Avian Orthopedics

WRNC Jan 17, 2026

Goals

- Proper triage
- Prognosis and repair options for various fractures
- Post-op care and protocols

Why bother?

- We are generally dealing with healthy birds
- Prognosis can be quite good
- Recovery can be very dramatic

Factors affecting prognosis

- Bone exposure
- Proximity to a joint
- Chronicity – is the patient emaciated?

Our patients have to be close to perfect for a successful outcome.

Immediate needs/goals

- Stabilize the bird
- Immobilize bones
  - Prevent desiccation
- Prevent further stress and injury

Stabilization

- Most fractures are not immediately fatal, but shock and stress are.
  - Warm fluids SQ BID/TID
  - Pain control with meloxicam and butorphanol
  - Start antibiotics if open fracture or if surgery will be needed
    - Enrofloxacin +/- clindamycin

Wound care

- Use anesthesia
- Warm NaCl or LRS is always best
- Wear gloves!

Bone exposure

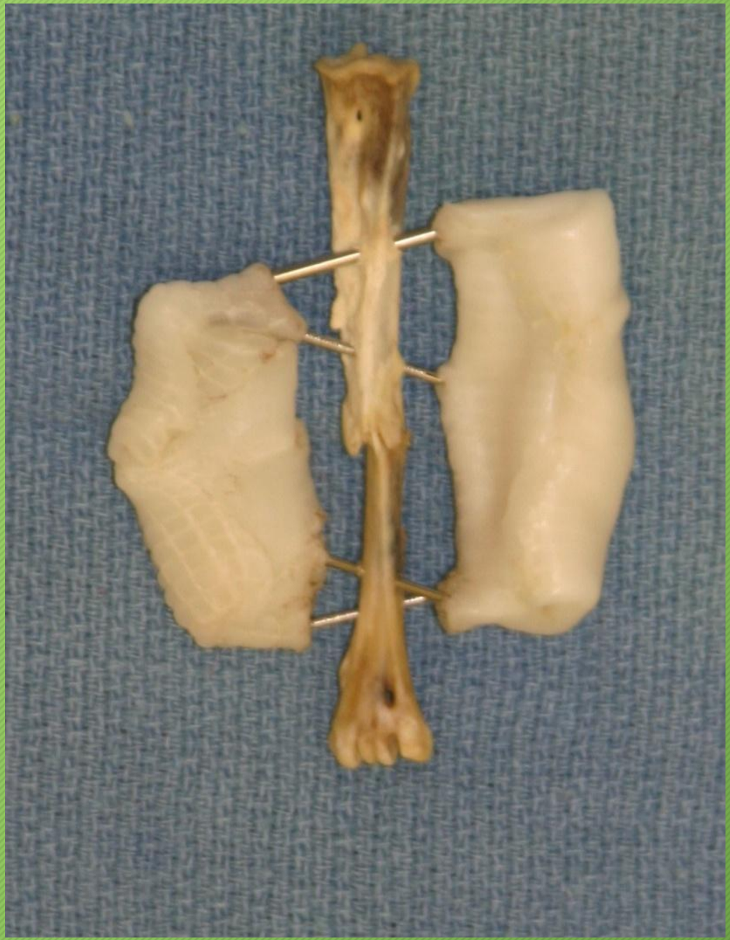
- Must prevent desiccation by covering with skin, if possible. **THIS IS AN EMERGENCY**
  - Can use temporary sutures if necessary
  - Can also use collagen/gel dressings
- Use Duoderm – saline-soaked Telfa does NOT work!
- Start systemic antibiotics (enrofloxacin + clindamycin)
- Surgery ASAP

Stabilization

- Figure 8 bandage for ulna/radius/metacarpal fractures
- Figure 8 + body wrap for humerus and coracoid fractures
- Padded splint +/- ball wrap for fractures distal to the knee
- Not much can be done for femur fractures. Surgery indicated ASAP.

Orthopedic supplies

Orthopedic supplies



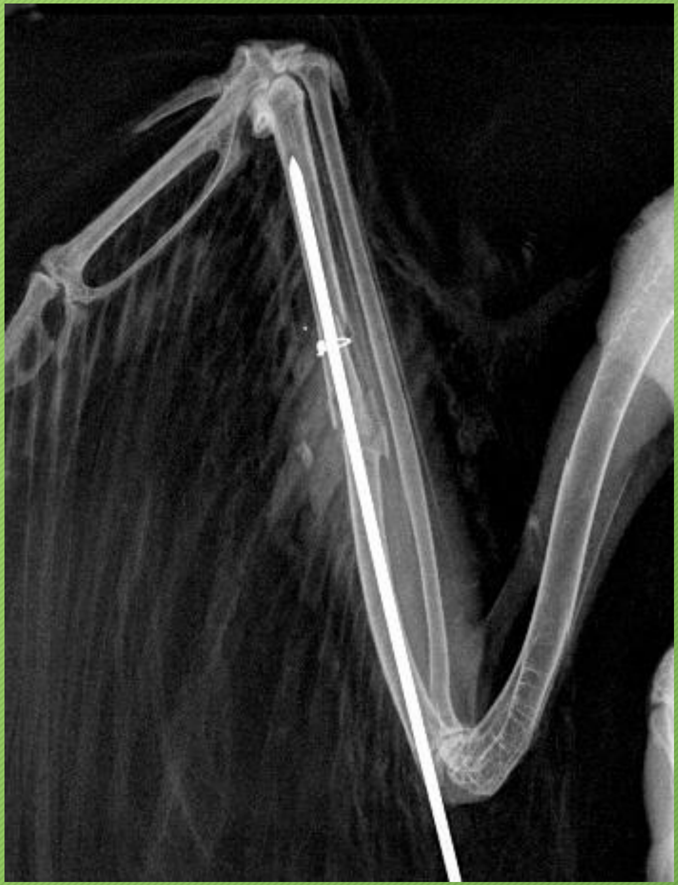
A few more points

- Examine entire bird including eyes.
  - Don’t want to put a bird thru surgery if it is blind.
- If surgery is necessary, do it quickly.
  - Ideally within 2-3 days of admission
  - Goal is within 24 hours

Ulna fracture

- Probably most common fracture
- Usually a closed fracture
- If alignment ok, figure-8 bandage and PT may be enough
- IM pin +/- ESF

Ulna fracture – post-op



Goal is to

- ☐ Prevent callus from bridging to the radius
- ☐ Provide ***reasonable*** alignment

Ulna fracture – bad pin placement

Ulna fracture

Ulna fracture – IM-ESF

Ulna/radius combo fracture

- Almost always open with massive soft tissue trauma
- **Very** difficult to splint. Needs surgery immediately.

Ulna/radius combo fracture

Ulna/radius combo fracture

Ulna/radius combo fracture

Ulna/radius combo – post-op

- Staged removal of implants
- IM pin in ulna
- IM pin placed in radius but this can interfere with the wrist joint
  - Remove it early (2-3 weeks)

Extremely comminuted

5 weeks later

Don’t rush into surgery

4 days later…

No surgery required

Humerus fractures

- Very variable.
  - Midshaft, distal, proximal
  - Transverse, oblique
  - Comminuted or simple
- Can have severe soft tissue trauma.
- Severe muscle contracture common.
- Bone exposure VERY common
- Immediate stabilization requires a figure-8 wrap + body wrap.

Anatomy – radial nerve

Long oblique, midshaft

IM-ESF + cerclage wires

External fixator configurations

Highly comminuted

Highly comminuted

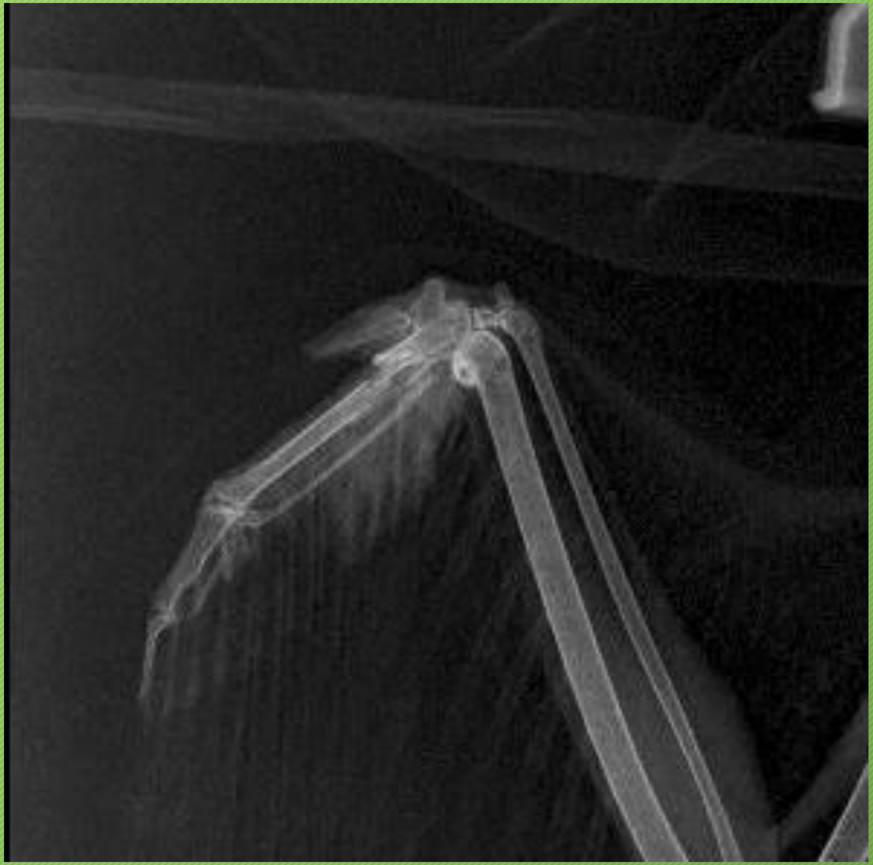
External fixator tie-in

- Disadvantages
  - Technically more challenging. Placing pins can cause damage.
  - Increased surgical time
  - More pin tracts to take care of
  - Very difficult/impossible in small birds?
- Advantages
  - Fixation is MUCH more rigid
  - Can remove wrap sooner (2 days vs 3 weeks).
  - **Definitely the treatment of choice**

Metacarpal fracture

- Figure-8 wrap can work.
- IM pin for proximal or unstable fractures.
- IM-ESF in larger birds?

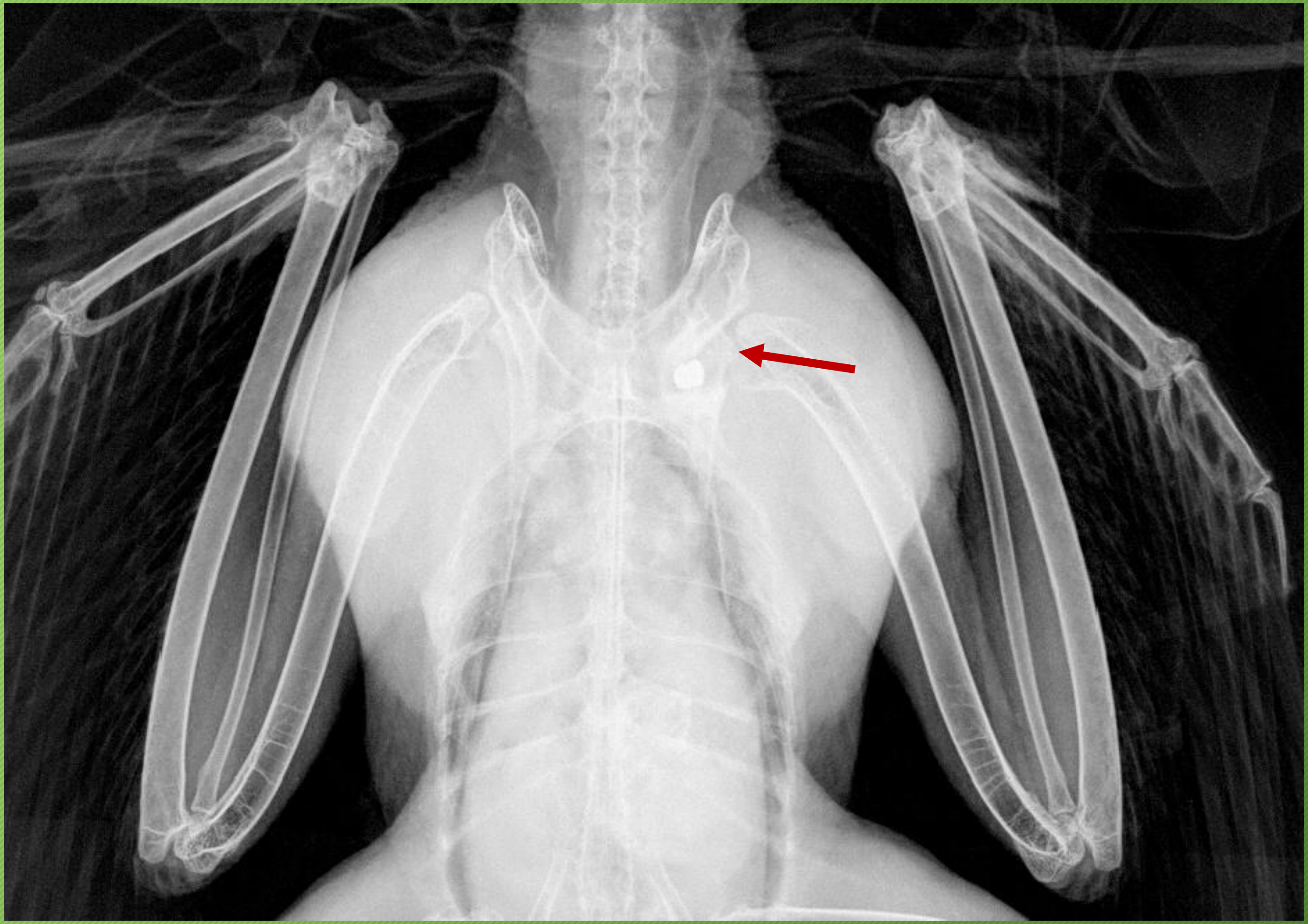
Metacarpal fracture



Coracoid fracture

- Window strikes
- Very difficult to palpate
- Surgery is NOT indicated
- Treat with figure-8 + body wrap for 3 weeks with intermittent PT OR just cage rest.
- Prognosis is very good

Coracoid fracture



Coracoid fracture

Femur fracture

- Large muscle mass. Can be missed on physical exam.
- Usually midshaft
- Bumblefoot can result in opposite foot if not adequately stabilized.
- Splints/wraps are not effective

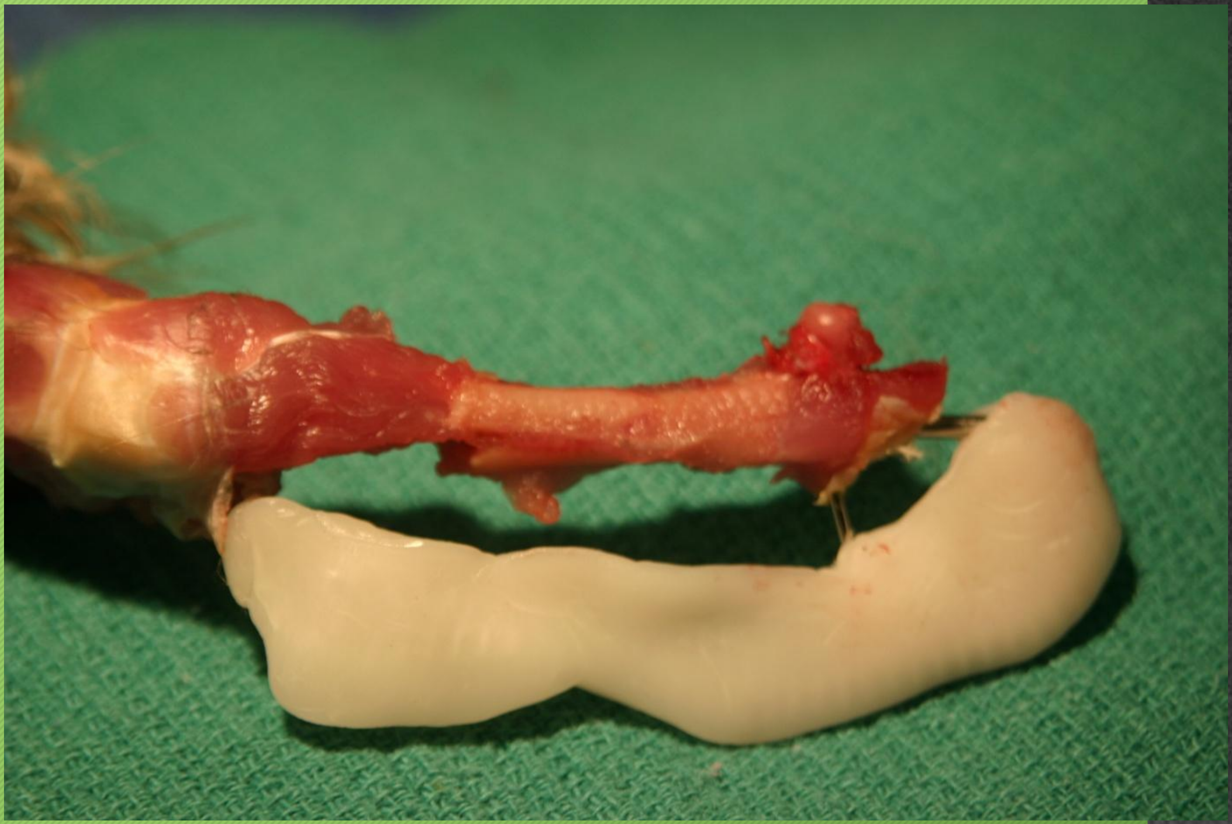
Femur fracture

- IM pin will migrate/fall out. THIS DOES NOT WORK WELL.
- External fixator tie-in MUCH more rigid.
- Should blunt the pin at the stifle

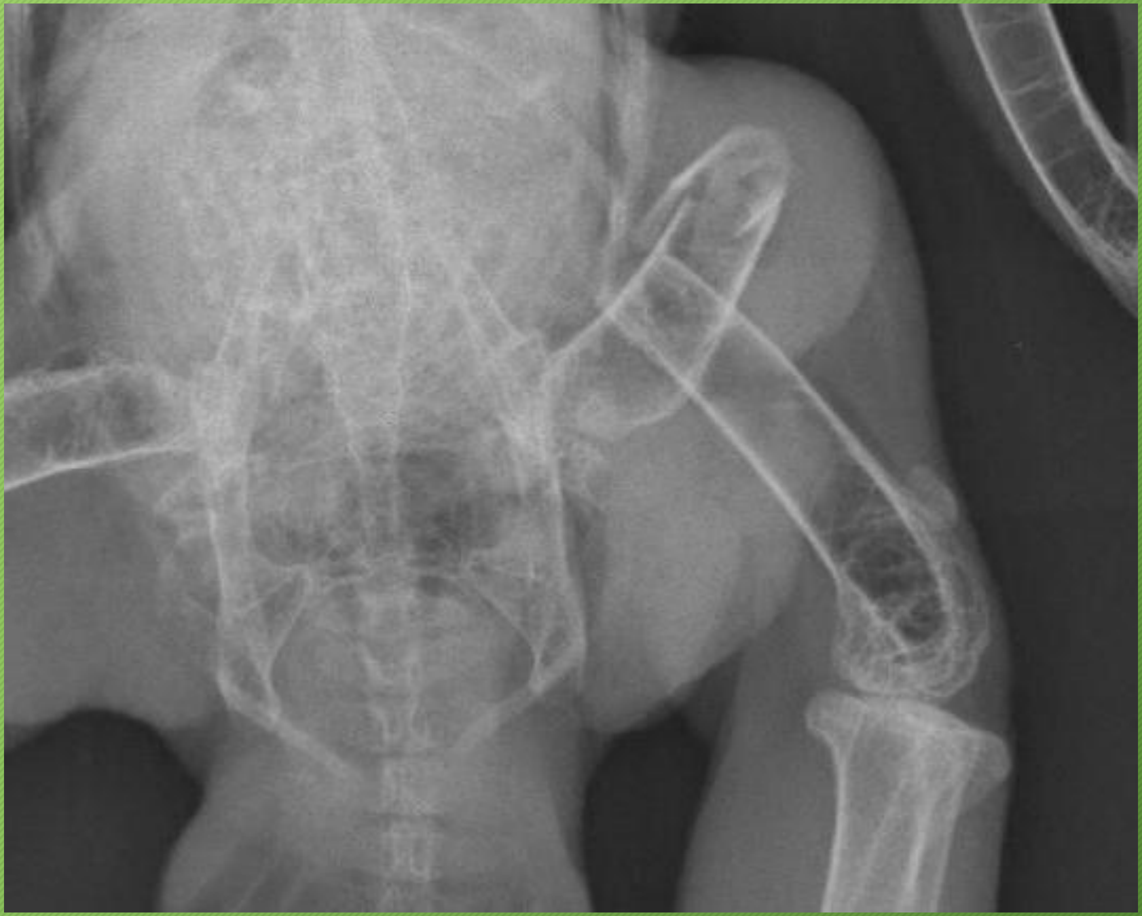
Femur fracture – tie-in fixator

Femur fracture – tie-in fixator

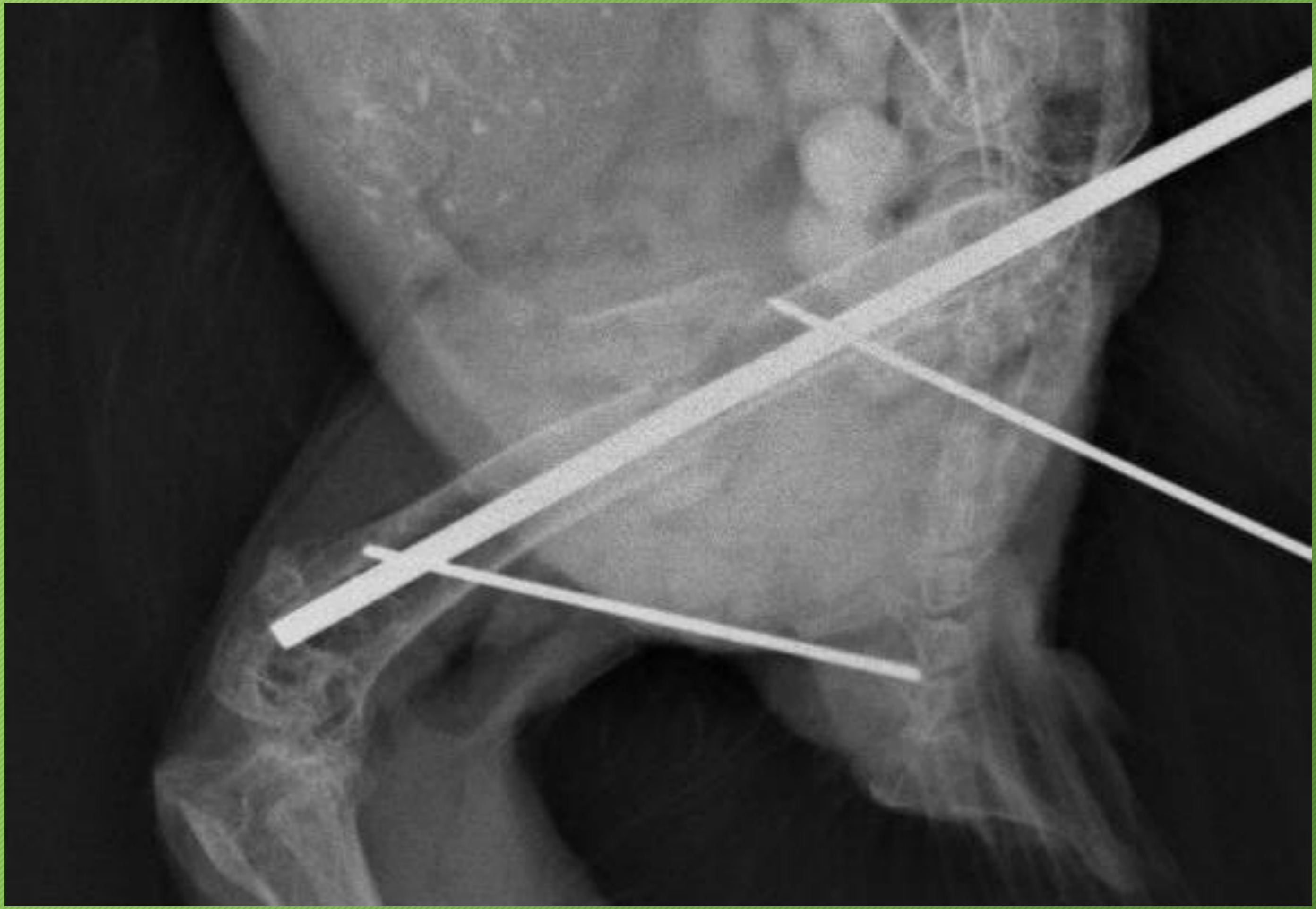
Femur fracture – tie-in fixator



Femur fracture



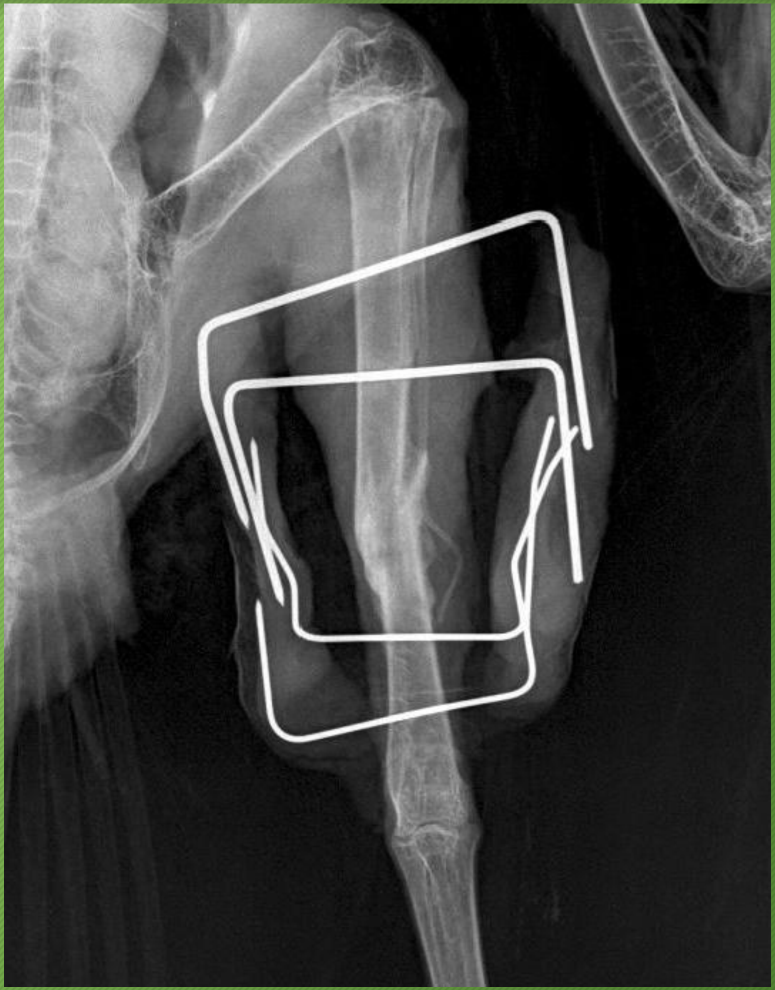
Femur fracture – IM-ESF



Tibiotarsus

- IM pin + ESF is usually best choice
- IM-pin + shuttle pin is also an option
- ESF alone does **not** work well
- Pin placement can be difficult
  - Severe swelling – large soft tissue mass
  - Tibiotarsus has odd cross-section

Tibiotarsus – Turkey vulture



Tibiotarsus – Red-shouldered hawk

Tibiotarsus - Red-shouldered hawk

Tarsometatarsus

- Very little soft tissue covering. Tissue distal to fracture can become necrotic if blood supply is compromised.
- Toe swelling is bad prognostic indicator.
- Temporary padded splint +/- ball wrap +/- coat-hanger side bars can be effective temporarily or in very young birds.
- Bumblefoot can result in opposite foot if not adequately stabilized.

Tarsometatarsus

TMT has a C-shaped cross-section. Must be very careful when placing pins.

Tarsometatarsus

Tarsometatarsus

Implant removal

Pull pin when

- fracture is stable on palpation **and**
- there is radiographic evidence of a mature callus.

Typical protocol - part 1

- Day 0 – Admission and stabilization.
- Day 0-2 – Butorphanol 2 mg/kg IM BID.
- Day 2-10 – Tramadol 10-20 mg/kg BID.
- Day 0-10 – Meloxicam 0.5 mg/kg BID.
- Day 1 – Surgery.
- Day 2-7 – Pins are cleaned daily and triple antibiotic ointment applied.
- Day 3 – Begin physical therapy under ANE.

Typical protocol- part 2

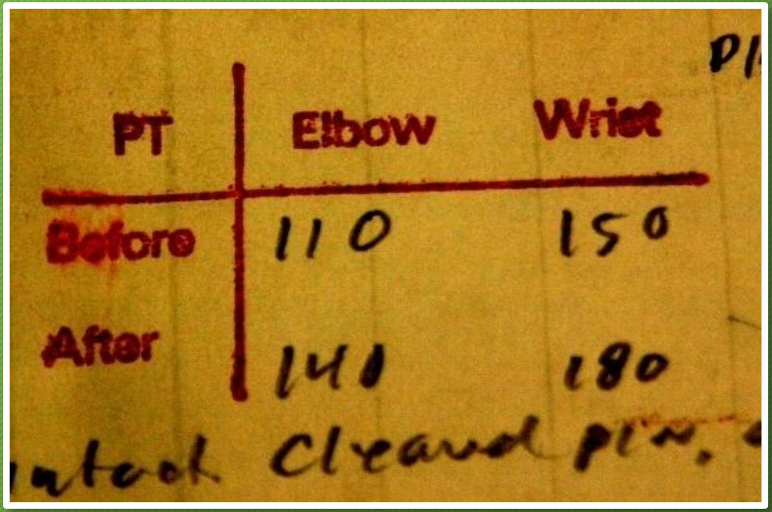
- Day 3-21 – Physical therapy continues 3 x weekly. Anesthesia required for most of it.
- Day 10 – Radiograph and every 10-14 days thereafter.
- Day 21 – Wrap can likely be removed, if present.
- Week 3-6 – Physical therapy as needed without anesthesia.

Typical protocol - part 3

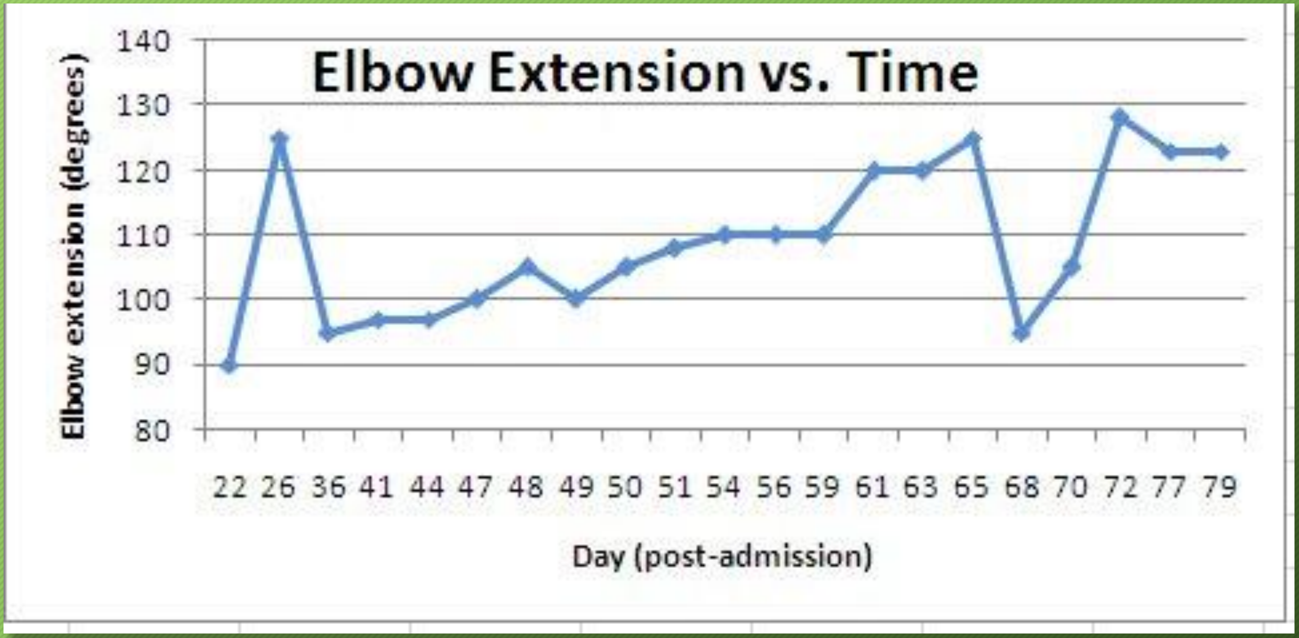
- Week 5 – Remove fixation and move to small (10x10 ft) outdoor cage to allow limited exercise.
- Week 6 to10 – Move to large (50-100 ft) flight cage with gradually increased forced exercise
- Week 12 – Release!

Physical therapy

- Importance of PT cannot be overstated.
- If you are not prepared to do PT frequently and humanely (i.e. with anesthesia) then patient should be euthanized or transferred to another facility.



Physical therapy



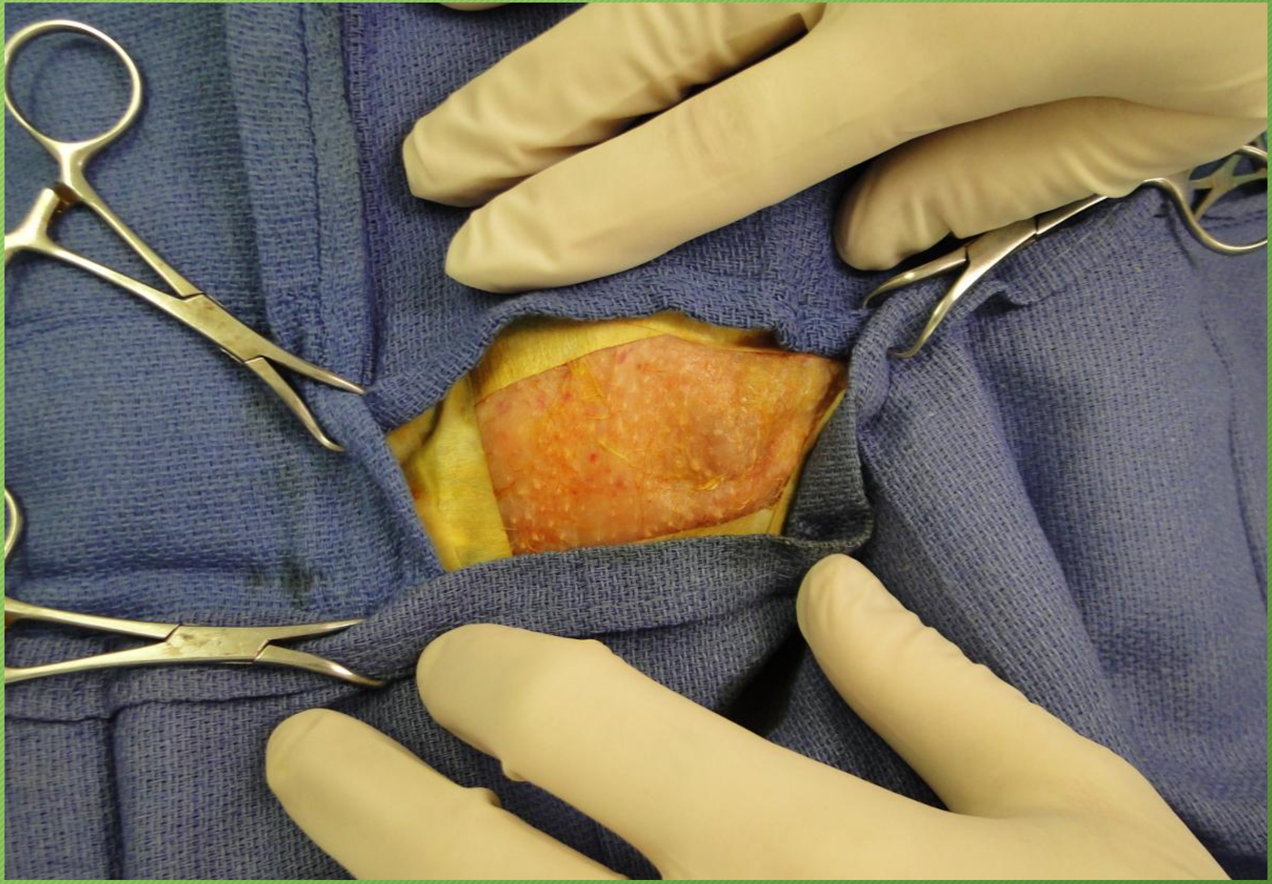
Flight training

The release

Surgical field preparation

Surgical field preparation

Surgical field preparation



Driving cross pins

Driving cross pins

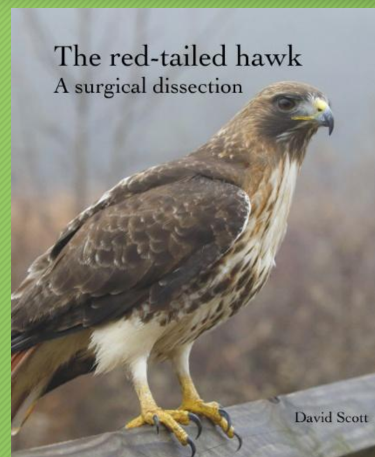
VTP material

X-Lite Classic cast rolls
www.runlite.com
allardin.com

Thank you

Dave Scott, DVM

descott12@gmail.com



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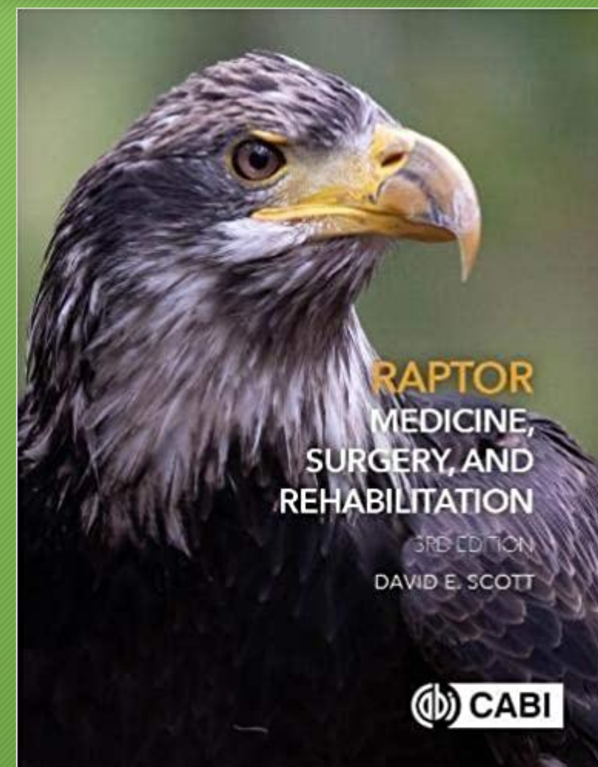

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