Basic principles of surgical approaches to the bones.

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MAGYAR KISÁLLAT ORTOPÉDIAI EGYESÜLET

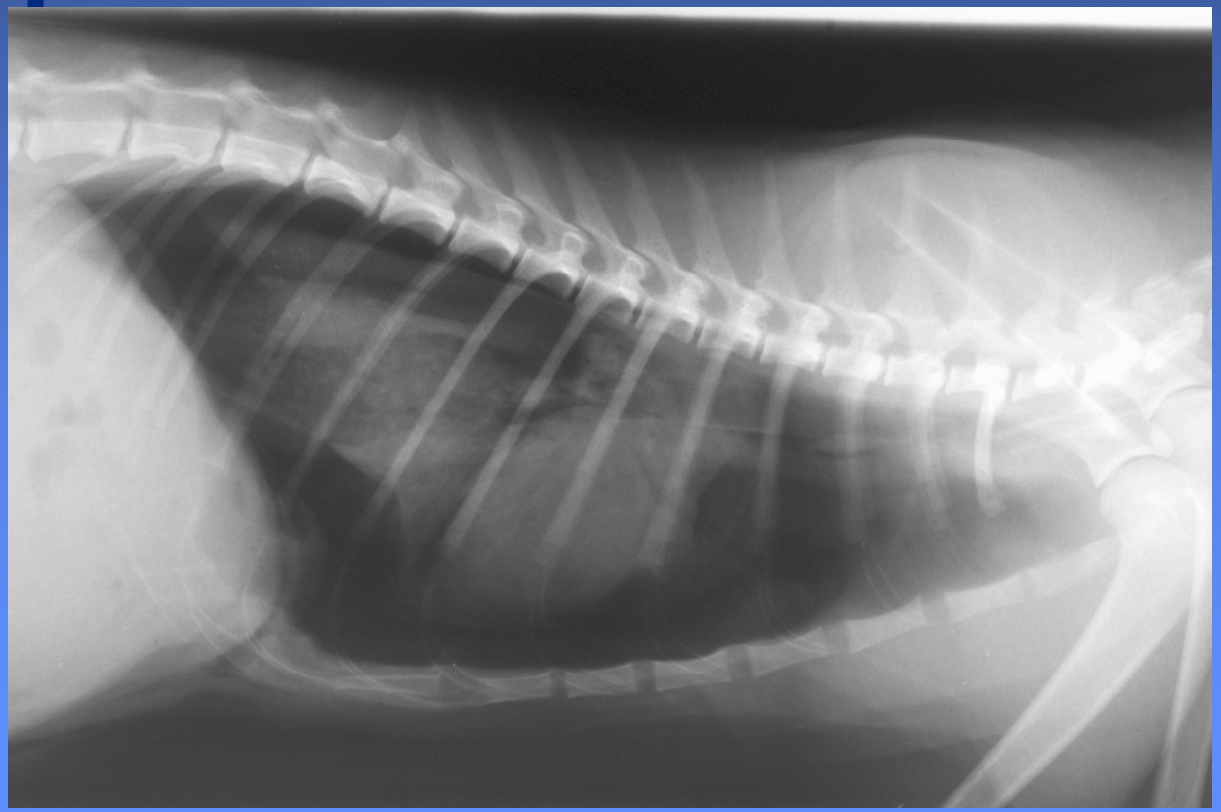
Bone fracture

is a complete or incomplete disruption in the continuity of the bone

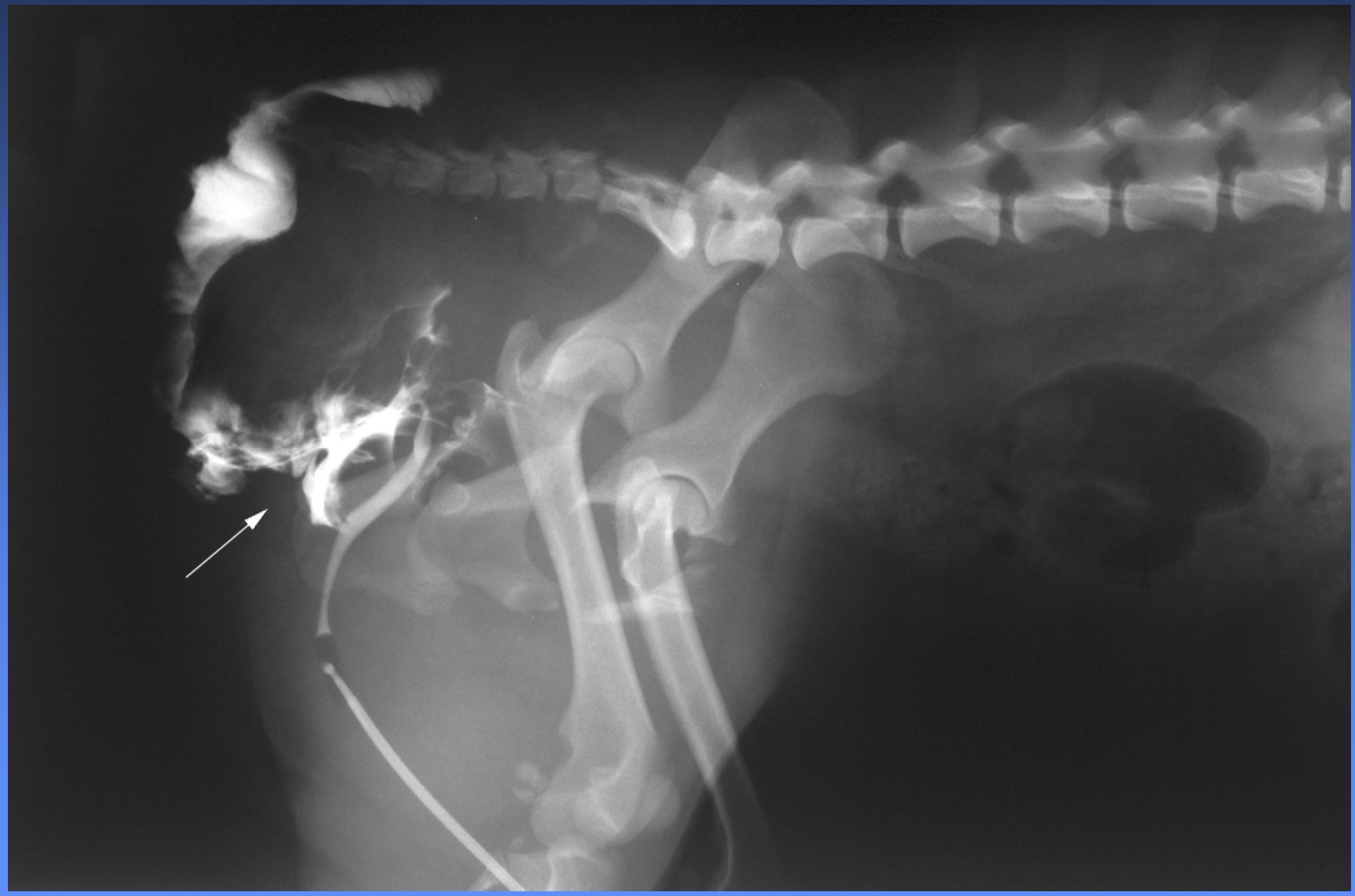
Trauma → Fracture

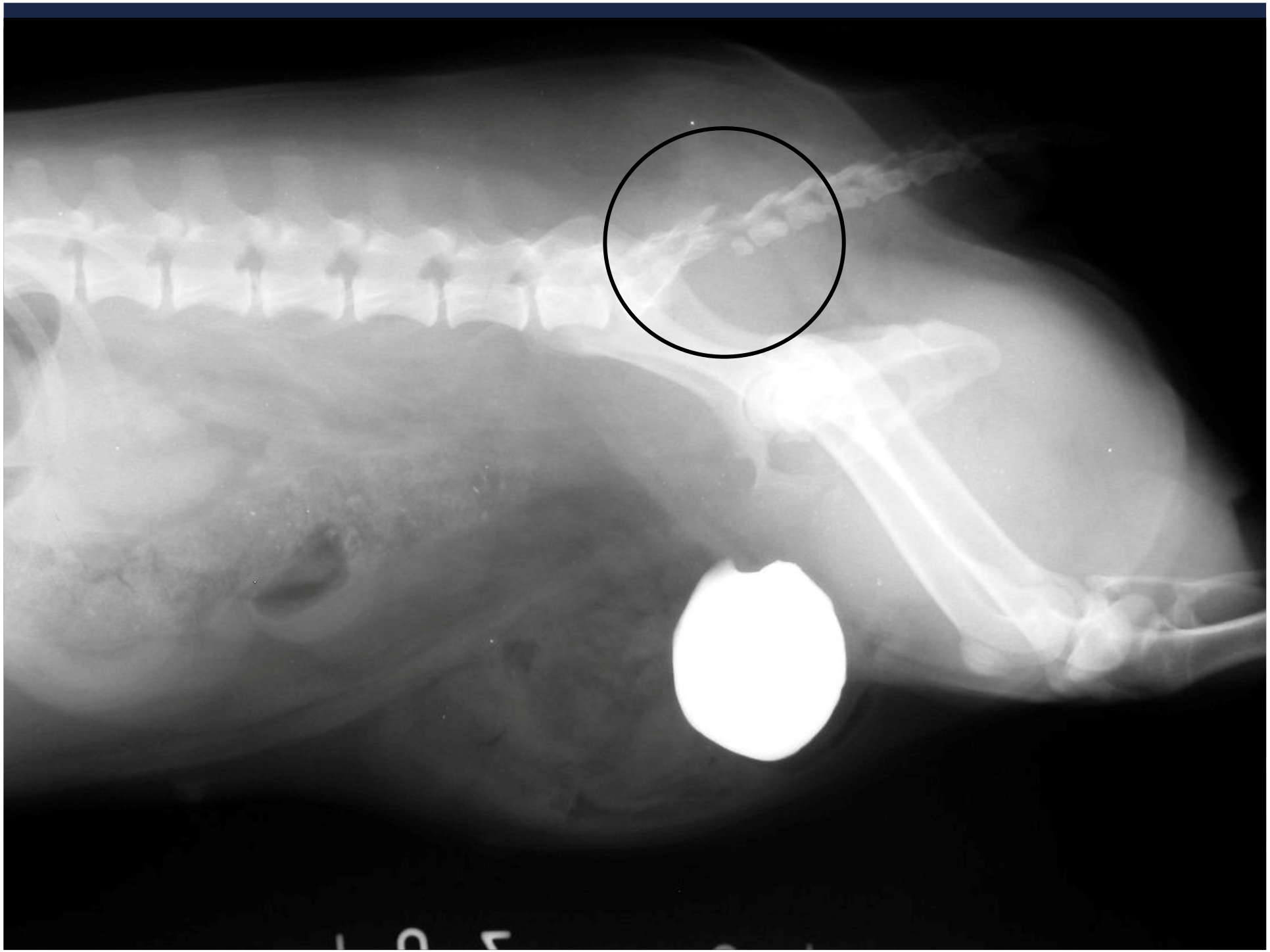
Life threatening conditions

PTX

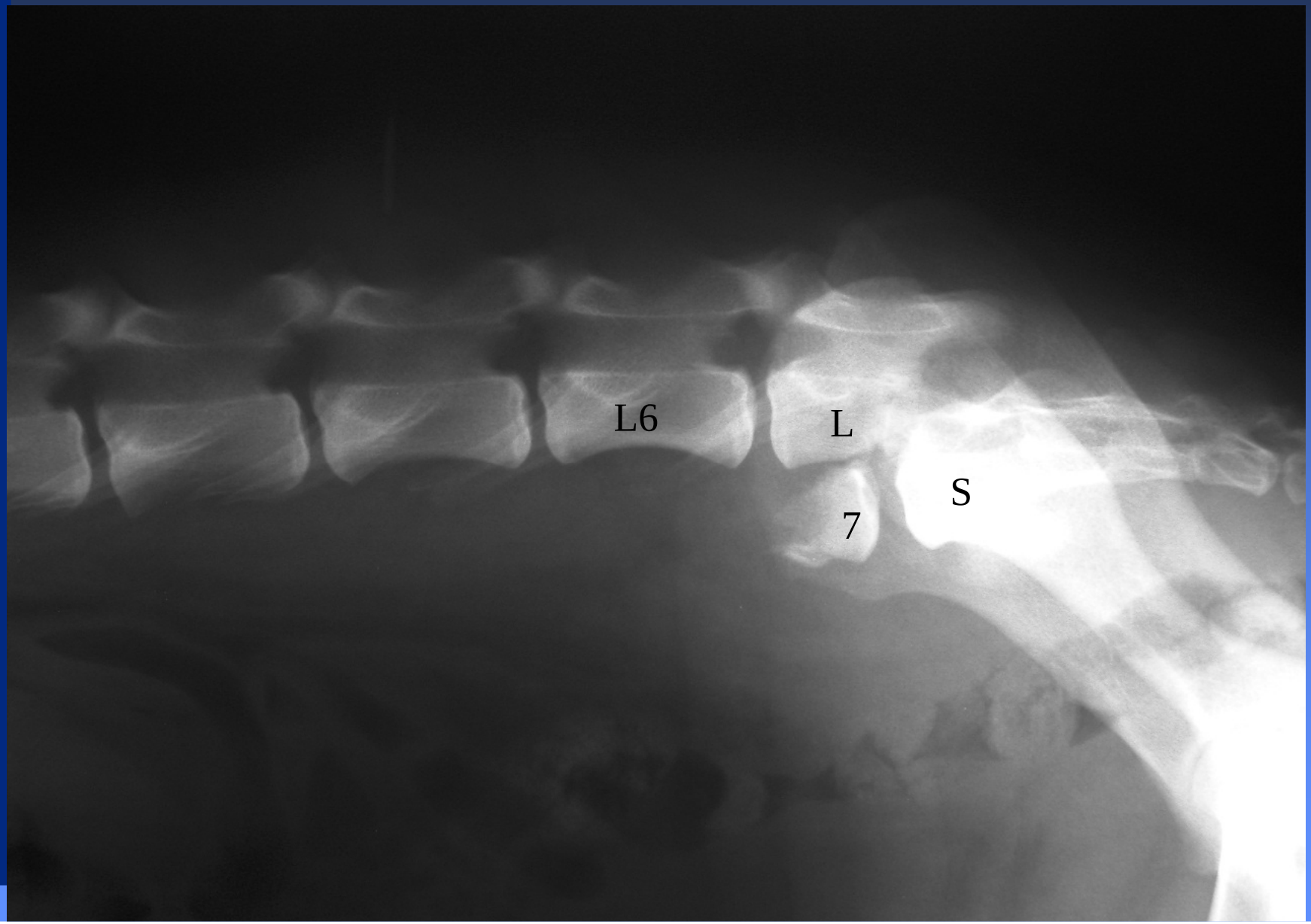


Life threatening conditions





Neural disorders



Focusing on fracture diagnostics

- Inspection of the gait
- Inspection of the leg
- Physical examination
- Auxiliary examinations

Inspection of the gait

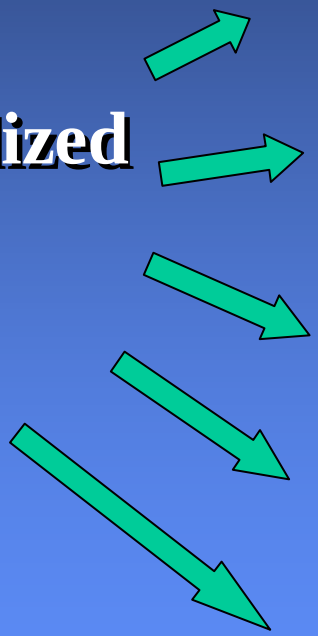
Signes of bone fracture

- Severe lameness (non weight bearing)
- Swelling, deformity
- Pain
- Abnormal mobility
- Crepitation

Abnormal mobility

Auxiliary examinations

When we localized the pain or abnormality



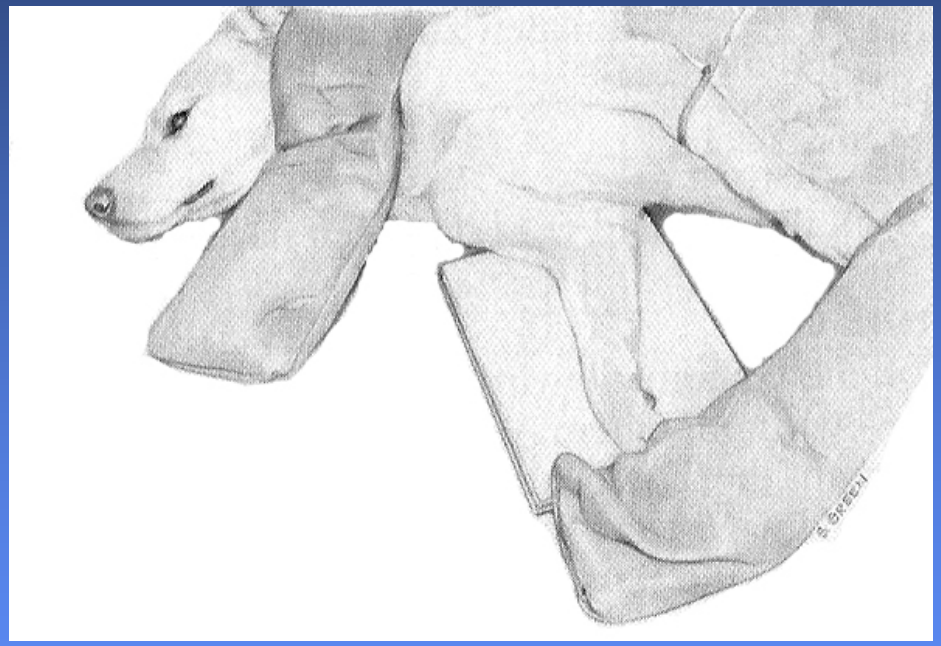
- **Puncture**
- **Citology**
- **X-ray**
- **arthroscopy**
- **C.T., M.R.I., scintigraphy**

Basic principles

- General anaesthesia
- Standard positioning
- Two plane – 90 degrees
- Including both articulations

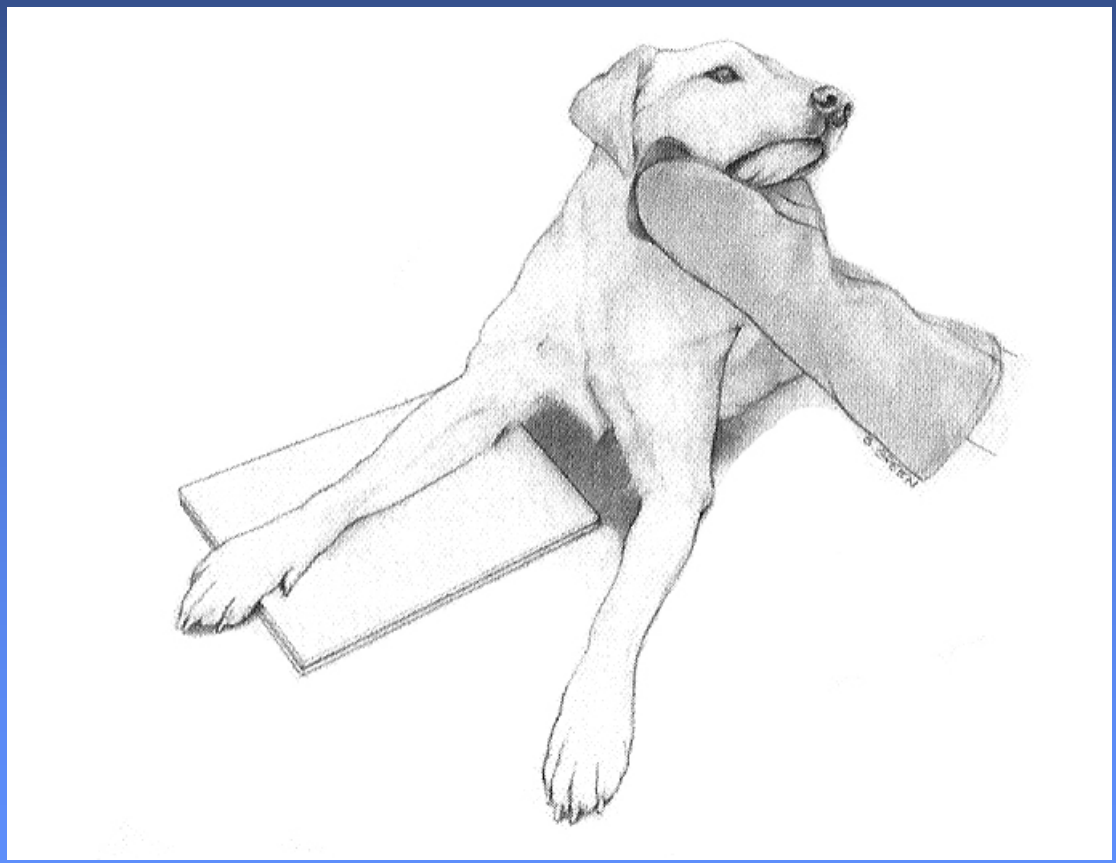
Two plane – 90 degrees

Medio-lateral



Two plane – 90 degrees

Cranio-caudal



Diagnostic work

Theory

-signalment

-history

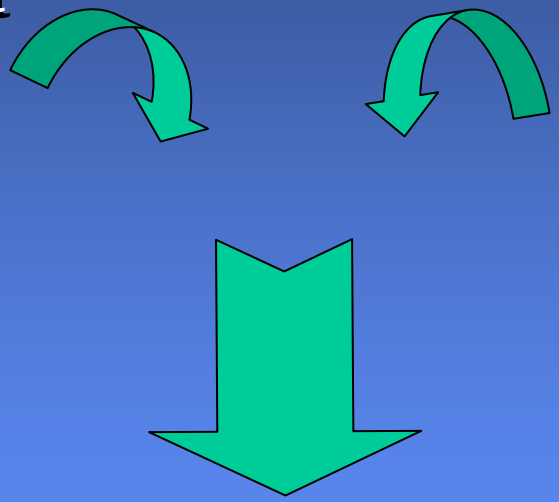
Facts - Findings

-inspection

-physical and

-auxiliary

examinations – x-ray



DIAGNOSIS → FRACTURE

Decision making

- Conservative
- Surgical

If the decision is surgery.

What is next?

Preoperative planning

Preoperative planning

Anaesthesia

- Temperature
- Fluid (blood pressure)
- Perioperative pain management

Fixation type

Preoperative planning

Anaesthesia

Fixation type

- The type and timing of surgical intervention must be guided by the degree of injury to the soft-tissue envelope and the physiological demands of the patient.

Surgical fixation methods

Internal fixation:

- Cerclage wires
- Pin fixation
- Tension band wire
- Intramedullary pins
- Screws
- Plate osteosynthesis
- Locking plates…

External fixation:

- External skeletal fixation (ESF)

Preoperative planning

Fixation type

- Hairclipping
- Positioning - draping
- Approach

Preoperative planning

Preoperative planning

Fixation type

- Hairclipping
- Positioning - draping
- Approach

Preop. planning

Failure to plan results in

- **Prolonged operating time,**
- **Excessive soft-tissue trauma and**
- **Technical errors**

Preop. planning

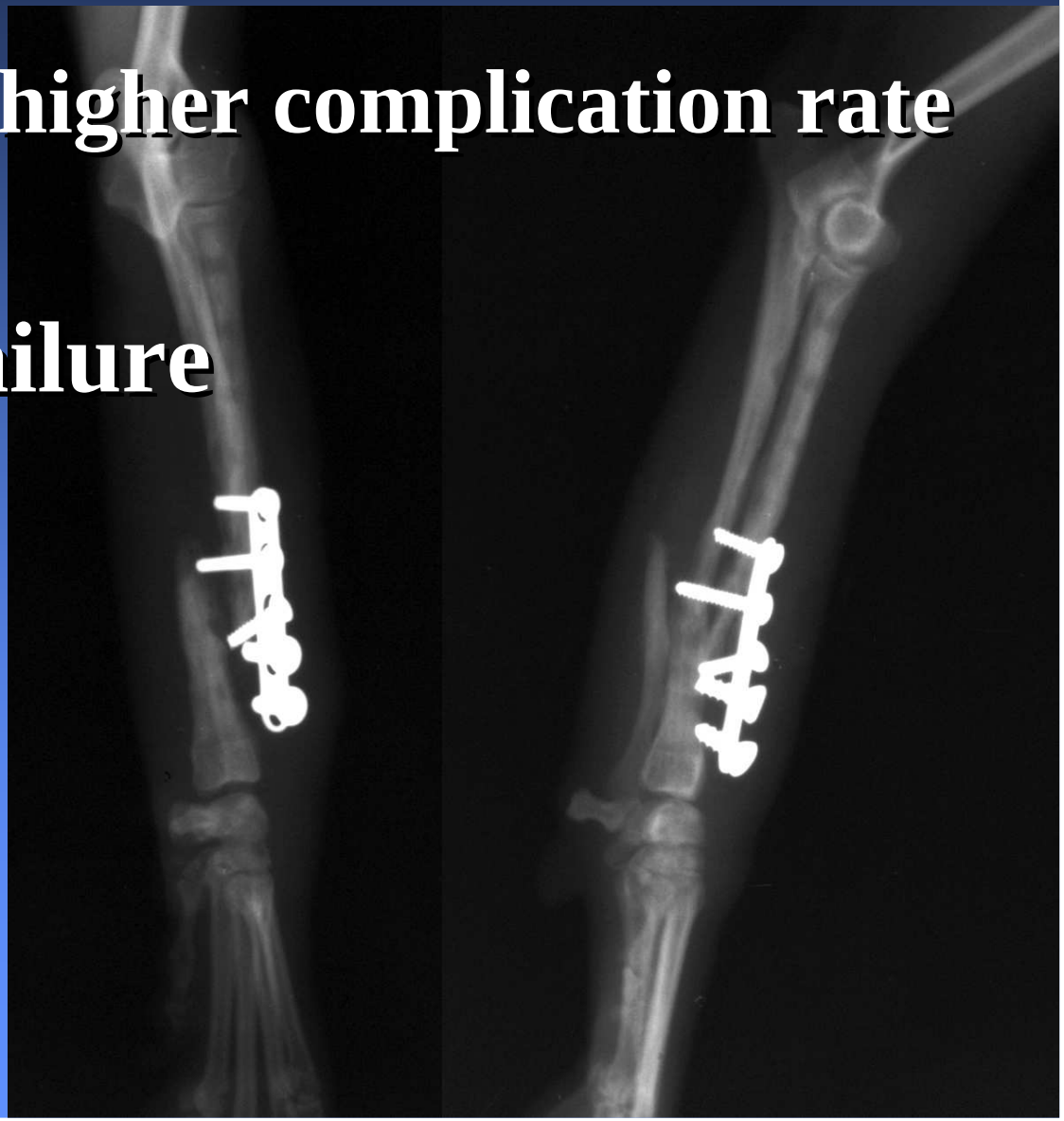
Failure to plan = higher complication rate

- **Infection**

Preop. planning

Failure to plan = higher complication rate

- **Implant failure**



Preop. planning

Failure to plan = higher complication rate

- **Delayed healing and non-union**

Preop. planning

- Correct patient positioning is imperative for adequate exposure and ease of reduction of the fracture

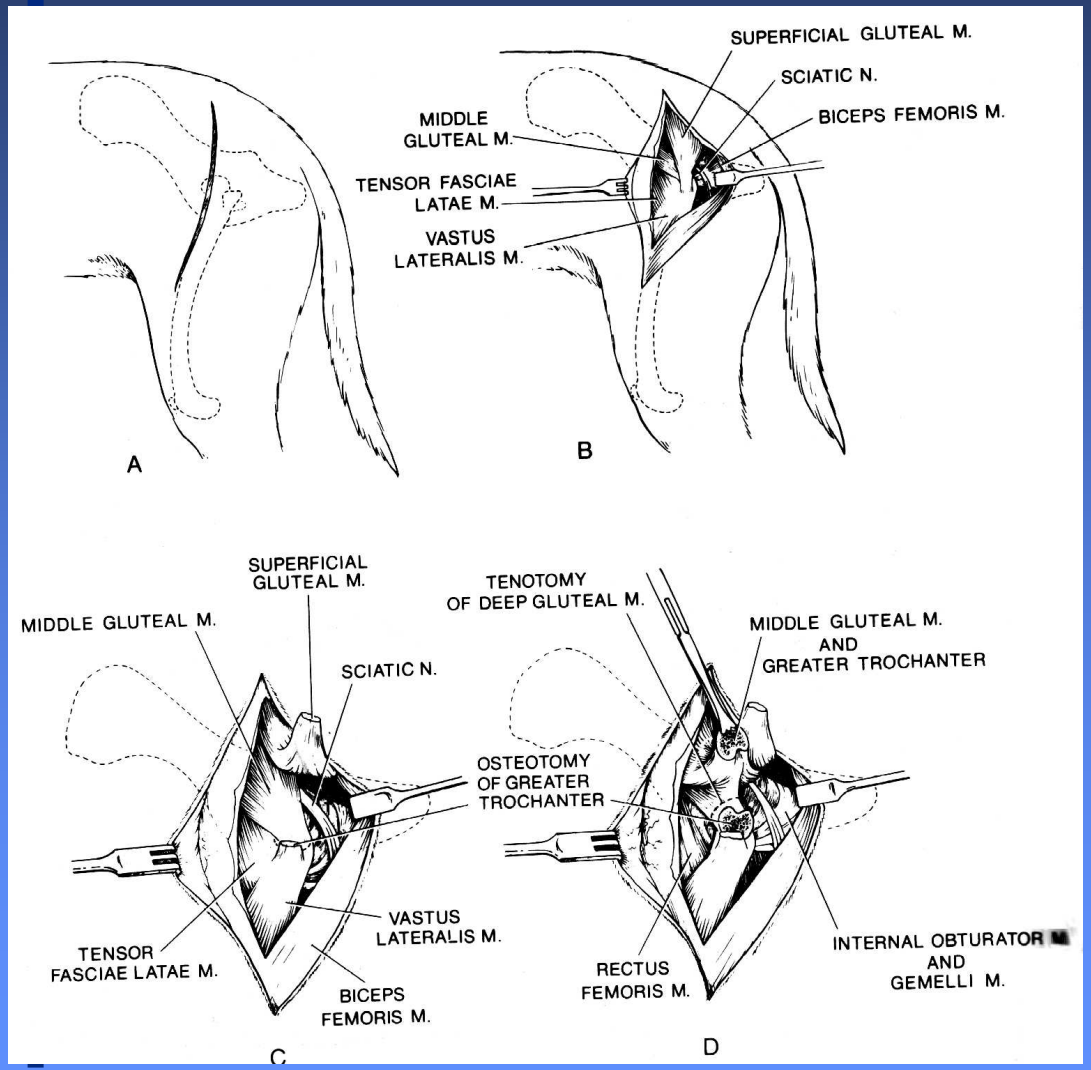
Major steps of internal fixation

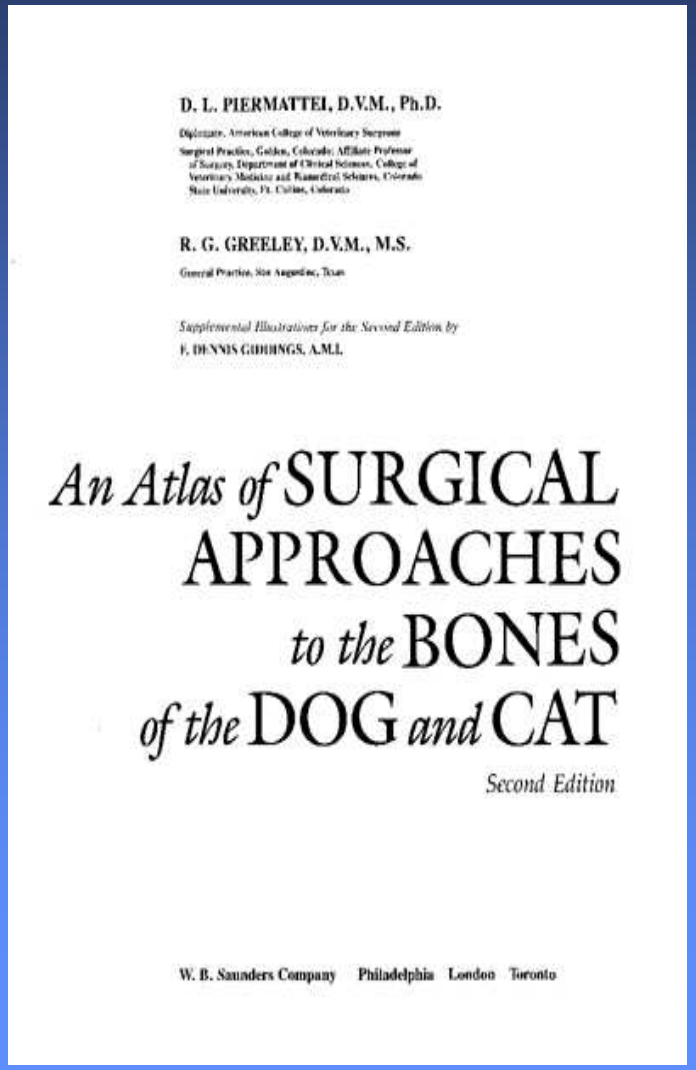
Approach – surgical anatomy

Reposition – adaptation and temporary fixation

Fixation = osteosynthesis

Approach – surgical anatomy





Surgical approaches

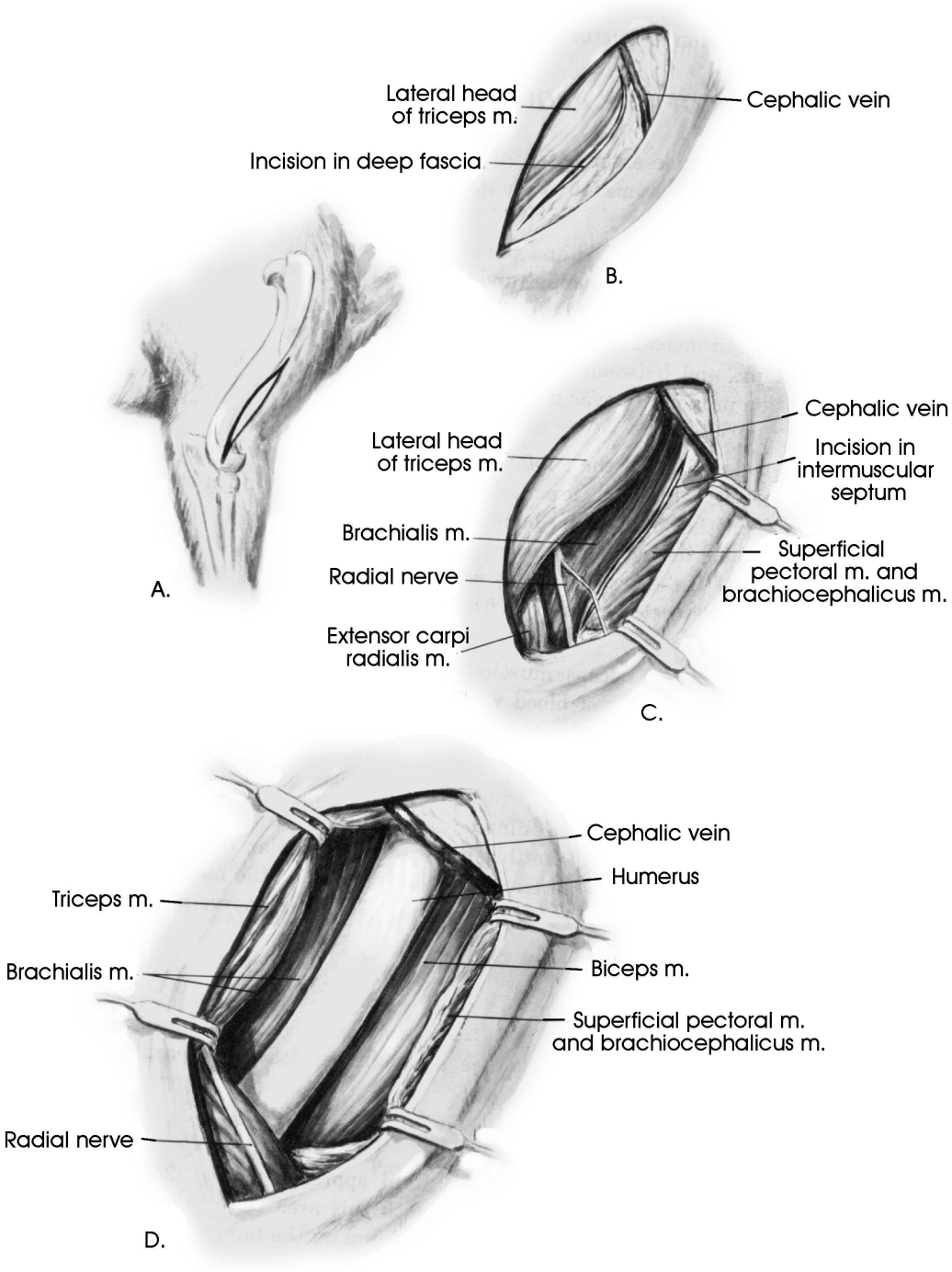
- expose fractured bone segments and fragments, so they can be anatomically reconstructed and held in position with implants

Surgical approaches

- should follow the normal fascial planes
- should be of sufficient sized to permit adequate exposure of all the fragments

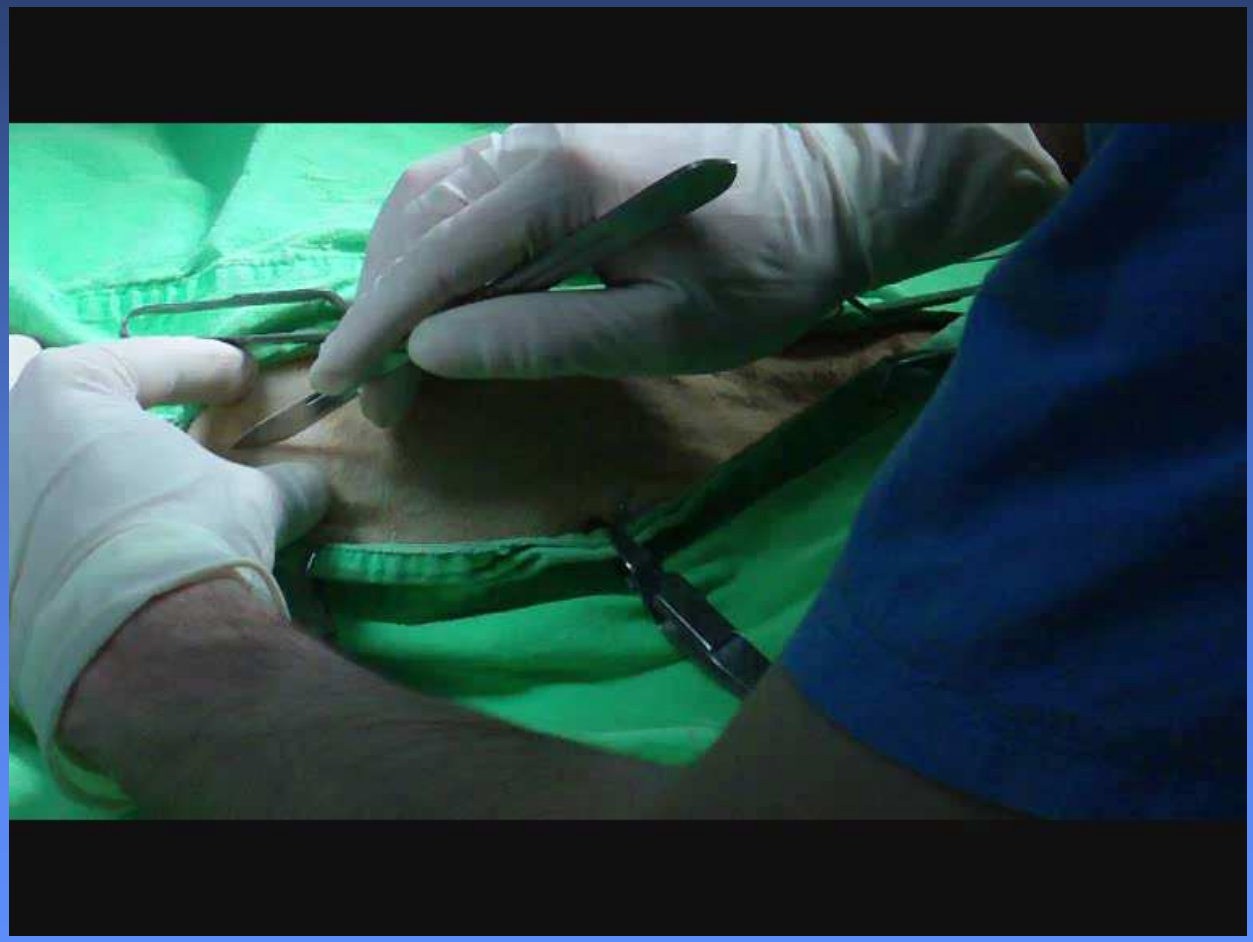
Approach

- Gelpi retractors
- Hohman retractors
- Raspatorium

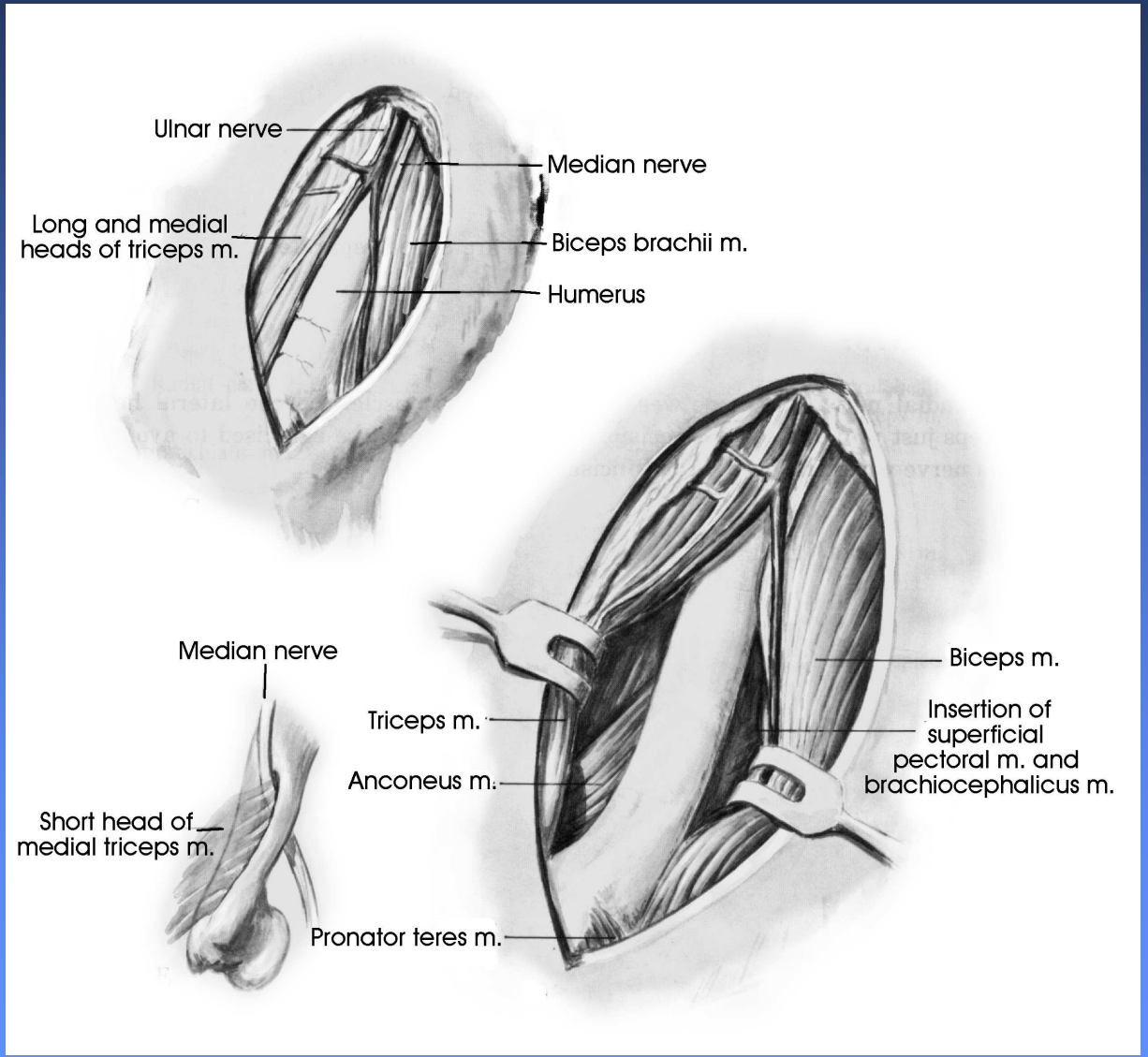


Lateral approach to humerus

Lateral approach to humerus



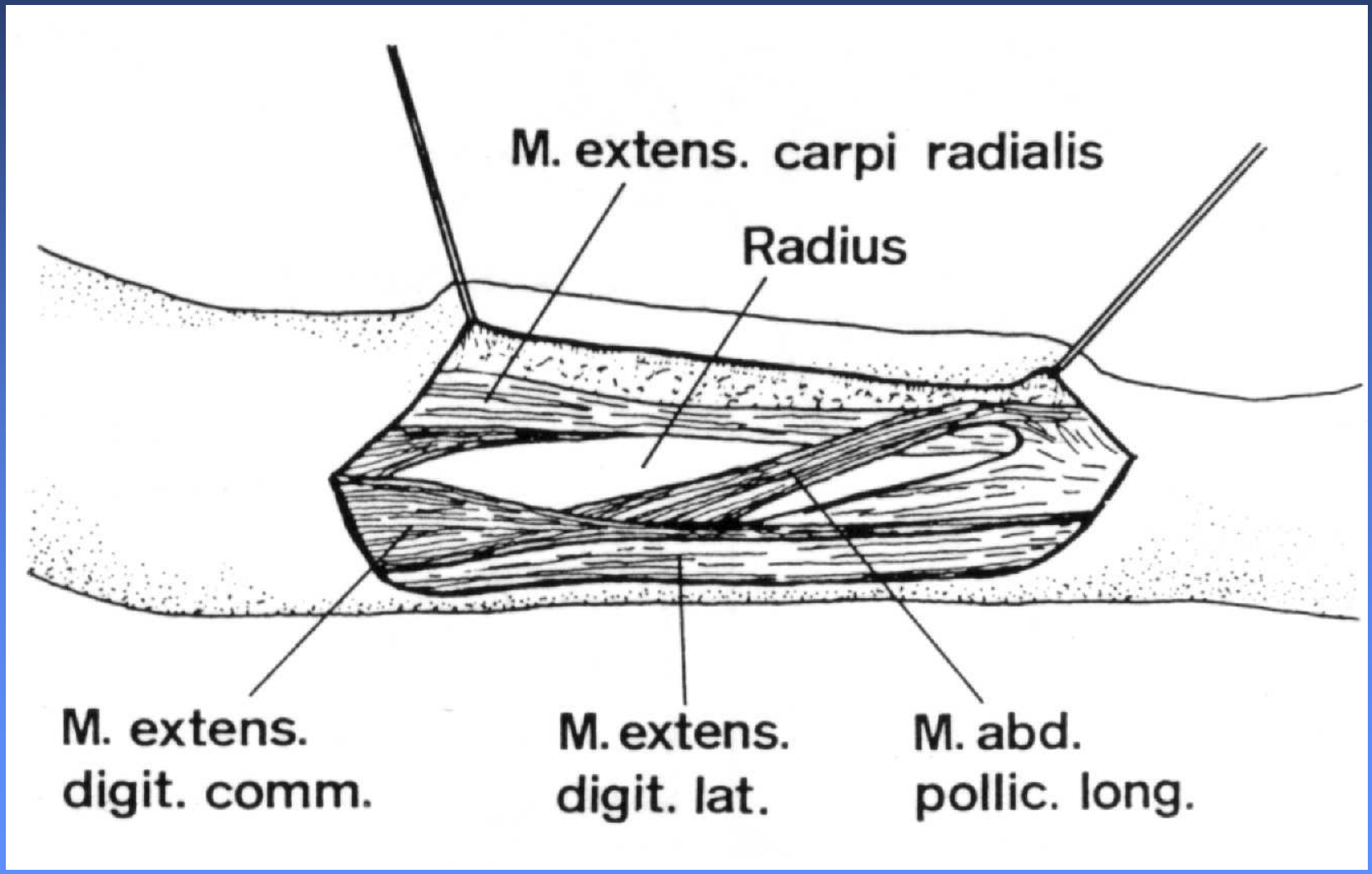
Medial approach to humerus



Medial approach to humerus

Surgical approaches

Lateral approach to Radius



How to fight against bacteria?

The infection rate of elective orthopedic surgery is reported to be between 2.5 and 4.8%

How to fight against bacteria?

Prevention is based on

- **Strict surgical asepsis**
- **Adequate surgical technique**

How to fight against bacteria?

- **The majority of orthopedic infections are caused by Staphylococcus intermedius originating from the skin**

Perioperative antimicrobial prophylaxis

- Administration of an antimicrobial agent prior to a surgical incision

Perioperative antimicrobial prophylaxis

- **If appropriately employed, a four-fold reduction in the rate of infection is achieved during clean orthopedic procedures!**

Perioperative antimicrobial prophylaxis

Recommended when

- **The procedure time exceeds 90 minutes,**
- **Metallic implants are used**
- **Extensive soft-tissue injury is present**

Perioperative antimicrobial prophylaxis

The antimicrobial should be given at least 30 minutes prior to the surgical incision to achieve adequate tissue concentration at the time of surgery!

Perioperative antimicrobial prophylaxis

- **cefazolin is the antimicrobial of choice of most veterinary surgeons**
- **Dosage: 22-30mg/kg i.v.**

Thanx for the attention!

Don’t be shy to ask anytime!!!