My first fracture

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Selection of fractures that an individual feels capable of managing is a challenge; it is easy to let ambition outstrip ability. A methodical approach to fracture planning is required to allow appropriate case selection and decision-making. The FPAS aims to simplify the process of fracture assessment. A numerical score is assigned to the biology, mechanical and clinical factors associated with the patient's fracture. The cumulative score then gives a guide to the severity of the fracture and which management method is best employed. The actual score given is not critical; what is important is to go through the process of fully assessing the fracture and the patient to identify potential problems and apply pre-emptive solutions.

BIOLOGICAL FACTORS

This considers the healing potential of a fracture. The fracture itself and the overall health of the patient must be considered. In general a comminuted fracture will have a lower score than a simple fracture due to the degree of accompanying soft tissue damage present. Older patients with concurrent systemic disease will also be associated with lower scores. Conversely, young healthy animals with high healing potential have a higher score.

MECHANICAL FACTORS

Factors to be considered include the inherent stability of the fracture, the reconstructable nature of the fracture, fracture biology and injuries involving other limbs. Severely comminuted fractures are assigned a low score. The ability to reconstruct a fracture surgically and achieve load sharing between implants and bone will result in a high score. Where fracture biology is poor, healing will be prolonged and the mechanical challenge will be greater; as such, the score is lower.

CLINICAL FACTORS

Patient factors such as body weight and demeanour coupled with the ability of an owner to comply with post-operative instructions will influence the clinical score. It is best to assume that such factors increase the mechanical challenge and as such reduce the score. The demeanour of the patient and the capability of the owner can dictate the fixation system that is used.

APPROACH

As a general rule, fractures with lower scores will have both prolonged healing and present a greater mechanical

challenge and as such require robust and durable fixation.

All aspects of the proposed surgery should be considered. Are all the required implants and instrumentation available? Does the surgeon understand how the implant system works and how best it is applied, for example through an open approach or using a minimally invasive technique. How will direct or indirect fracture reduction be achieved? Can I ensure aseptic protocol? Do I have the skills to execute the procedure?

KEY LEARNING OBJECTIVES

- Approach fracture cases systematically using the fracture patient assessment system (FPAS)
- Recognize the importance of fracture planning
- Describe in detail how you will manage the fracture

MULTIPLE CHOICE QUESTIONS

1. Assessment of fracture biology is important when predicting the healing potential of the fracture. Which of the following would you expect to have the poorest fracture biology?
(A) Non-displaced distal tibial physeal fracture
(B) Comminuted distal radial fracture in a toy breed dog
(C) Transverse mid-diaphyseal tibial fracture in a skeletally mature dog
(D) Comminuted diaphyseal femoral fracture in a cat
2. Assessment of the mechanical challenge a fracture presents is important when considering how it should be stabilized. Which of the following would you expect to provide the greatest mechanical challenge?
(A) Distal diaphyseal transverse radial fracture in a toy breed dog
(B) Fracture of the lateral humeral condyle in 3-month-old Yorkshire Terrier
(C) Comminuted distal tibial diaphyseal fracture in a skeletally mature cat
(D) Non-displaced tibial diaphyseal fracture in a cat with an intact fibula
3. Minimally invasive osteosynthesis techniques aim to minimize disruption to the fracture biology during fracture repair. Which of the following is the least minimally invasive?
(A) Application of external coaptation
(B) Anatomical reconstruction of a comminuted femoral fracture
(C) Bridging osteosynthesis of a comminuted femoral fracture
(D) Application of an external skeletal fixator using a hanging limb technique