



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2013

Small Animal Surgery Paper 1

Perusal time: **Fifteen (15)** minutes

Time allowed: **Two (2)** hours after perusal

Answer **ALL FOUR (4)** questions

Answer **FOUR** questions each worth 30 markstotal 120 marks

Paper 1: Small Animal Surgery

Answer all four (4) questions

1. Linear external fixators can be used to stabilise comminuted mid-shaft long-bone fractures.

Answer **all** parts of this question:

- a) Name the type of bone healing that occurs in the above scenario (2 marks) and briefly describe the sequence of events that occurs with this type of bone healing from injury to one year post fracture repair. (8 marks)
- b) Discuss advantages and disadvantages of an external fixator that has been applied in a closed manner compared to open reduction and stabilisation by a dynamic compression plate applied as a buttress/bridging plate. (8 marks)
- c) Name **four (4)** categories of linear external fixator frame configurations and draw a diagram for each to illustrate the construct. (4 marks)
- d) List strategies to increase the strength and stiffness of an external fixator frame. (8 marks)

2. Answer **all** parts of this question:

- a) Compare the pathophysiology of Hansen type one intervertebral disc disease with that of Hansen type two intervertebral disc disease. (8 marks)
- b) Describe the neuromuscular control of urine storage and voiding. You may wish to use a diagram. (14 marks)
- c) You have examined the urinary bladder of a dog with an acute thoraco-lumbar intervertebral disc extrusion **and** a dog with a chronic severe lumbosacral compression. For **each** case listed above describe: (8 marks)
 - i. the neurological classification of bladder dysfunction
 - ii. the neuroanatomic localisation of the lesion
 - iii. the expected clinical examination findings pertaining to the bladder
 - iv. how these abnormalities affect control of micturition.

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3. Answer **all** parts of this question:

- a) Draw and label a diagram of the normal microscopic layers of articular cartilage in a mature dog. (6 marks)
- b) Define osteochondrosis and osteochondritis dissecans. (2 marks)
- c) Describe the pathophysiology of osteochondritis dissecans in a dog. (12 marks)
- d) List **four (4)** recognised risk factors for development of osteochondritis dissecans in the dog. (4 marks)
- e) List **three (3)** joints in which osteochondritis dissecans lesions occur in the dog. Identify the specific anatomic location most commonly affected within those joints. (6 marks)

4. Answer **all** parts of this question:

- a) Describe, with the aid of diagrams, the normal anatomy of the canine diaphragm. Include in your answer the muscular divisions and their attachments and the spatial relationship of the diaphragm to adjacent organs. (11 marks)
- b) Name the nerve that provides motor supply to the diaphragm. (1 mark)
- c) Name the abdominal organ that is most commonly displaced into the thoracic cavity in cases of traumatic diaphragmatic rupture in small animals. (1 mark)
- d) Describe the pathophysiological processes that occur as sequelae to traumatic diaphragmatic hernia in the following body systems:
 - i. respiratory system (8 marks)
 - ii. cardiovascular system (2 marks)
 - iii. gastrointestinal and hepatic systems. (7 marks)

End of paper



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Paper 2

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Answer **ALL FOUR (4)** questions

Answer **FOUR** questions each worth 30 markstotal 120 marks

Paper 2: Small Animal Surgery

Answer all four (4) questions

1. A one-year-old, male neutered cat presents to you having been hit by a car. Pelvic radiographs identify a right-sided sacro-iliac fracture/luxation, and a left-sided central acetabular fracture. You cannot identify a bladder silhouette on the radiographs.

Answer **all** parts of this question:

- a) List any additional diagnostic tests you would recommend for this patient, and justify your selection. *(10 marks)*

- b) Name the major peripheral nerve that is most commonly injured with pelvic fractures. Explain how to evaluate the function of this nerve with a physical examination. *(3 marks)*

- c) List the indications for surgical stabilisation of pelvic fractures in cats. *(4 marks)*

- d) Briefly discuss the principles of screw fixation of sacroiliac fracture/luxation that minimise surgical complications. *(5 marks)*

- e) List the principles of articular fracture repair. *(2 marks)*

- f) Briefly describe key steps in the surgical approach to provide adequate exposure for the acetabular fracture *(4 marks)* and the technique you would use for stabilisation. *(2 marks)*

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2. A nine-year-old entire male rottweiler presents for straining to urinate and defecate. On examination a large left-sided perineal swelling is observed and a perineal hernia is suspected.

Answer **all** parts of this question:

- a) Describe the anatomical anomalies that allow the perineal hernia to develop. (2 marks)
- b) Explain how this diagnosis may be confirmed during a physical examination. (1 mark)
- c) State the most likely cause of the straining to urinate. (1 mark)
- d) Describe the initial management of this patient. Include further diagnostic tests/imaging (4 marks) and stabilisation of the dog's condition prior to any surgery. (2 marks)
- e) The hernia is to be repaired using an internal obturator muscle flap.

Answer **all** of the following:

- i. List key anatomical structures used in the repair. (5 marks)
 - ii. Briefly describe the surgical technique for the internal obturator muscle flap. (5 marks)
 - iii. Name **one (1)** abdominal surgical technique that could be performed in this case in addition to the internal obturator muscle flap to address the cause of the stranguria. (1 mark)
 - iv. Explain why the internal obturator muscle flap technique is superior to anatomical reconstructive techniques. (1 mark)
- f) Name **two (2)** peripheral nerves that have the potential to be damaged during dissection or suture placement. (2 marks)
- g) If the internal obturator muscle flap technique is not successful state **two (2)** alternative techniques that can be used. (4 marks)
- h) The patient develops a rectal prolapse the first day after surgery. Name **one (1)** procedure for initial management and **one (1)** procedure if the prolapse does not resolve. (2 marks)

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3. Answer **all** parts of this question:

- a) List the **four (4)** specific conditions grouped under the heading of elbow dysplasia. *(4 marks)*
- b) Discuss the advantages and disadvantages of the following imaging modalities with regards to diagnosing elbow dysplasia: *(10 marks)*
 - i. radiography
 - ii. arthroscopy
 - iii. computed tomography.
- c) Discuss the management options available for a 10-month-old rottweiler with elbow pain due to fragmented medial coronoid process of the ulna. Include the advantages and disadvantages of these treatment options. *(16 marks)*

4. A three-year-old west highland white terrier presents with a two-day history of restlessness, retching, excessive salivation and regurgitation. Plain survey thoracic radiographs reveal a mineral density opacity in the oesophagus.

Answer **all** parts of this question:

- a) At what single location in the oesophagus are bone foreign bodies most likely to be found? *(1 mark)*
- b) List potential short-term complications of oesophageal foreign bodies. *(3 marks)*
- c) What is the most commonly encountered major long-term complication? *(2 marks)*
- d) List the appropriate anatomical location for a thoracotomy to remove an intrathoracic oesophageal foreign body located:
 - i. cranial to the heart base *(2 marks)*
 - ii. at the level of the heart base *(2 marks)*
 - iii. caudal to the heart base. *(2 marks)*

Question 4 continued over page

- e) Describe how an oesophagotomy incision may be sutured, justifying your answer (5 marks). Explain why there is an increased risk of dehiscence in oesophageal surgery in comparison to intra-abdominal intestinal surgery. (3 marks)
- f) Identify the appropriate location for a feeding tube to be placed in this patient. Justify your answer with reference to other possible options (2 marks). Explain **one (1)** technique for placement of the feeding tube. (8 marks)

End of paper