

CASE TWO:

A 4-year-old male Pug presents with a 24-hour history of acute onset dyspnoea following exercise. The owner also reports lethargy and anorexia. There is no history of trauma.

On presentation, the dog is distressed. Rectal temperature is 38.7°C, heart rate 160bpm and respiratory rate 60 breaths per minute with increased inspiratory and expiratory effort. The respiratory pattern is shallow with increased abdominal effort. Mucus membranes are congested and capillary refill time is < 1 second. Thoracic auscultation confirms reduced lung sounds. Intravenous access is obtained and oxygen supplementation given.

2.1. STATE the most appropriate next diagnostic step in this patient.

- TFAST

A brief conscious thoracic ultrasound confirms the presence of a pleural effusion. 260ml of fluid is drained from the thorax via thoracocentesis. The fluid is submitted for analysis:

Fluid nucleated cell count 12.4 x 10⁹/l

Fluid red cell count 3.25 x 10¹²/l

Haematocrit 0.22 L/L

Fluid protein 43 g/l

Fluid Albumin 20 g/l

2.2. Based on the quantitative fluid analysis, how would you characterise this effusion?

- This effusion is consistent with haemorrhage.
also accept haemorrhagic exudate

Following stabilisation of the patient for general anaesthesia, you decide to perform a CT scan of the thorax (movie A and movie B). The sequences shown are in a pre-contrast lung window in a transverse plane and in a dorsal plane.

2.3. Excluding the pleural effusion, STATE the TWO most significant findings seen on the CT sequences. BE SPECIFIC about the location of any abnormalities.

- Extensive vesicular pattern identified within the LEFT cranial lung lobe (ESSENTIAL)
- Truncated (meaning we cannot follow the lumen to its normal termination) bronchus to this lobe

2.4. STATE your diagnosis based on the CT findings. BE SPECIFIC about the location of any abnormalities.

- Left cranial lung lobe torsion

Image A is an intra-operative image following a standard left 5th muscle splitting intercostal thoracotomy.

2.5. STATE THREE reported different techniques for lung lobectomy in this patient including SPECIFIC details on any equipment you will use.

- Surgical stapler (VA30)
- Individual ligation of lobar artery/vein/bronchus
- Two V-LOC or pre-tied suture ligatures.
- Traditional suture ligation

2.6. Why is it NOT recommended to untwist the lung lobe prior to removal?

To avoid release of inflammatory cytokines and endotoxins

2.7. Name IN ORDER the FIVE muscles you will need to individually re-appose during closure of the 5th intercostal thoracotomy.

- Intercostal muscles
- Serratus ventralis
- External abdominal oblique
- Latissimus dorsi
- Panniculus

Two hours after surgery an arterial blood gas sample is obtained whilst the dog is breathing room air. The results are (normal range in brackets):

pH 7.282 (7.35-7.45)

pCO₂ 54.7 mmHg (35-45)

pO₂ 44.5mmHg (86.5-97.7)

HCO₃ 23.6 mmol/L (20-24)

SO₂ 79.1% (>93)

2.8. Based on these results, STATE the next TWO most appropriate INTERVENTIONS.

Oxygen supplementation

Drain the thoracostomy drain (i.e. aspirate the pleural space)

You decide to drain the thorax and aspirate 1000ml of air and 30ml of serosanguinous fluid. The surgical incision is intact and sealed.

2.9. STATE THREE actions, which could be performed in the dog's kennel, to ensure this pneumothorax is NOT caused by entry of air in to the thorax from the external environment?

- Check the drain has not been dislodged/check drain positioning
- Check all the connections between the thoracostomy tube and the three-way tap etc
- Apply something occlusive (tissue glue or sterile Vaseline) around the drain exit hole in case there is air tracking along the subcutaneous tunnel and re-aspirate the drain

Repeated drainage of the thoracostomy tube over the next four hours confirms a persistent pneumothorax. You make the decision to re-open the thorax at surgery.

2.10. Examination of the previously stapled lobectomy site reveals leakage of air from the bronchus. What suture pattern would you use to seal the leak?

- Preplaced interrupted horizontal mattress sutures placed through the bronchial stump. The mucosa and cartilage on the distal edge of the bronchus are oversewn in a simple continuous pattern.

OR

- Continuous pattern of horizontal mattress sutures

--- END OF QUESTION ---