

C-SAS.6 Small Animal Orthopaedic Surgery (A)

Credits: 10 (100 hours)

Provider: Veterinary Postgraduate Unit – Institute of Veterinary Science

RCVS Content Covered

The following outlines the modular content as set out by the RCVS.

Candidates are strongly recommended to take the ‘core’ Surgery module – Small Animal Surgical Practice (C-SAS.1) - before attempting this module. Whilst this module may be taken as a free-standing module, it assumes a sound understanding of the principles covered within C-SAS.1

The areas to be covered should include the following:

Bone biology

- Understanding of biology of normal and diseased bone and fracture healing
- Processes
- Understanding of basic biomechanics of bone and fracture repair

Fracture management

- Pre-operative assessment of trauma patient and recognition and treatment of associated injuries including provision of analgesia
- Pre-operative fracture planning
- Surgical anatomy
Candidates should be familiar with the commonly performed surgical approaches to the humerus, radius and ulna, femur, tibia and pelvis
- Understanding of AO/ASIF principles
- Biological osteosynthesis
Candidates should be familiar with the principles of this approach to fracture repair
- Thorough knowledge of fracture stabilisation techniques to include the uses and limitations of:
 - Casts and splints
 - Bone plating (compression, neutralisation, buttress), plate rod combinations and locking plates
 - Pin and cerclage wire
 - External skeletal fixation (advantages and disadvantages of different systems available including APEF)
 - Circular skeletal fixators and Ilizarov principles
 - Interlocking nails
- Management of fractures of fore- and hindlimbs, skull, spine and pelvis

A list of fractures that the candidate should be capable of performing is detailed separately. Candidates should be familiar with the principles of management of the technically more demanding fractures where practical experience is not expected.

- Special considerations applicable to articular and open fractures
Candidates should be familiar with the management options for articular fractures, complications of these injuries and how these complications can be managed. Candidates should be familiar with the classification of open fractures.
- Classification and treatment of fractures involving growth plates in immature animals
Candidates should be familiar with the potential complications of growth plate injuries and their management.
- Post-operative management to include the role of physiotherapy
Candidates should have an understanding of the more commonly used techniques used by physiotherapists to manage orthopaedic disorders.

Complications of fracture management

- Fracture disease- understanding the pathological processes involved and how to treat it.
Candidates should be familiar with the management of quadriceps contracture.
- Understanding the pathogenesis and treatment of delayed, mal- and non-union.
Candidates should be familiar with the classification of non-unions.
- Management of osteomyelitis

Pathogenesis and management of angular limb deformities

Candidates should be familiar with the aetiology and treatment options for angular limb deformities of the forelimb (carpal valgus/varus) and hindlimb (genu valgum).

Metabolic bone disease

- Aetiology, pathogenesis and treatment of:
 - Craniomandibular osteopathy
 - Metaphyseal osteopathy
 - Hypertrophic osteopathy
 - Nutritional bone disorders
 - Panosteitis

A detailed understanding of the pathology of these diseases is not expected.

Bone tumours

- Biology, diagnosis and treatment
Candidates will be expected to have an understanding of the biology, diagnosis and treatment options for osteosarcoma. Candidates should be familiar with the other malignant bone tumours and their treatment

A list of procedures is provided separately indicating the level of experience expected from candidates following the surgical route through the Certificate, and this applies to candidates taking this module.

Aim of the Module

The aim of this module is to develop in depth understanding of the principles of tissue healing and the physiological consequences of surgery on all body systems, and an ability to critically appraise current working practices with regard to preparation and management of the orthopaedic patient, the surgical environment, staff and instruments. It is anticipated that the information gained in this module be used to modify working practices and upgrade to 'best practice' techniques.

Learning Outcomes

At the end of the module, candidates should be able to:

1. demonstrate a systematic understanding of the anatomical, physiological, immunological and pathological processes involved in orthopaedic disease, including the relationship between orthopaedic surgery and the overall health status of the patient, and the role of surgical trauma in this relationship;
2. demonstrate a critical awareness of the role of asepsis, the preparation of theatre, personnel and patient for orthopaedic surgery and the importance of post-surgical nursing, nutrition and post-operative rehabilitation applying current evidence based medicine in order to achieve "best practice" standards;
3. demonstrate a comprehensive familiarity with the clinical presentation of the common orthopaedic surgical conditions affecting dogs, cats and small mammals;
4. evaluate critically the pharmacology and use of the major drug groups, especially antimicrobials, their applicability to the various orthopaedic surgical techniques and review and critically reflect on current practices in light of the knowledge gained;
5. demonstrate the ability to utilise a sound clinical reasoning process, incorporating evidence from the diagnostic database and scientific literature as well as the ability to appropriately adapt to client, animal and practice factors;
6. demonstrate the ability to recognise the appropriate orthopaedic case for onward referral.

Module Structure

The syllabus will be divided into 6 study units:

Study Unit 1 Bone Biology: This unit will review the biology of normal and diseased bone and the fracture healing processes; and the basic biomechanics of bone and fracture repair.

Study Unit 2 Fracture Management: This unit will cover pre-operative assessment and planning of the fracture case with treatment of associated injuries; Post-operative management; Surgical anatomy; Thorough knowledge of fracture stabilisation techniques; Understanding of the principles of AO/ASIF and biological osteosynthesis; Management of fore- and hindlimb, skull, spine and pelvic fractures with particular attention paid to open fractures and fractures affecting articular surfaces or growth plates.

Study Unit 3 Complications of Fracture Management: This unit will cover fracture disease, forms of abnormal union and osteomyelitis.

Study Unit 4 Pathogenesis and Management of Angular Limb Deformities: This unit will cover angular deformities of the limbs.

Study Unit 5 Metabolic Bone Disease: This unit will cover the aetiology, pathogenesis and treatment of Craniomandibular, Metaphyseal and Hypertrophic osteopathies, nutritional bone disorders and Panosteitis.

Study Unit 6 Bone Tumours: This unit will cover the biology, diagnosis and treatment of osteosarcomas and review the treatment of other malignant bone tumours.

Assessment Strategy

Portfolio of cases (20 case logbook presenting 20 cases of fracture management or management of angular limb deformities), 3 x reflective case reports (1500 words each) presenting cases of fracture management., 1 x short answer question and/or MCQ test and 1 x journal critique/journal club presentation (pass/fail)

PLEASE NOTE: It is your responsibility to ensure that you have access to sufficient appropriate cases where you were the primary decision maker to produce adequate material for the module. This may not be possible with some internship positions. You must also be aware of any limitations of your facilities that may make the accumulation of appropriate cases difficult or impossible.