



Australian and New Zealand College of Veterinary Scientists

Membership Examination

June 2016

Surgery of Horses

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

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Paper 1: Surgery of Horses

Answer all four (4) questions

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

- a) Describe the blood supply of a long bone in an adult horse and contrast this to the blood supply of a long bone in a foal. *(14 marks)*
- b) Explain the aetiopathogenesis of sequestrum formation following a laceration that exposes an area of bone in the lower limb of a mature horse. *(6 marks)*
- c) A displaced lateral condylar fracture is repaired using lag screw fixation to achieve rigid internal fixation. Following repair the fracture line contains areas of direct bone contact and areas where there are small gaps about 1 mm wide. Explain the processes of bone healing that can be expected in this fracture. *(10 marks)*

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

- a) Answer **both** parts of the following:
 - i. State the mechanism of action of phenylbutazone **and** explain how this relates to the major potential toxic effects of this drug. *(7 marks)*
 - ii. Outline how a hospitalised horse should be monitored for signs of toxicity during treatment with 4.4 mg/kg of phenylbutazone daily. *(5 marks)*
- b) Answer **both** parts of the following:
 - i. Name the class of drugs that tildronate belongs to and outline its presumed mechanism(s) of action in the horse. *(5 marks)*
 - ii. List the potential adverse effect(s) of this drug in the horse and contraindications to its use. *(6 marks)*
- c) Explain the proposed mechanisms of action and advantage(s) of intravenous hypertonic saline in a horse with hypovolaemia due to severe colic that requires prompt surgical management. *(7 marks)*

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

- a) Explain the role of the synovial membrane in joint health. Include in your answer an outline of the main structural features, cell types and functions of the synovial membrane. *(8 marks)*
- b) Briefly describe the mechanism(s) responsible for lubrication of a synovial joint. *(8 marks)*
- c) Briefly explain why triamcinolone is the preferred corticosteroid over methylprednisolone acetate for intra-articular use in horses with osteoarthritis. *(4 marks)*
- d) After arthroscopic removal of an osteochondral fragment of the distal aspect of the radial carpal bone and debridement of the fracture site, a 7 mm diameter defect extending to the subchondral bone plate is present at the dorsal aspect of the articular surface. Describe in detail the expected stages of healing of this defect. *(10 marks)*

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

- a) Answer **both** of the following:
 - i. Outline the mechanics of airflow during strenuous exercise in a normal horse. *(8 marks)*
 - ii. Explain the potential consequences of a reduced upper airway cross-sectional area on airflow mechanics. *(6 marks)*
- b) Identify and explain changes in the laboratory parameters obtained from a centrifuge, refractometer, hand-held lactate and glucose meters when differentiating a strangulating obstruction of the small intestine from a simple obstruction. *(8 marks)*
- c) Briefly discuss the components that are responsible for the normal strength and viscoelasticity of the superficial digital flexor tendon in the horse. *(8 marks)*

End of paper



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Paper 2

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Paper 2: Surgery of Horses

Answer all four (4) questions

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

- a) An owner requests that you manage a valuable horse with a core lesion in the superficial digital flexor (SDF) tendon using mesenchymal stem cell (MSC) therapy.

Answer **all** parts of the following:

- i. Name the most clinically studied and potentially useful source of MSCs to manage tendinopathy in the horse and list other sources of MSCs currently available. *(4 marks)*
- ii. Briefly comment on what evidence there is to suggest that intra-lesional injection of MSCs may be useful in the management of SDF tendinopathy in horses. *(4 marks)*
- iii. What is the preferred technique for delivery of the cells into a core lesion? *(2 marks)*
- b) A brood mare develops moderate ventral midline oedema and mucopurulent exudate from a ventral midline laparotomy incision 7–10 days after surgery for correction of a large colon volvulus. Outline how this incision should be managed. *(8 marks)*
- c) You examine a horse because of recurrence of mild unilateral epistaxis six months after treatment of an ethmoid haematoma with a series of intralesional formalin injections until it was no longer visible via nasal endoscopy. Outline the diagnostic approaches available and the advantages and disadvantages of **each** to maximise the chance of successful treatment. *(12 marks)*

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

- a) You are presented with a three-day-old colt for surgical correction of a ruptured bladder. A colleague has performed an abdominal ultrasound and observed a large volume of anechoic fluid in the peritoneal cavity and a defect in the dorsal aspect of the bladder. Prioritise the specific laboratory parameters that should be evaluated before inducing general anaesthesia for surgical correction **and** justify your response. (8 marks)

- b) A horse is presented with a deep, melting corneal ulcer. After discussing options with the client, the horse is placed under general anaesthesia so that a conjunctival graft may be performed.

Answer **all** parts of the following:

- i. Discuss what sample(s) should be collected from this eye and describe your collection technique. Comment on the laboratory testing that should be requested and how the results of these tests may affect the management of this case. (10 marks)

- ii. State the disinfectant type and concentration recommended to prepare the cornea for surgery. (2 marks)

- iii. Identify the main surgical principles that should be considered when performing a 360 degree conjunctival graft **and** explain the advantages of this procedure compared to a third eyelid flap in a horse. (10 marks)

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

- a) You examine a dressage horse because of grade two of five right forelimb lameness of four weeks duration. There is no pain on application of hoof testers. Distal limb flexion results in a moderate increase in lameness. The only palpable abnormality is moderate effusion of the digital flexor tendon sheath which the owner reports has been present for over a year. The lameness resolves following local anaesthesia of the palmar nerves performed just below the proximal sesamoid bones. Radiographic examination of the foot is unremarkable. You perform an ultrasound examination of the distal limb. Moderate effusion of the digital flexor tendon sheath is observed.

You decide to perform other blocks the following day in an attempt to further localise the source of lameness. List the intra-synovial blocks that may be helpful in this case. For **each** block indicate the structures that may be desensitised **and** comment on the specificity of the block. (20 marks)

- b) Outline and contrast the potential usefulness of ultrasonography and magnetic resonance imaging (MRI) of the horse if there was tendinopathy of the deep digital flexor tendon at the level of the navicular bone. (10 marks)

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

- a) A valuable mare in the last trimester of pregnancy has shown intermittent signs of abdominal pain of moderate severity for 24-hours and on rectal palpation you diagnose a uterine torsion.

Answer **all** parts of the following:

- i. Outline briefly how foetal viability can be assessed. *(3 marks)*
- ii. Briefly describe the reported options for surgical correction of uterine torsion in the mare. *(7 marks)*
- iii. List the main factors reported to affect prognosis for survival of the foal. *(2 marks)*

- b) A client telephones to report that a two-year-old Standardbred that was castrated earlier in the day has small intestine protruding 30 cm from the scrotum.

Answer **all** parts of the following:

- i. Briefly outline the immediate advice that should be given to the client. *(3 marks)*
- ii. Discuss how best to evaluate this case and describe the pre-operative management of this horse. *(7 marks)*
- iii. Describe the surgical management for this complication. *(8 marks)*

End of paper