



Australian and New Zealand College of Veterinary Scientists

Fellowship Examination

November 2020

Small Animal Surgery

Paper 1

Perusal time: **Twenty (20)** minutes

Time allowed: **Three (3)** hours after perusal

Answer **ALL SIX (6)** questions

All **six (6)** questions are of equal value.

Answer **SIX (6)** questions, each worth 30 markstotal 180 marks

Paper 1: Small Animal Surgery

Answer all six (6) questions

1. Answer **all** parts of this question:
 - a) Briefly describe the sequence of events that occur in the development of implant-associated infection. Include in your answer, a description of the process of biofilm formation. *(7 marks)*
 - b) List the constituents of a biofilm. *(3 marks)*
 - c) Describe the mechanisms by which a biofilm may alter bacterial susceptibility to antibiotics. *(12 marks)*
 - d) Discuss the use of local and systemic antibiotics in the treatment of implant-associated osteomyelitis. *(8 marks)*

2. Answer **all** parts of this question:
 - a) Briefly describe the phases of small intestinal wound healing. *(10 marks)*
 - b) Compare and contrast the suture patterns available for hand-sutured small intestinal anastomosis. You do not need to cite specific references. *(8 marks)*
 - c) Briefly discuss the relative advantages and disadvantages of sutured, versus stapled, small intestinal anastomoses. Refer to the recent literature, where possible. *(6 marks)*
 - d) Discuss the current recommendations regarding the use of leak testing after small intestinal resection and anastomosis. *(6 marks)*

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

- a) Describe the microscopic anatomy of the canine meniscus, in terms of collagen fibre orientation and extracellular matrix composition. Explain how each component contributes to meniscal function during weight bearing. You may elect to use a diagram and/or table as part of your answer. *(12 marks)*
- b) List the components of the 'functional unit' of the canine meniscus. *(1 mark)*
- c) Describe the concept of 'hoop stress', as it relates to the transfer of load through the meniscus. *(5 marks)*
- d) Describe **two (2)** locations for transection when performing medial meniscal release. *(2 marks)*
- e) Discuss the effect of medial meniscal release and caudal hemi-menisectomy on femorotibial contact mechanics. *(10 marks)*

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4. Answer **all** parts of this question:
- a) Indicate what component of the haemostatic process is evaluated by each of the following tests in dogs. State **one (1)** possible cause of abnormalities for each test: *(6 marks)*
 - i. Buccal mucosal bleeding time (BMBT)
 - ii. Prothrombin time (PT)
 - iii. Activated partial thromboplastin time (aPTT).
 - b) Considering the proposed aetiology for delayed post-operative bleeding in the greyhound dog breed, describe why these tests are typically within normal limits in affected dogs. *(4 marks)*
 - c) Select the most useful laboratory test in the investigation of delayed post-operative bleeding in the greyhound. Broadly explain how this test works and why it is useful in such cases. *(6 marks)*
 - d) Describe your perioperative management of a greyhound undergoing femoral fracture repair, following motor vehicle trauma, to manage potential post-operative bleeding. *(10 marks)*
 - e) Describe the proposed mechanism of action for any medications you have suggested in 4 d). *(4 marks)*

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

a) With respect to thoracic vertebral body malformation (TVM) in dogs:

- i. List the **four (4)** most common breeds in which TVM is seen. *(1 mark)*
- ii. Briefly describe the proposed aetiology of TVM. *(3 marks)*
- iii. Discuss how TVM is proposed to result in neurological dysfunction. *(6 marks)*
- iv. Describe how the Cobb angle is measured and interpreted. Briefly comment on the relationship of measured Cobb angles in radiographic screening programmes and the development of clinical signs. *(5 marks)*
- v. Describe the reported risk factors for the development of clinical signs in dogs with TVM. *(4 marks)*
- vi. The term, 'hemivertebra', is often used to describe vertebral malformation resulting in kyphosis. Explain how the use of this term can be considered anatomically incorrect. *(2 marks)*

b) With respect to thoracolumbar spinal arachnoid diverticula in dogs:

- i. Define the term, 'spinal arachnoid diverticula'. *(1 mark)*
- ii. Describe the clinical signs seen with thoracolumbar spinal arachnoid diverticula and discuss how the typical neuroanatomical location of thoracolumbar arachnoid diverticula explains these clinical signs. *(8 marks)*

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6. With respect to vascular ring anomalies (VRA) in small animals.

Answer **all** parts of this question:

- a) Outline the normal embryogenesis of the thoracic arterial great vessels. You may use a diagram to support your answer. (8 marks)
- b) Describe the aberrant development that results in the most commonly documented clinical VRA seen in small animals. (4 marks)
- c) List the VRA types reported in the veterinary literature. For each type, name the approach required for open surgical correction of the VRA. (7 marks)
- d) Discuss the relative merits of the modalities available for the diagnosis of VRAs. (11 marks)

End of paper



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Paper 2: Small Animal Surgery

Answer all six (6) questions

1. Answer **both** parts of this question:

- a) Supraphysiologic loading is central to the currently accepted theory of the development of medial coronoid process disease (MCPD) in the dog. Discuss forms of joint incongruity that have been proposed to result in supraphysiologic loading through the medial coronoid process. *(15 marks)*
- b) Various ulnar osteotomy procedures have been proposed for the treatment of elbow joint congruity. With reference to the literature, justify your selection of the ulnar osteotomy technique for a one-year-old Labrador with cartilage erosion of the medial compartment. Include in your answer the relative advantages and disadvantages of your chosen technique, when compared to other techniques. *(15 marks)*

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

- a) Describe the expected clinical and radiographic findings for canine stifle osteochondrosis. Include in your answer, a brief explanation of the progression of an osteochondrosis lesion and how this relates to the development of clinical signs. *(10 marks)*
- b) Describe, in detail, the location of standard arthroscope, instrument and egress portals for stifle arthroscopy. You may use a diagram to support your answer. *(3 marks)*
- c) Describe, using a list, the modified Outerbridge scale for the arthroscopic evaluation of chondropathy. *(3 marks)*
- d) Define the terms, 'reparative' and 'restorative', as they relate to the treatment of osteochondrosis and give **three (3)** specific examples for each type of treatment. *(5 marks)*
- e) Compare and contrast the reported restorative techniques for the treatment of canine femoral condylar osteochondrosis. *(9 marks)*

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

- a) Describe the characteristics of oral malignant melanoma (OMM), squamous cell carcinoma (SCC), fibrosarcoma (FSA) and acanthomatous ameloblastoma (AA) in dogs. Include in your answer, patient signalment, predilection location, local biologic and metastatic behaviour, prognosis and median survival time. You may use a table to formulate your answer. (10 marks)
- b) You are presented with a 10-year-old female neutered Cocker Spaniel with an oral melanoma arising from the gingival mucosa of the right lower canine tooth (404). Compare and contrast the techniques available for the detection of lymph node metastasis in this patient. (10 marks)
- c) List the peri-operative and post-operative complications that are associated with major oral surgery in dogs. Briefly outline the strategies to minimise complications. (10 marks)

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

- a) List the predisposing factors and anatomic features that are thought to play a role in urethral sphincter mechanism incompetence (USMI) in dogs. (3 marks)
- b) Regarding urethral pressure profilometry, define the following terms, describe how they are measured, and how they support a diagnosis of USMI. (7 marks)
 - i. Maximal urethral closure pressure (MUCP)
 - ii. Leak point pressure (LPP)
 - iii. Stressed urethral profile.
- c) Describe, in detail, the surgical technique of placing an artificial urethral sphincter (AUS). Include in your answer, any implant preparation that may be required. (8 marks)
- d) Discuss the outcome of AUS placement for the treatment of USMI and how this compares to other reported surgical techniques. Refer to the available literature to support your answer. (12 marks)

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5. You are presented with a peracutely paralysed Dachshund, with compressive intervertebral disc extrusion at T13-L1, that has been confirmed on magnetic resonance imaging.

Answer **all** parts of this question:

- a) Describe the potential causes and the prognostic significance of depressed pelvic limb myotactic reflexes on physical examination in this patient. *(6 marks)*
- b) Discuss the role of intervertebral disc fenestration in the treatment of this patient, at both the affected disc space and other disc spaces. *(12 marks)*
- c) Briefly describe each of the following procedures, using a diagram if desired (a description of the soft tissue approach is **not** necessary). In your answer state whether the approach is appropriate for facilitating spinal cord decompression and prophylactic fenestration in this dog. *(12 marks)*
- i. Dorsal laminectomy via a dorsal approach
 - ii. Hemilaminectomy via a dorsolateral approach
 - iii. Mini-hemilaminectomy via a lateral approach
 - iv. Partial lateral corpectomy.

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

- a) State and describe a published technique for the preoperative identification of the thoracic duct(s) in a patient with chylothorax. *(3 marks)*
- b) List the procedures that have been reported to be successful in the surgical treatment of chylothorax. *(6 marks)*
- c) Justify, with reference to the literature, a procedure or combination of procedures for first-time chylothorax surgery in:
- i. a large dog, and
 - ii. a cat.

Describe a surgical approach or approaches for performing the procedures you have selected in **each** patient. *(21 marks)*

End of paper