amount of air is present in the pleural space causing retraction of the pulmonary margins (yellow arrows) and displacement of cardiac silhouette from the sternum (orange arrowheads). There is a generalised, severe unstructured interstitial to alveolar pulmonary pattern in all lung lobes, with relative sparing of the right accessory lung lobe; the generalised changes are worse in the right lung. The pulmonary vasculature and cardiac silhouette are largely obscured.

The soft tissue along the cranial half of the thorax is irregular and heterogeneous, with a moderate amount of subcutaneous gas extending from the caudal cervical region to the mid thoracic region, the subcutaneous gas largely superimposed with the right scapula and axilla (red arrows).



## ABDOMEN:

There soft tissue stranding in the falciform fat cranioventrally (red arrows) and poor serosal contrast in the caudoventral abdomen (red circle). There is adequate retroperitoneal serosal detail. In the cranial abdomen, peritoneal air opacity (bright green arrows) defines both surfaces of the diaphragm when contrasted with the pleural air (right green arrowheads).

The stomach contains a moderate volume of heterogeneous soft tissue opaque material admixed with gas. The small intestines are relatively uniform and within normal limits for diameter, the majority of segments containing homogeneous gas. The colon is filled gas and inhomogeneous soft tissue opaque material admixed with gas, the least amount or more homogeneously soft tissue opaque material present in the rectum. Visible margins of the liver, spleen, and kidneys are within normal limits. The urinary bladder is not visible. There is mild soft tissue streaking present of the subcutaneous fat in the inguinal region.

A complete, minimally displaced fracture is left paramedian in the body of the left pubis (orange arrowheads). A radiolucent fissure (yellow arrow) is left paramedian in the table of the left ischium. The asymmetric widening of the left sacroiliac joint (purple arrow) is attributed to the slight rotation of the pelvis. There is no visible intervertebral disc space between the 4<sup>th</sup> and 5<sup>th</sup> caudal vertebrae (light blue arrows) and the spinal canal at this level is mildly ventrally deviated.

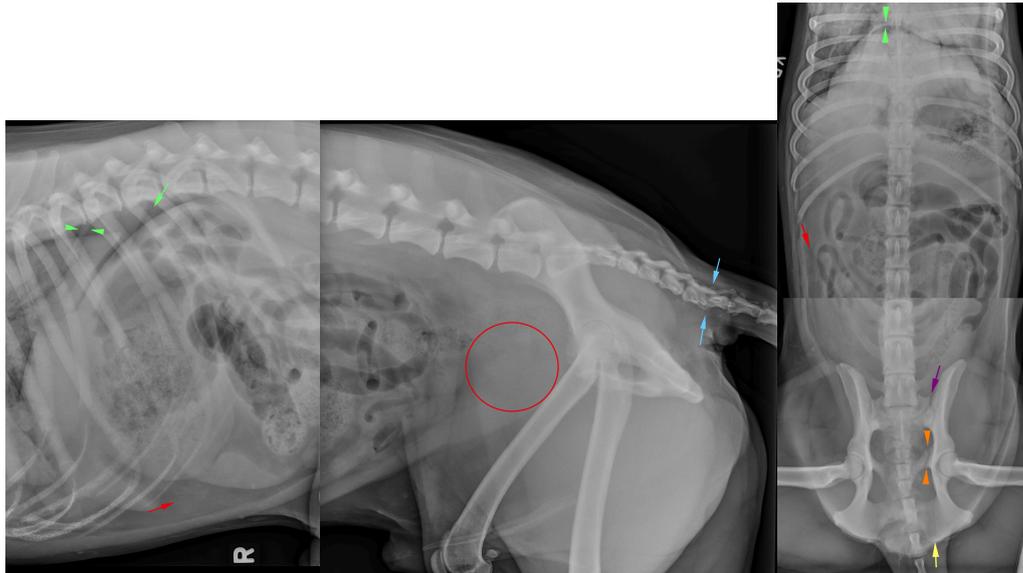


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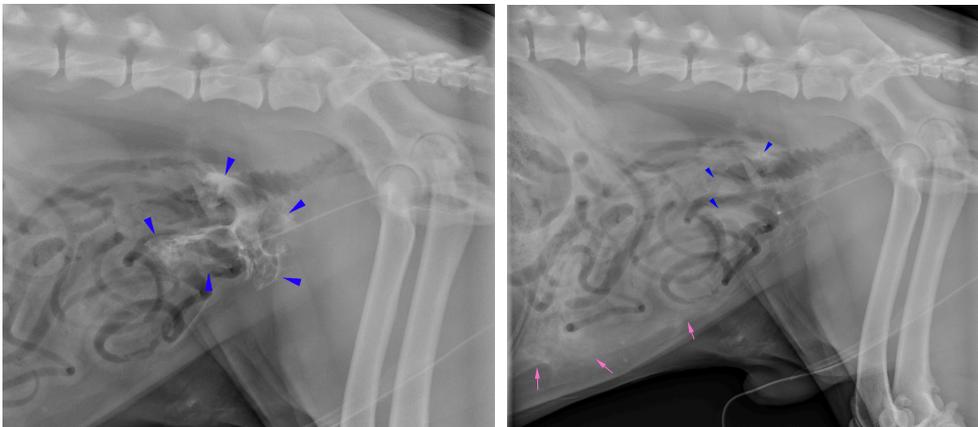
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#### RETROGRADE CONTRAST CYSTOGRAPHY:

A urinary catheter is now in place with the radiopaque tip extending in the caudal abdomen to the level of L6. The urinary bladder is still not visible. From the first administration and continuing throughout the study, the positive contrast medium does not conform to the normal shape of a urinary bladder, but instead is deposited haphazardly into the caudal peritoneal space (bright blue arrowheads) and quickly dissipates within the peritoneal cavity, increasing the general opacity of fluid within the abdomen (pink arrows). The small intestines still containing gas throughout. The colon is less filled with a mild amount of faecal material present in the proximal portion of the descending colon, the distal descending colon empty and corrugated, and the rectum empty. A gas dilated segment is seen at the cranial edge of the study, and is thought to represent ascending/transverse colon.



#### Conclusions:

Related to reported acute trauma:

- Pneumothorax, moderate to severe.
- Pulmonary contusions/haemorrhage, generalised and severe.



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- Ruptured urinary bladder with associated peritoneal effusion. Concurrent haemorrhage cannot be ruled out without sampling.
- Mild pneumoperitoneum.
- Left pubis fracture.
- Left ischiatic table fracture, suspect incomplete.
- Suspect mild inguinal swelling. This likely represents haemorrhage or oedema.
- Soft tissue trauma and subcutaneous emphysema, right axilla.

Additional:

- Suspect otitis media, bilaterally, with possible narrowing of the ear canals and otitis externa; relate clinically.
- Suspect block vertebra Cd4-5, congenital. Trauma is not entirely ruled out.

**Additional comments:**

There are multiple significant pathologies present in this series:

- Pneumothorax and pulmonary contusion will pose challenges to respiratory stabilisation. Pulmonary contusions may mature in 72 hours and the radiographic changes noted here may therefore not represent the severity of the pulmonary injury. It is appropriate to mention that pulmonary contusion may reduce tolerance of normal anaesthetic pressures if manual or mechanical ventilation is warranted.
- Rupture of the urinary bladder is confirmed with the positive contrast study. A uroabdomen is likely accompanied by some degree of haemoabdomen due to the inciting trauma.
  - The presence of pneumoperitoneum may be iatrogenic from serial catheterisation in conjunction with bladder rupture. Alternatively, rupture of the gastrointestinal tract could be considered, however is less likely.
  - Corrugation of the colon is suspected to be from serosal irritation by the hyperosmolar contrast media or uroabdomen.

Further characterisation of the lower urinary tract can be made with urethrogram.



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