Initial Fracture Stabilization

FWRA 2025

Dr. Jennifer Bloss

Brook-Falls Veterinary Hospital & Exotic Care

Menomonee Falls, WI

exoticvet@earthlink.net

Goals of Lab

- 1. ORTHOPEDIC EXAM
- 2. INITIAL FRACTURE STABILIZATION
- Next step for your patient- veterinarian visit and radiographs
- Prior years lectures on the FWRA website have complete information on surgery, medications, post op care, rehab

Start with the physical exam

- History very important!
- Ie) Red-Tailed Hawk hit by car.
  - Why was it in the road in the first place? Is there a preexisting condition forcing the bird to scavenge on the roadside?
- Need to evaluate the entire animal – not just most visible problem
  - Is the animal in good body condition or emaciated? Is this an acute on chronic problem?

Physical Exam

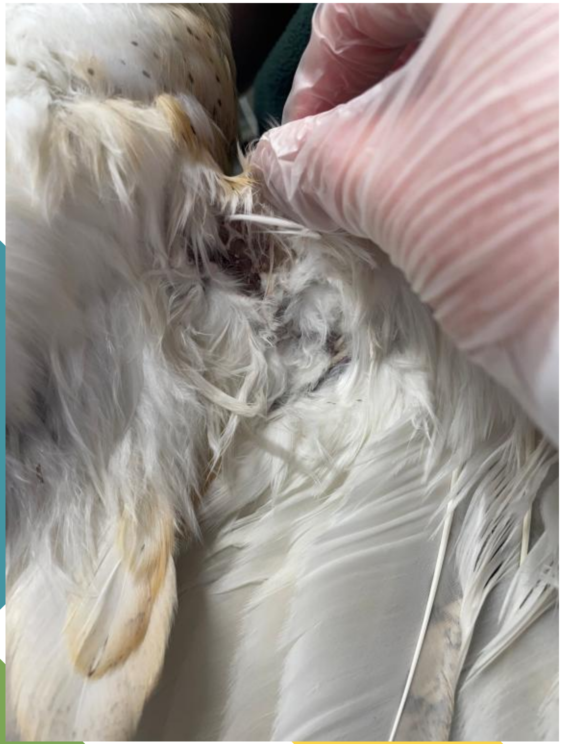
- Your physical exam process should cover the entire animal, from head to toe, and is the same for EVERY species
- Don't skip exam steps or you will miss important conditions!
  - Ie) Don't want to take a hawk to surgery to stabilize a fracture if it has severe retinal lesions and won't be releasable
- Assess the animal visually before any handling is performed
  - Equal limb weight bearing and grip strength? Wings symmetrical?
  - Overall body posture correct? Any neurologic symptoms?
  - Initial stabilization with heat and fluids

ORTHOPEDIC PRESENTATIONS

- Lameness
- https://www.youtube.com/watch?v=kDYu-JG-GbY

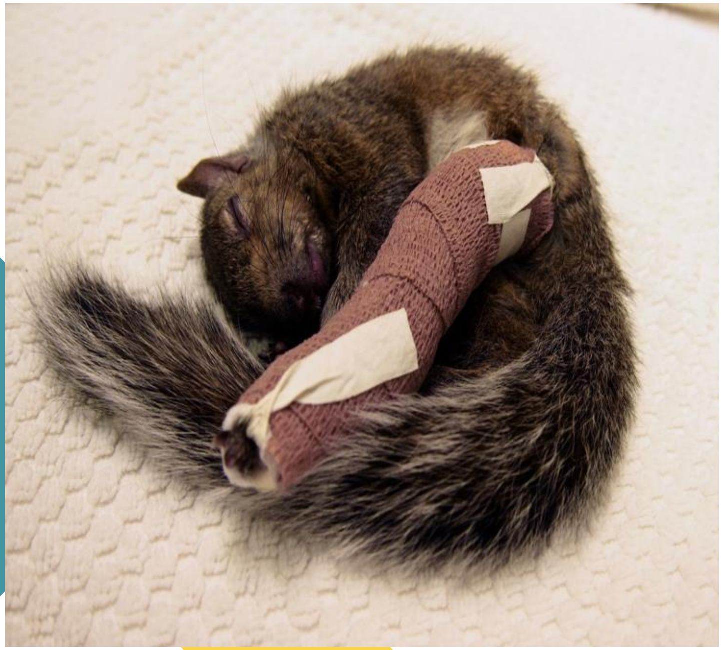
  https://www.youtube.com/watch?v=7i96iz8yB0E
- Wing droop
- Swelling
- Crusted feathers or hair
- Open wounds
- Paresis

Orthopedic Hands- On Physical Exam



- Always part the hair or feathers over the entire body looking for bruising or excoriations.
- Palpate head and skull. Transillumination of the skull in small birds can reveal intracranial bleeding. Check inside the ears for hemorrhage. Are the eyes in a symmetrical position?
- Palpate the keel or sternum and rib cage.
- Visualize and palpate the entire length of the vertebral column for bruising, swelling, or deviations
- Palpate limbs starting proximally at the shoulders/hips and proceed distally.
  - Long bones palpated for fractures, swellings and deviations
  - Each joint put thru individual range of motion.
  - Avoid fully extending the limbs to avoid iatrogenic fractures while flapping/kicking
  - Always compare to contralateral limb

Orthopedic Physical Exam



- Full orthopedic exam requires reevaluation under anesthesia with radiographs
- Until that is possible, fractures need to be temporarily stabilized with splints or bandages to prevent further trauma
- If you place a splint, a veterinarian should be examining that patient within 24 hours, usually under anesthesia for radiographs
- If surgery is needed, the patient may need several days of stabilization before it is strong enough for a long anesthesia, however……

Complications with delayed fracture repair

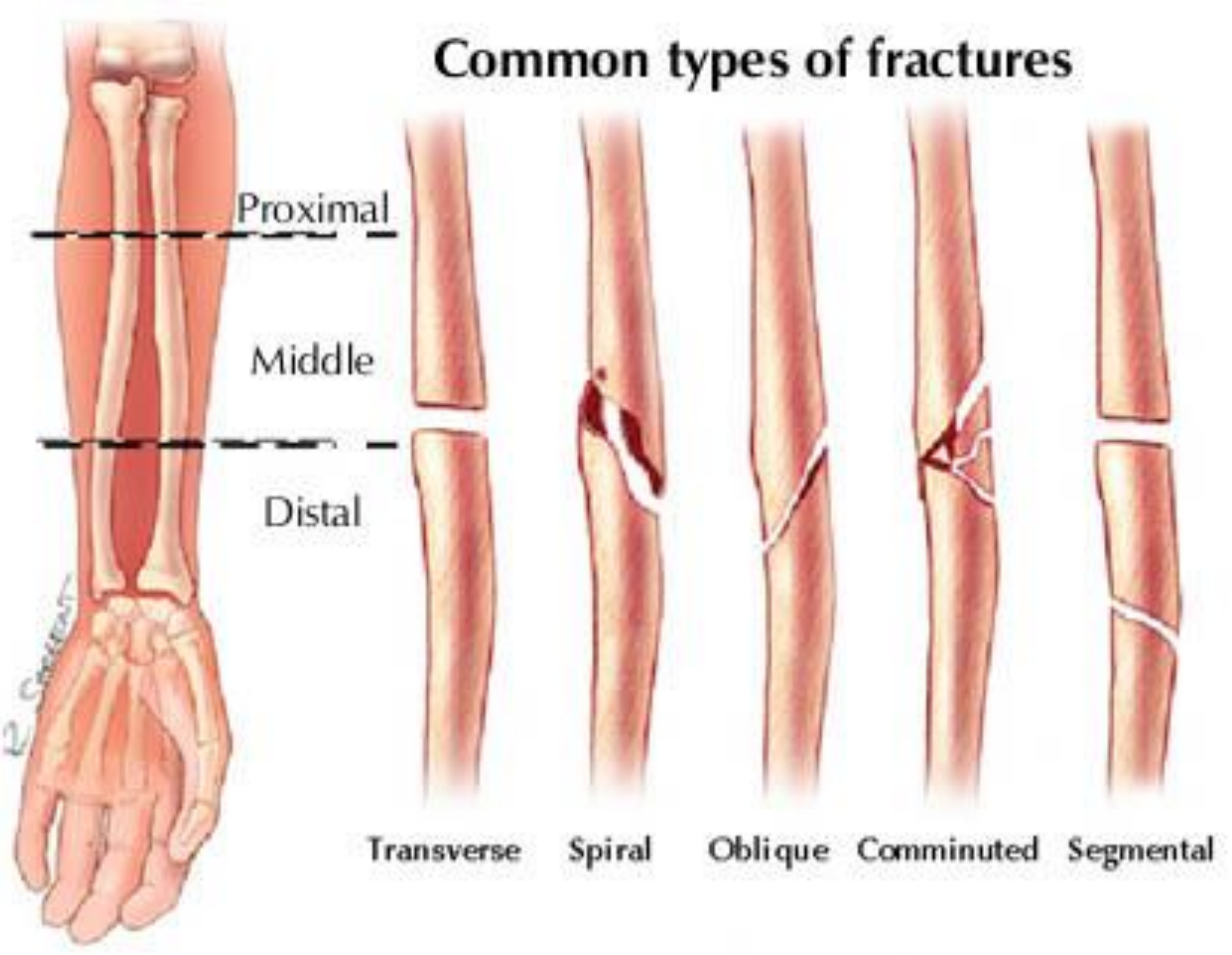
- Increased chance of soft tissue trauma with unstable fractures
- muscle contracture causes overriding of fracture ends
- adhesions quickly form making reduction difficult
- more debridement needed to align fracture may interrupt blood supply to fracture site, esp in birds
- The sooner the fracture is reduced surgically the better the outcome- always a balance with anesthetic risk

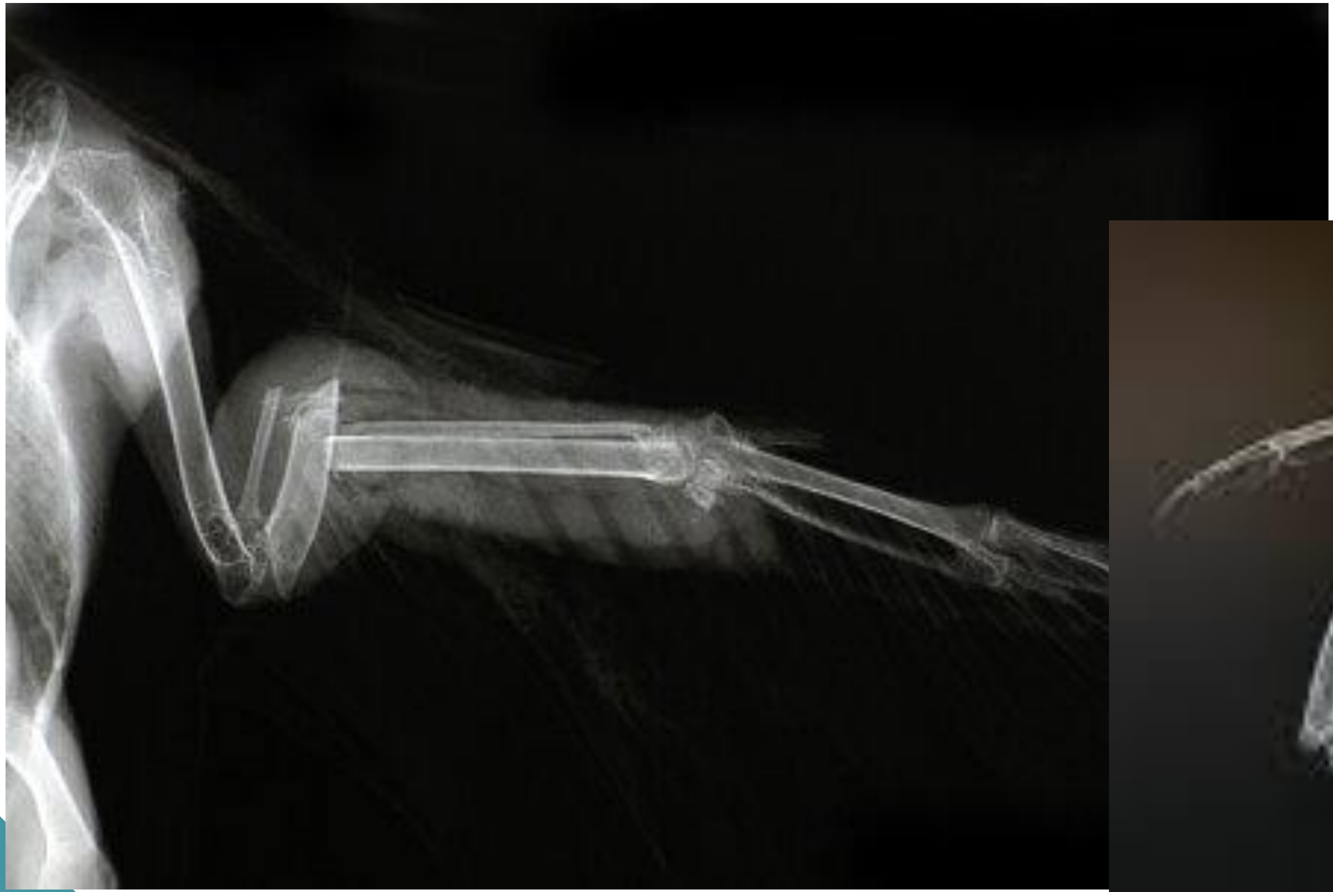
Splinting fractures

- Fractures are painful, esp if unstable- the correct splint will help control pain.
- Incorrect splinting will induce more pain through distraction at the fracture site, and increase soft tissue trauma
- When in doubt- leave it alone and cage rest

Fracture Types

Fractures near joints have a poor prognosis





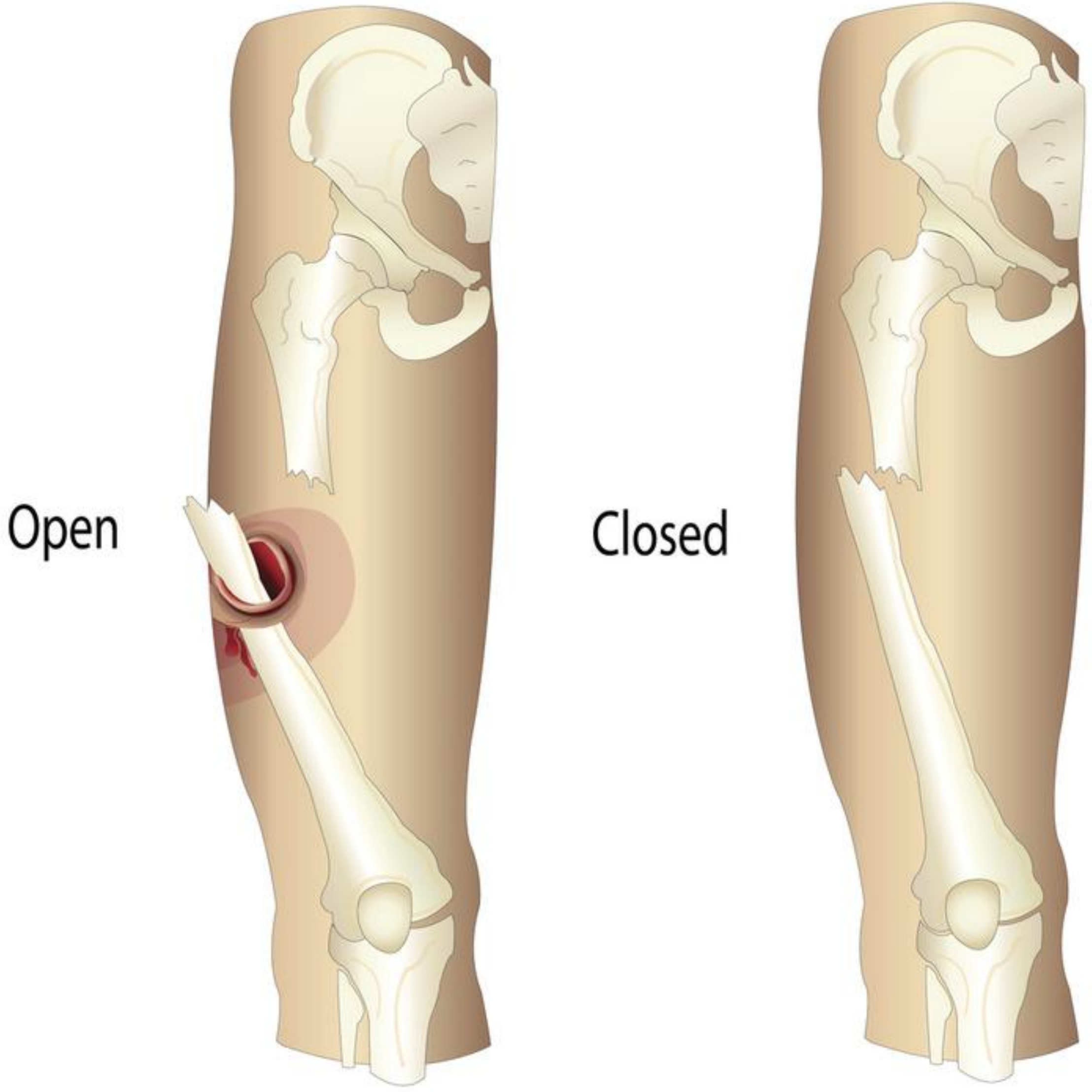


Northern Raccoon^^^^ (O)
22-1509
2Y
DOS:4/11/2022
DOE:4/11/2022 1:27:15 PM
Crow Wildlife Hosp.
Index : 3
82 kVp
320.00 mA
320.00 mA
0.010 s
3.20 mAs
3883 Sanibel Captiva Rd., Sanibel, FL 33957
134 mm
67.41
Laterality :
Step : Thorax D
1786
: 2935

Fracture Types

Open fractures need to be covered ASAP to prevent desiccation and necrosis of bone

Open fractures have much poorer prognosis due to infection and nonunion



Fracture Types- nonreleasable

1. “3 strikes your out”
2. 2 fracture sites in different limbs
3. Old open fractures with dead bone
4. Severe Emaciation
5. Fractures adjacent to or involving joints
6. Wing fractures with patagial contracture
7. Patagial injury/laceration
8. Severely contracted limbs with overriding old fractures
9. Extensive loss of soft tissue at site
10. Availablity of surgical vet care
11. Skill of wildlife rehabilitator

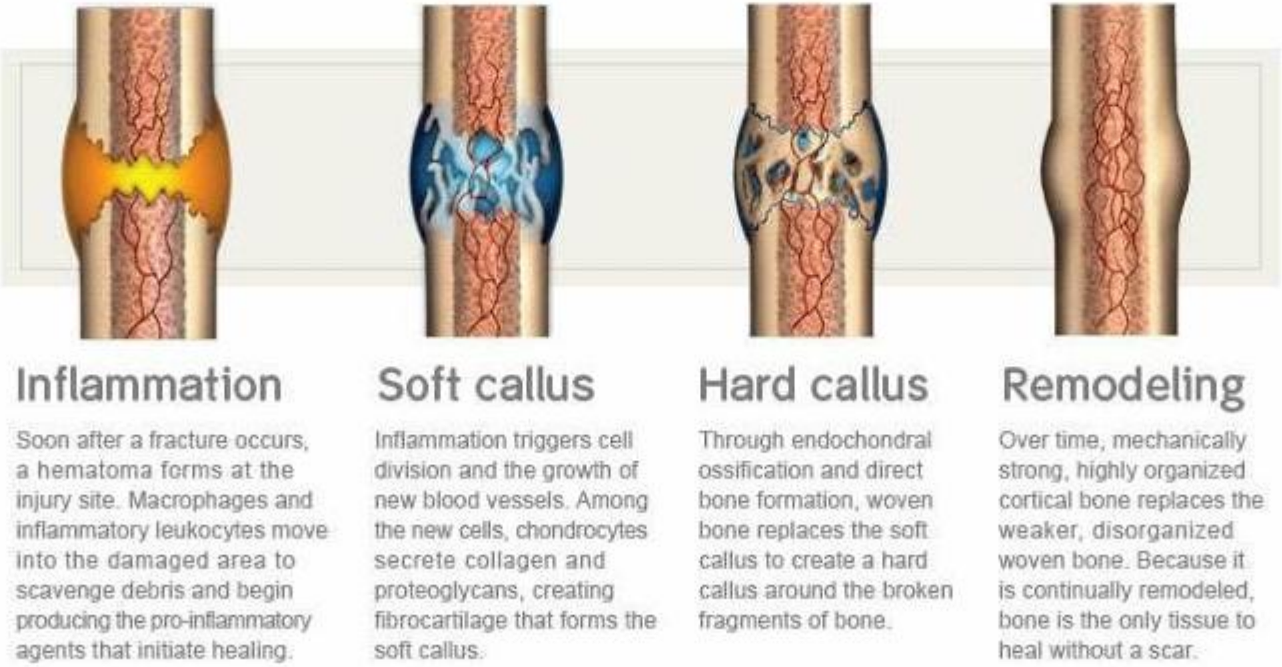
How bones heal

Mammal bone main blood supply
 from the marrow cavity

Avian bone main blood supply from the periosteum, so extensive handling of soft tissue will affect the ability of the fracture to heal

Fractures must be stable for a cartilaginous, then bony callus to form and heal the fracture

Unstable fractures will develop into a nonunion



Purpose of fracture immobilization

- Minimize the risk of soft tissue damage from movement of bone ends.

- Maintain bone alignment until fracture heals and bone integrity is restored.

- Provide stability until or after surgical repair is done.

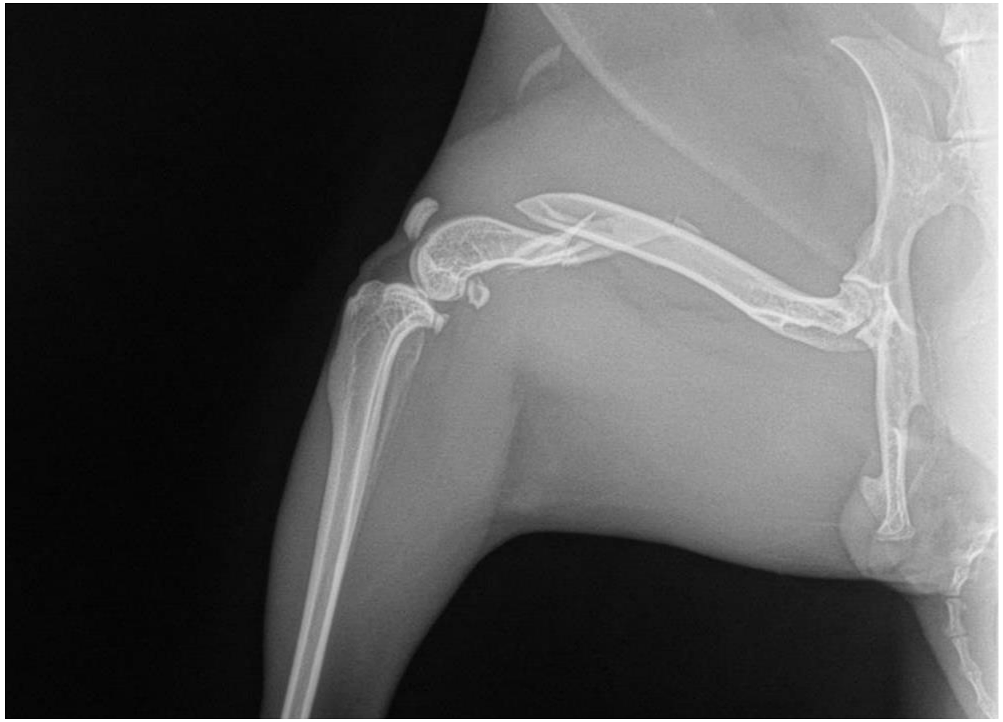
Fracture Immobilization Rules

- Must stabilize the joint **<u>above and below</u>**
- the fracture site- ALWAYS
- Address wounds
  - Disinfect and cover properly
  - Use non-adherant dressing
  - Check often
  - Place donut around wounds to prevent pressure sore
- Change wraps frequently
- Tip of extremity should be visible whenever possible

Fractures of the femur and humerus Immobilization Rules for Mammals

- Cannot immobilize the hip or shoulder joint.
- require surgical stabilization
- cage rest in deep bedding, possible for femur <u>SOME</u> fractures

-Abundant musculature in these areas helps these fractures heal



Bandages and Splints
MODIFIED ROBERT JONES
for fractures below the elbow and stifles in Mammals

1. Place tape stirrups avoiding wounds
2. 2 layers of cast padding
3. Layer of gauze
4. Reflect stirrups onto bandage
5. Place splint
6. Cover in vetwrap
7. Legs in extension
8. Leave toes out
9. extend above elbow
10. or stifle

- https://www.google.com/search?sca_esv=7a65098945d2ec2d&sxsrf=AHTn8zpxsdP-qL-MPykhDBKoHGHWDkK6QA:1738929886821&q=modified+robert+jones+bandage&udm=7&fbs=ABzOT_CWdhQLP1FcmU5B0fn3xuWpA-dk4wpBWOGsoR7DG5zJBtmuEdhfywyzhendkLDnhcoz2MIB1dVLatL09WpR-ccvb656T65oXaKKYe1LgsWRgPYR98mRwePmgE_C_GTD1P9rCxy-sxye7m3JZ6q_a2f9_RQtz4FZeIYqChk9OsNKyoFSxZbhWWMxUvL9b1ZAc5ps8-cz93j1PxD7gvxsmV-JfqCD0A&sa=X&ved=2ahUKEwiC1cXRwrGLAxUfSzABHZJuNY4QtKgLegQIERAB&biw=1536&bih=890&dpr=1.25#

Mammal splinting –Modified Robert Jones

- Change bandage/splint at least weekly
- Leave sirrups on hair, place new ones over these
- Watch for slipping down over the toes- cuts off blood supply
- Animal may need sedation/cone to prevent chewing
- Restrict activity until healed

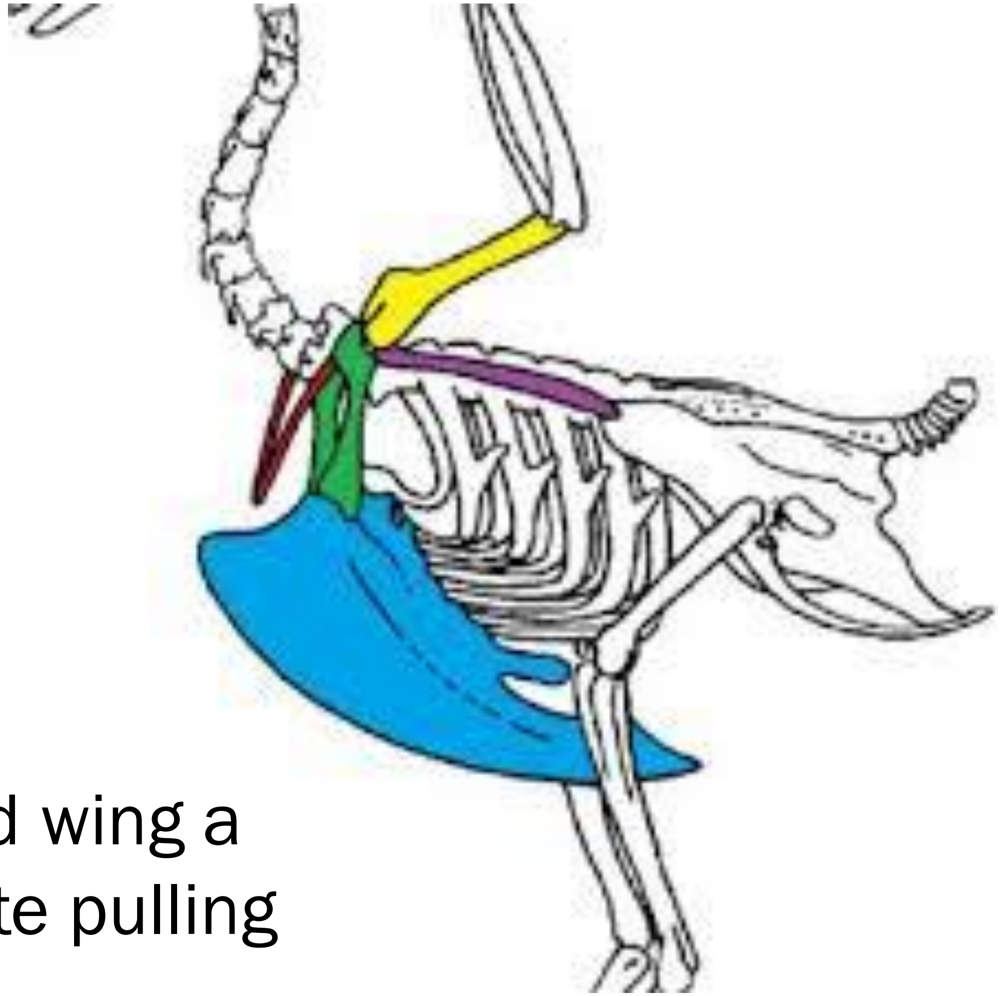
Avian Fractures

- CORACOID – cage rest only, if painful from heavy wing place figure 8 to help support the wing weight
- Humerus - Figure 8 bandage with body wrap
- Ulna, Radius, metacarpal– figure 8 bandage
- Femur- do not bandage!! Surgery ASAP
- Leg (distal to stifle)- padded bandage w splint vs tape splint
- Toes – snowshoe splint

Shoulder girdle

Scapula
Clavicle
Coracoid

Do very well with cage rest
If appear painful with dropped wing a body wrap initially can alleviate pulling on the fracture site



Body wrap

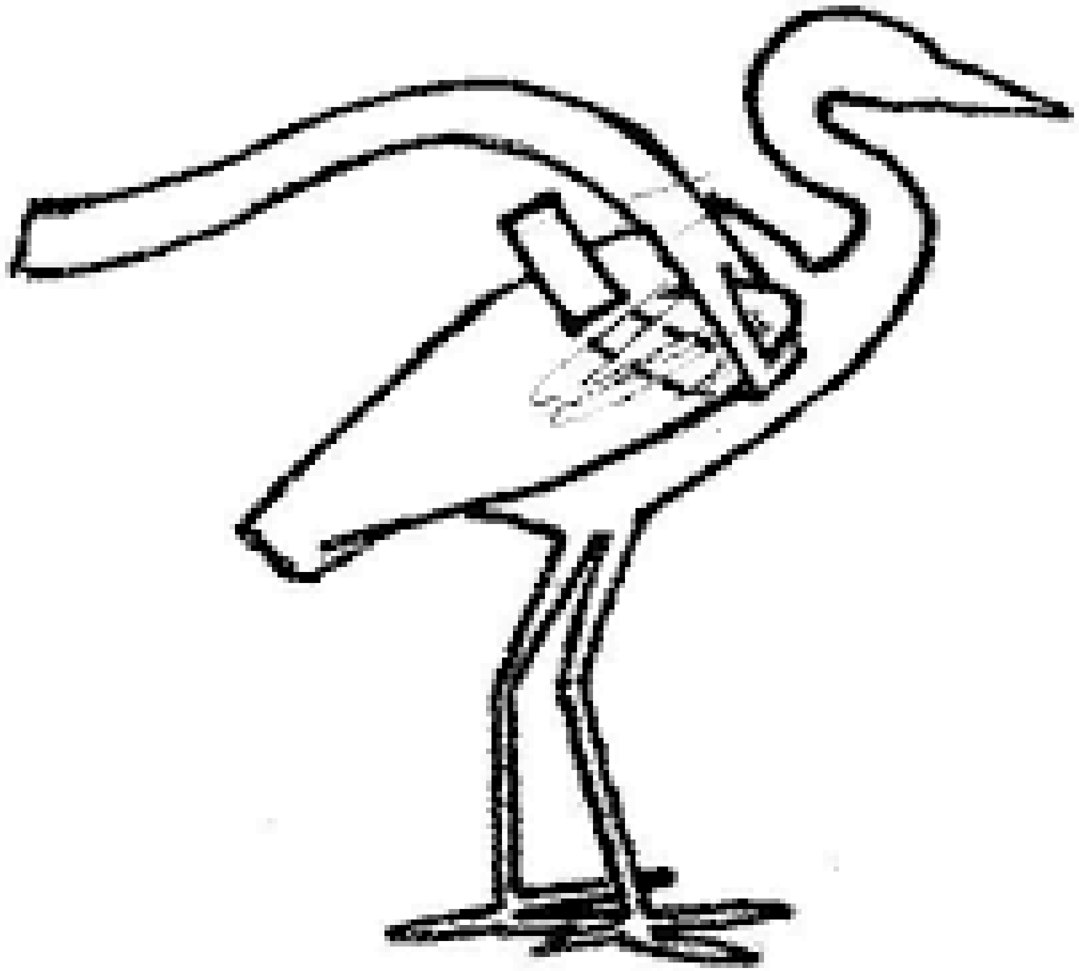


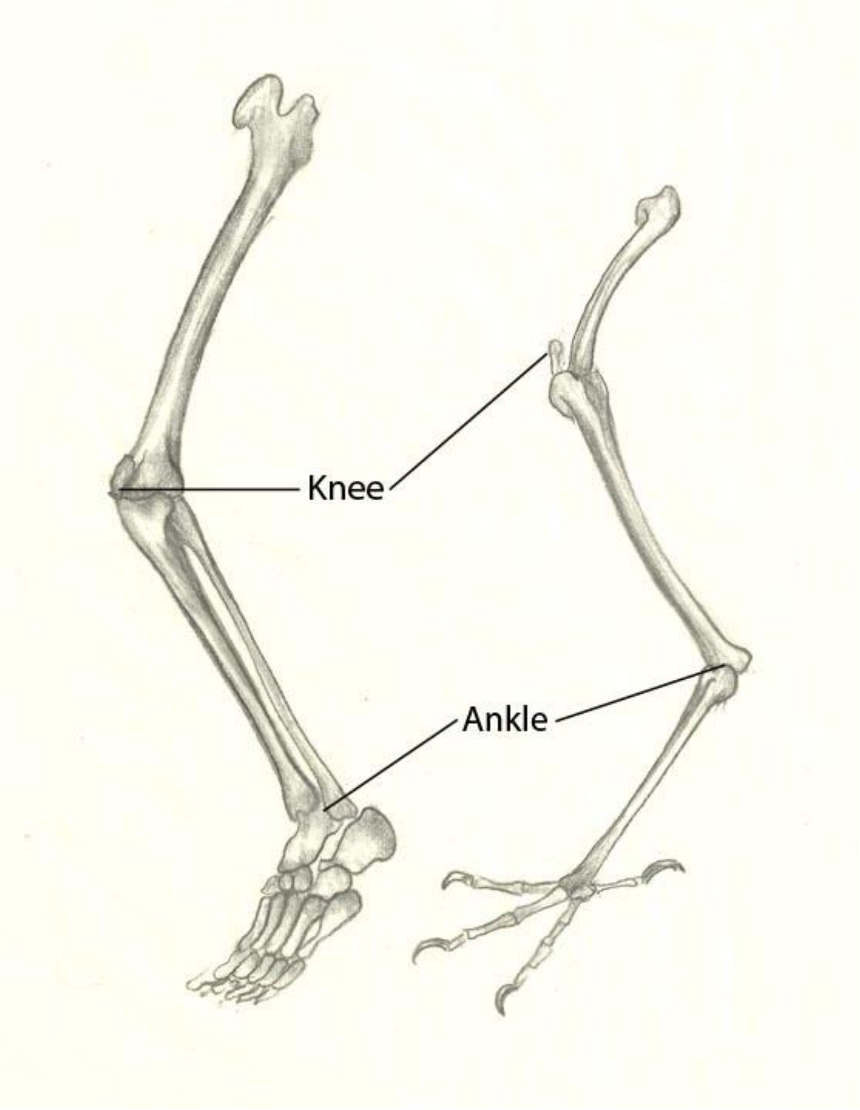
Figure 8 wrap – 2 versions

Figure 8 wrap pitfalls

- 1. do not twist the wing at humeral fracture site
- 2. make sure patagium is loose and not bound
- 3. bring high into axilla and tight enough so it will not slip
- 4. make sure to cover the ulna/radius fracture site
- 5. align both wings
- 6 use paper tape for small birds, vetwrap for larger birds
- 7. wrap to body after figure 8 for humeral fractures- at mid keel level
- 8. after 5 days, remove under anesthesia for physical therapy every 3 days to prevent patagial contracture

AVIAN LEG SPLINTING

- Femur fractures not splinted
  - These need surgery ASAP 24 hr
- Splints suitable for fractures
  - below the stifle (knee)
  - Difficult to splint above the stifle
- Little soft tissue below hock (ankle)
- Bandage in normal stance, not extended



SMALL BIRD LOWER LEG SPLINTS

- **Tape splint**
- **Pluck feathers if possible**
- Use paper tape for innermost layer
- Leg in normal stance
- Number of layers depends on size of bird
- Change at least every
  1-2 weeks

Larger bird lower leg splints

- Start with light padded bandage
- Add sam splint or paperclip, etc on

outside of bandage, cover with vetwrap

Keep leg in natural standing position

Shoe splints

- Toe fractures, splay leg

Questions??