

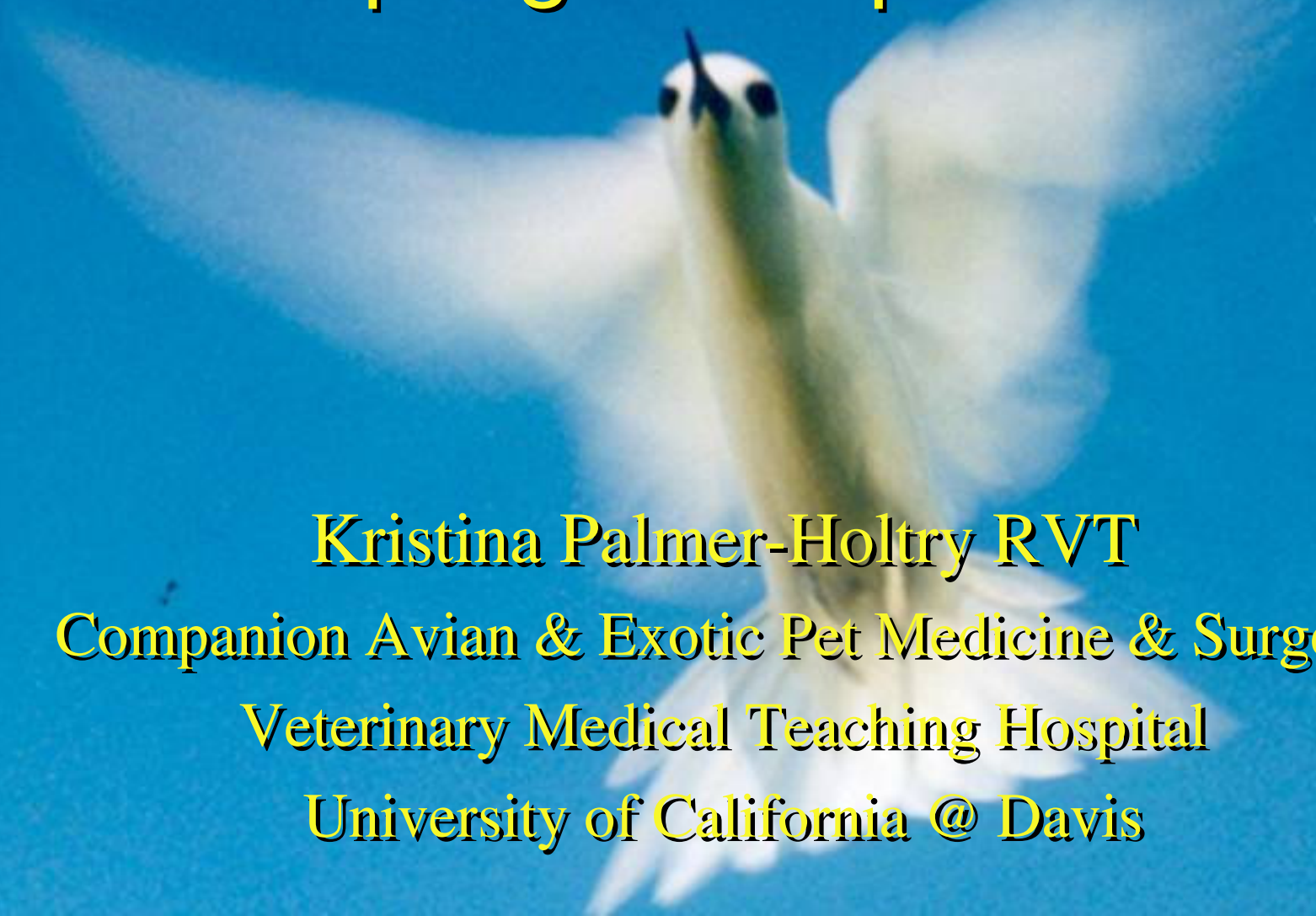
Avian Nursing: Diagnostic Sampling & Hospitalization

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Companion Avian & Exotic Pet Medicine & Surgery

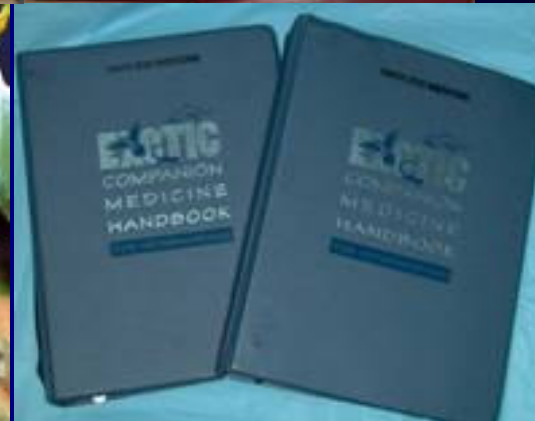
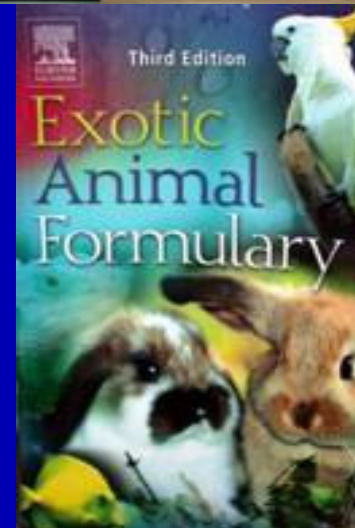
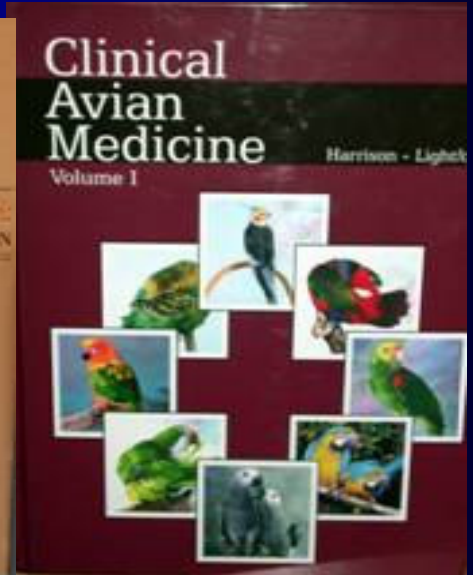
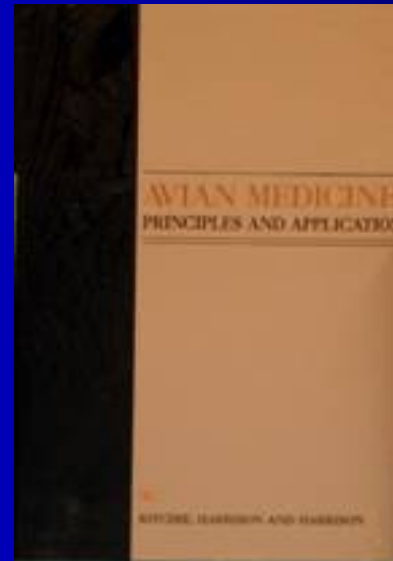
Veterinary Medical Teaching Hospital

University of California @ Davis



References

- Books & references
- Normal reference ranges.
- Keep good records on your patients.
- Patients previous routine blood work serves as base line.
- Continuing education
 - A MUST!



Get to Know Your Lab

Develop a rapport with your lab.

Understand the sample requirements.

Minimum requirements.

Prioritize requested tests.



Did you say blood work?



Quality diagnostics

- Patient usually not willing.
- Skilled restrainer.
- Combined with a thorough PE.
- Careful observation of the patient.

Capture and Restraint

- Close the window blinds & doors.
- Use towels for capture.
 - Don't grab off the shoulder.
- Monitor stress level during restraint.
- Know the patient's limitations.
- Establish priorities.
 - Blood work.
 - Radiographs.



Unique Respiratory System

- Large respiratory capacity.
- Complete tracheal rings.
- Lungs are rigid located dorsal near spine.
- Need keel movement for air exchange.
- Oxygen exchange with both inspiration and expiration.
- Death occurs rapidly with apnea.



Blood Volume

10% of body weight is blood volume.

- Can not lose much blood.
- Can safely take 1% body weight for sampling in a healthy bird.
- Should only take 0.5% from sick birds.

Example:

- 800gram healthy bird.
- 80ml blood volume.
- 8ml for sampling.



cc for every 100 grams—in Healthy Birds

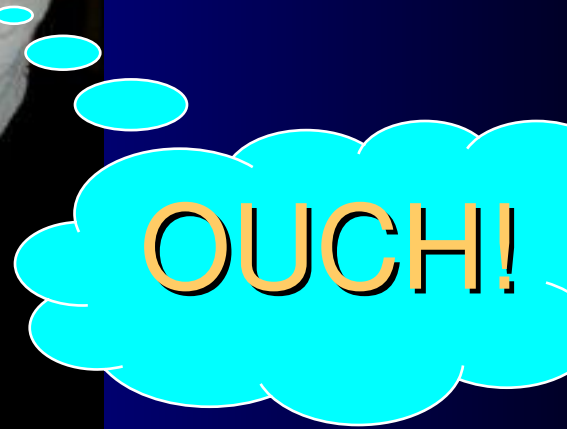
Don't Put Things in Your Mouth!

- Demonstrates poor aseptic technique.
- Not safe for you.
- Where has that item been?
- Many zoonotic diseases.



Toenail Bleeding

Painful.
Yields inadequate results.
Contaminated results.
Use a vessel when ever possible.





Medial Metatarsal Vein

- Great sight for medium to large birds
- Medial side of caudal tibia
- Muscles help stabilize and reduce hematoma formation
- Hemostasis by bandaging
- In most cases you have two tries













Jugular Vein

Method of choice for smaller birds.

Right is more prominent than left.

Arching and extending the neck helps visualize and immobilize the vein.

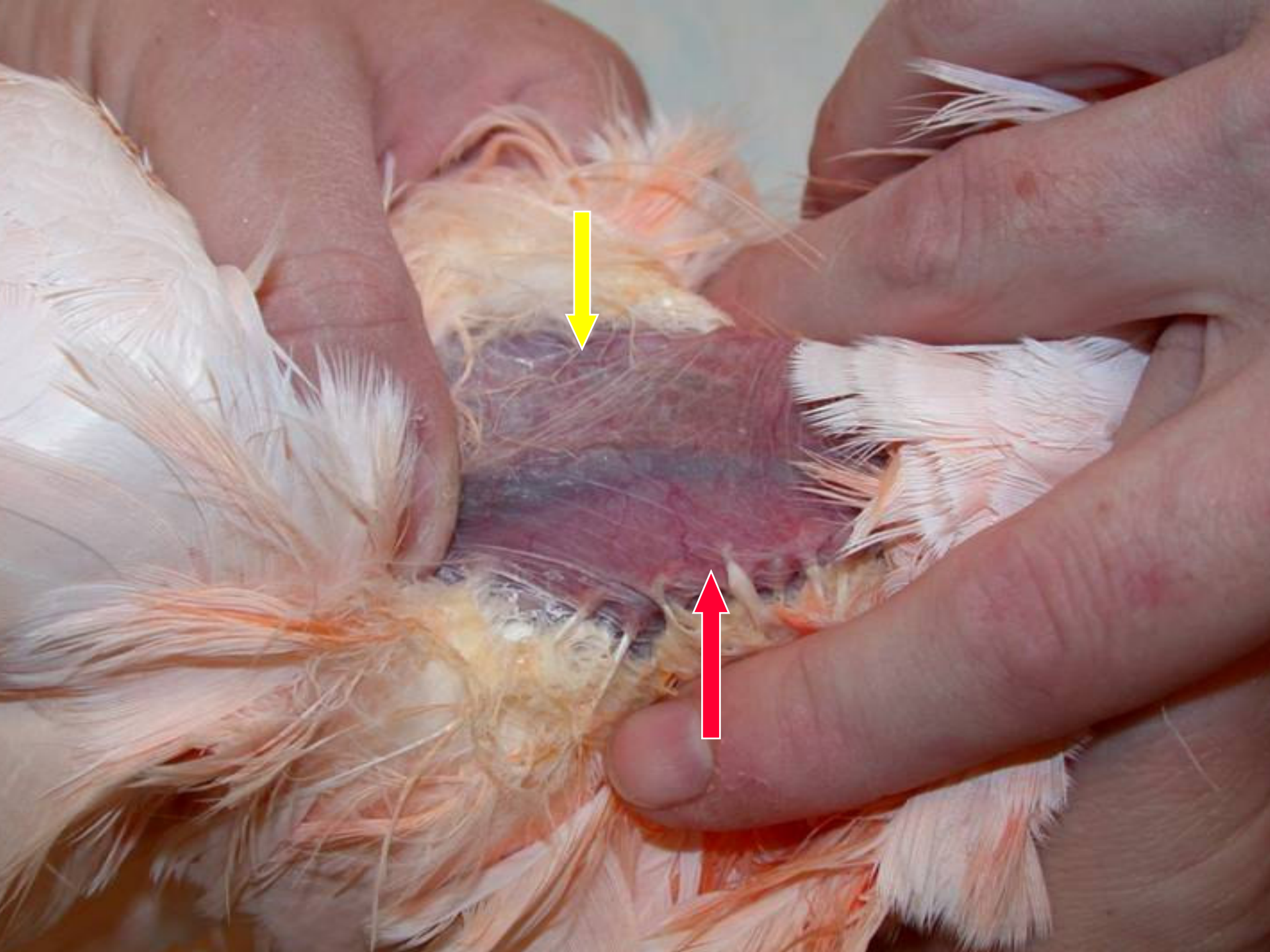
Hemostasis is vital.

Reconsider with coagulopathy.





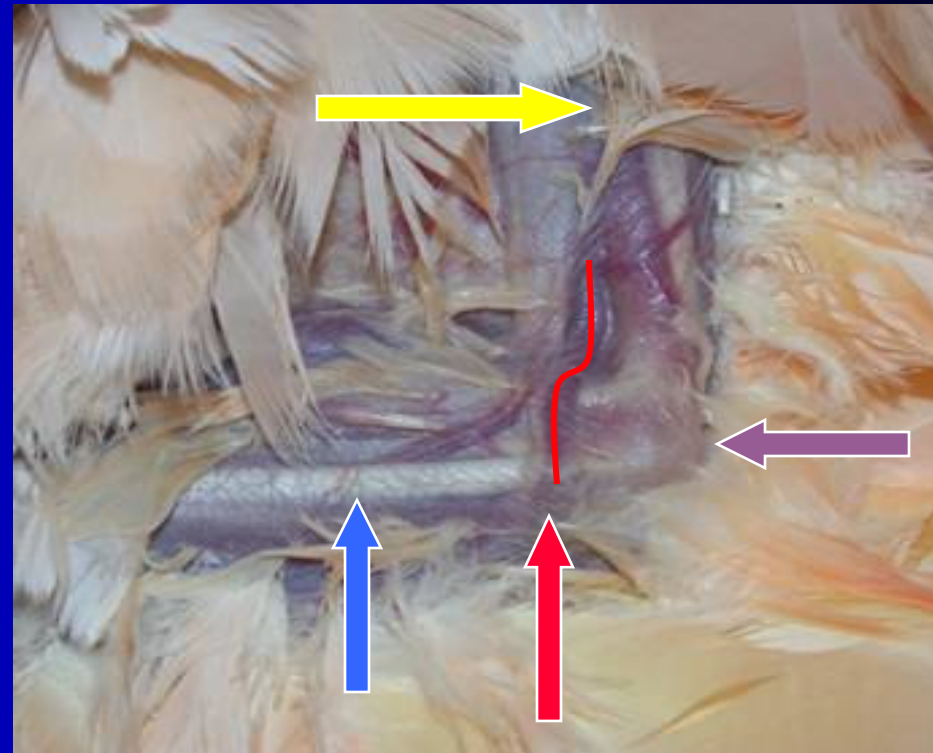






Ulnar or Wing Vein

- Medial surface of wing.
- Near distal humerus
- Proximal radius and ulna.
- Not recommended for non-anesthetized birds.
- Easy to lacerate in an awake patient.
- Large hematoma formations.
- Difficult to bandage.



Prepare the Blood

- Most labs will require:
- Fresh blood smears.
- Blood filled Hct tubes.
- Whole blood.
- Serum.
- Plasma.



Human Pediatric Blood Tubes

Microtainers ®.

➤ Becton Dickinson.

Small samples.

➤ 0.1ml – 0.4ml.

➤ Without dilution of sample.

GTT = lithium heparin.

RTT = serum tube.

Silicon separator plugs.

LTT = potassium EDTA.

Remove needle prior to filling.



Obtaining a Fecal Sample

- Fresh samples only!
- Clean cage bottom prior to visit.
 - Newspaper—no color adds.
 - Ink free paper towels.
 - Butcher paper.
- Plastic wrap lined bottom for urine sample collection.



Normal Droppings

- Fecal component
 - Green to light brown
 - May vary in consistency
- Urine
 - Should be clear
 - Stress can create polyuria
- Urates
 - White to pale tan



Fecal Examination

- Direct smear & floatation.
 - Parasitism.
- Gram stain.
 - Gram positive flora.
- Cloacal culture.
- Fecal occult blood.



Fecal Occult Blood

Detect blood loss from the GI.

Small sample requirement.

Simple disposable kits.

Instant results.

Easy to use and evaluate.

VERY sensitive.

- Dietary hemoglobin.
- Myoglobin.



Cloacal Swab

For gram staining & cultures

Mini-tipped culturette.

➤ Careful with smaller birds.

Gently advance into cloaca.

Swivel the tip around in the cloaca.

Caution: blood may appear in the droppings post sample collection.



Choanal Culture

- Organisms in the sinus cavity
- Good light & restraint
- Gauze strips or other speculum
- Mini tipped culturette
- Rostral portion of the slit



Radiographs

Very useful diagnostic tool.

May require sedation or anesthesia.

- Midazolam (0.25-1.0 mg/kg)
- Isoflurane or sevoflurane mask +/- intubate

Be efficient and develop a routine.

Have materials ready prior to restraint.

Always take two views of entire body.

- Ventrodorsal and right lateral.

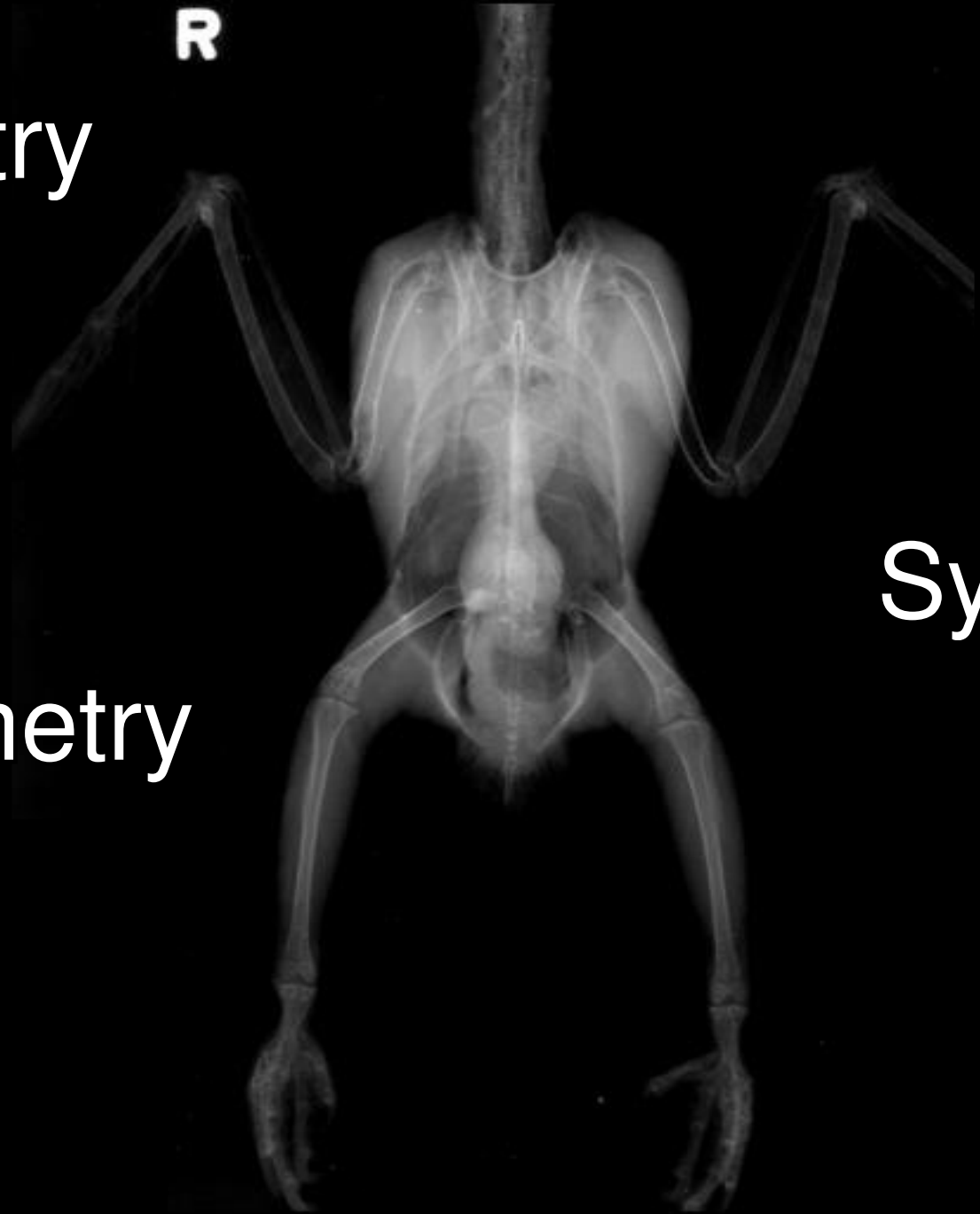
Ventrodorsal.

- Keel must be in line with spine.



Symmetry

R



Symmetry

Symmetry





R





Tube Side

NO

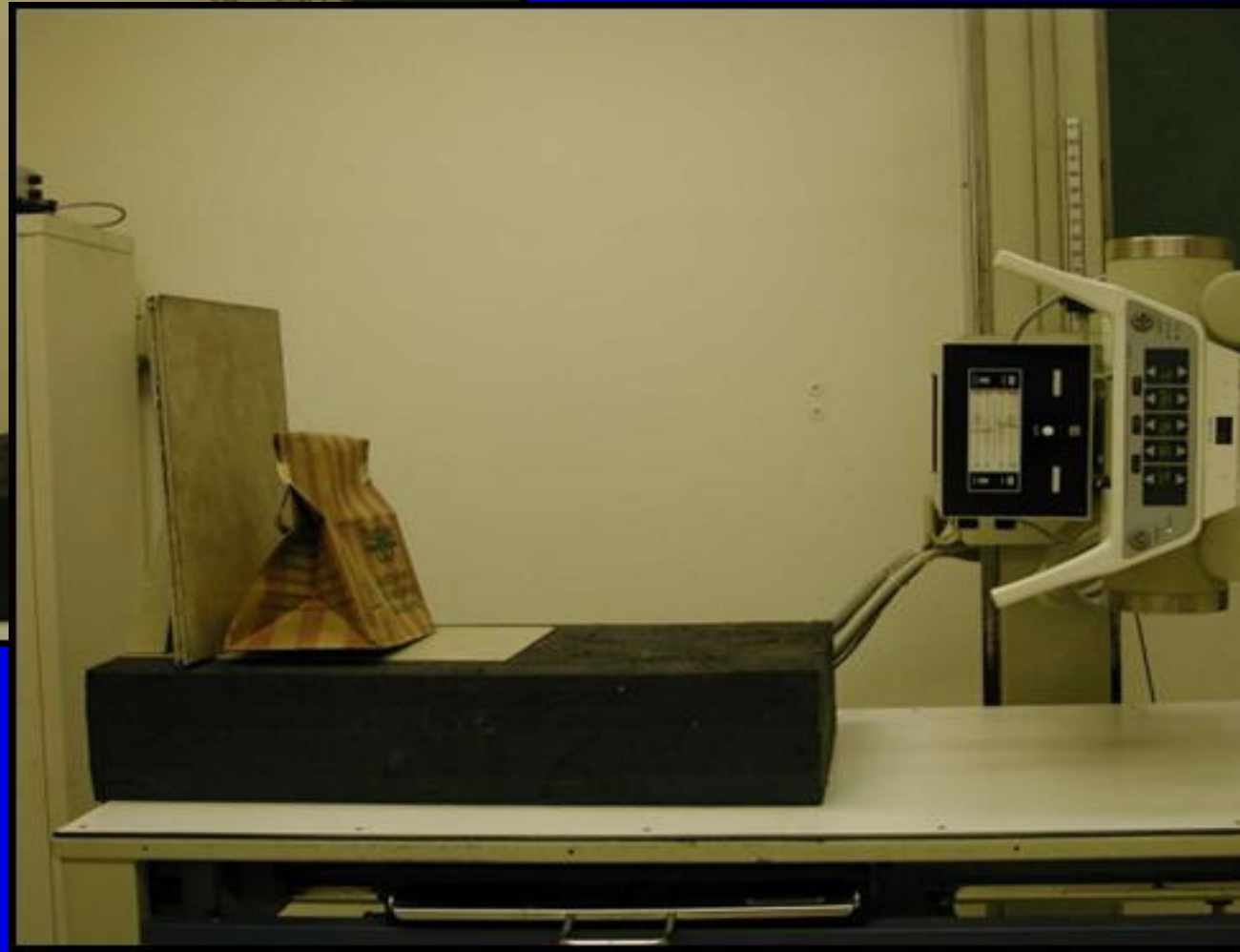








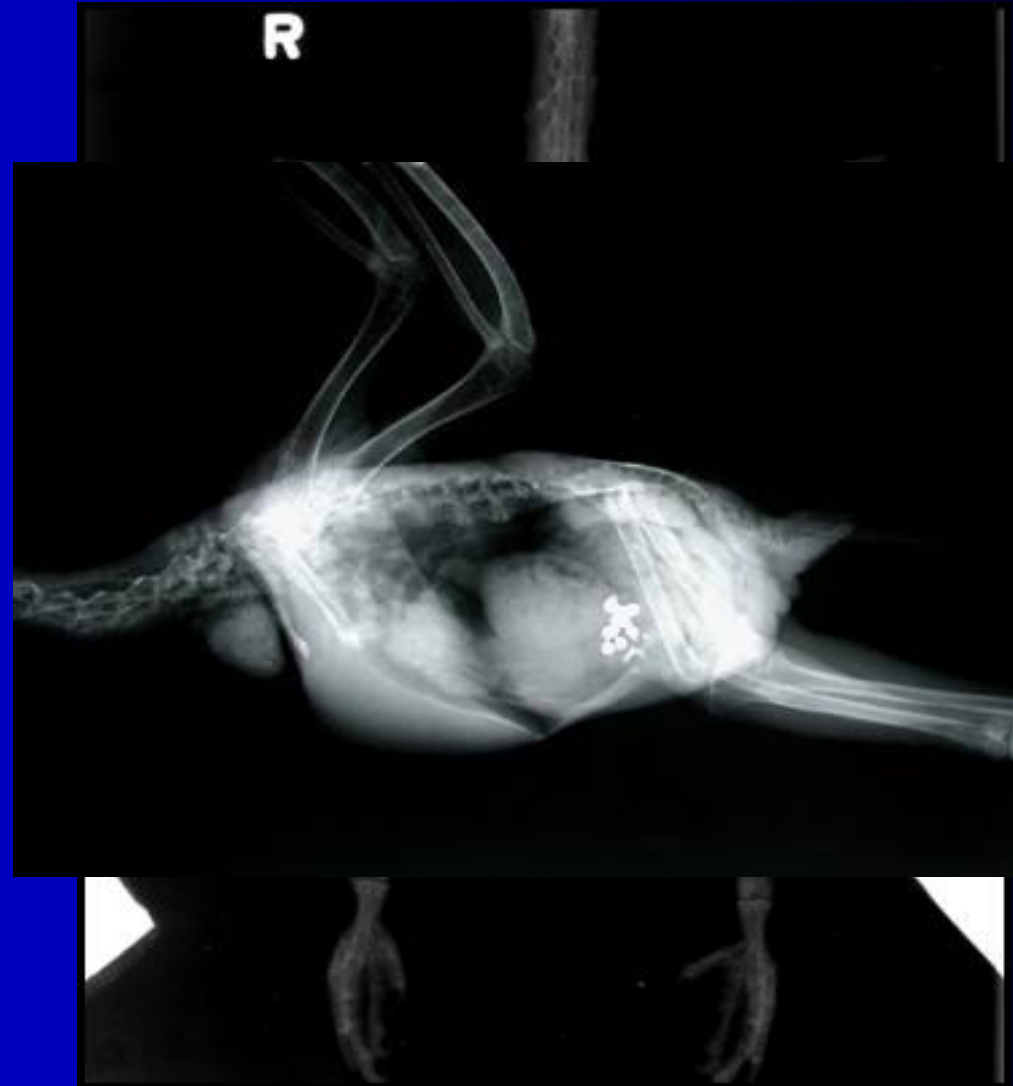
Horizontal Beam

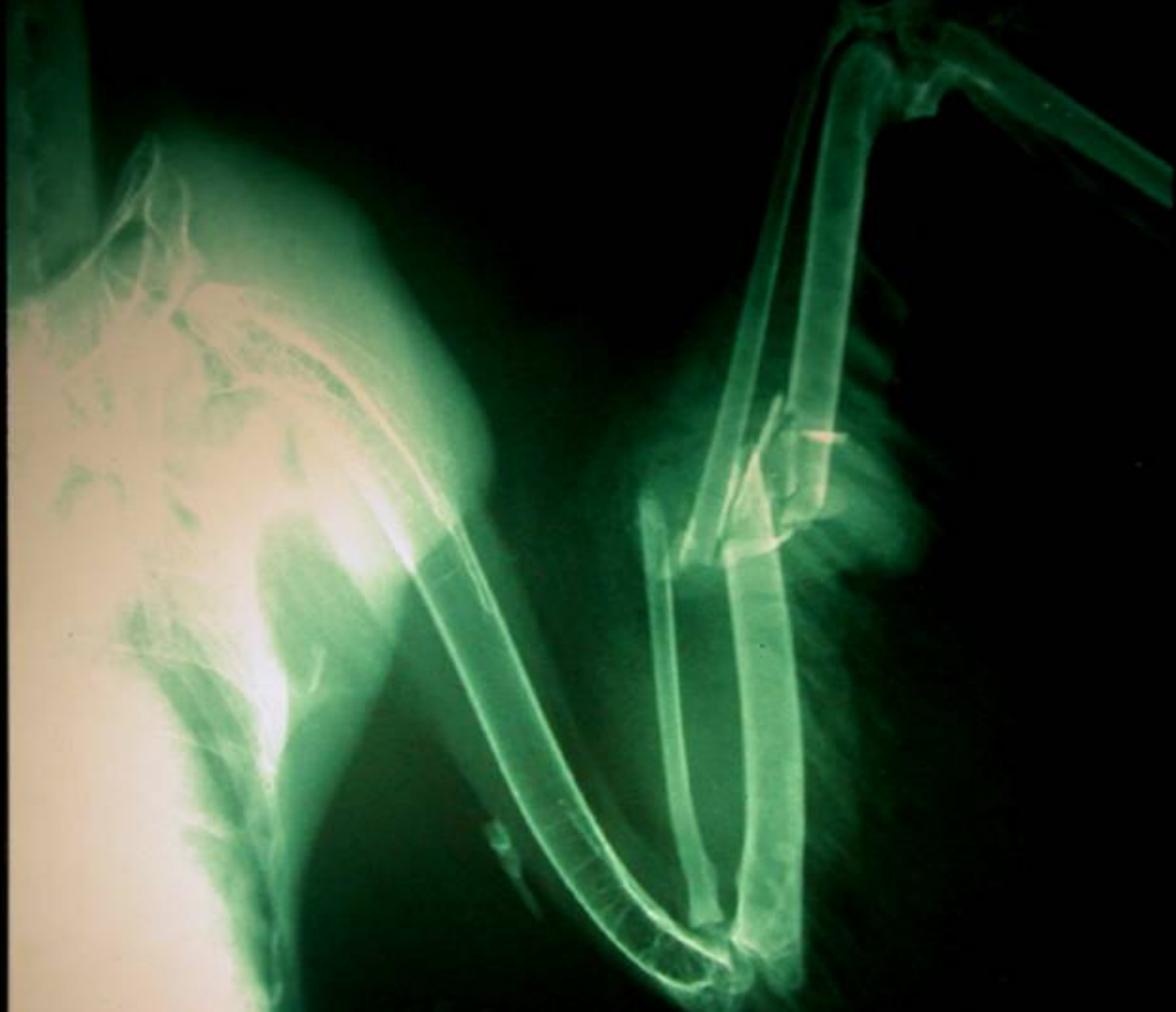


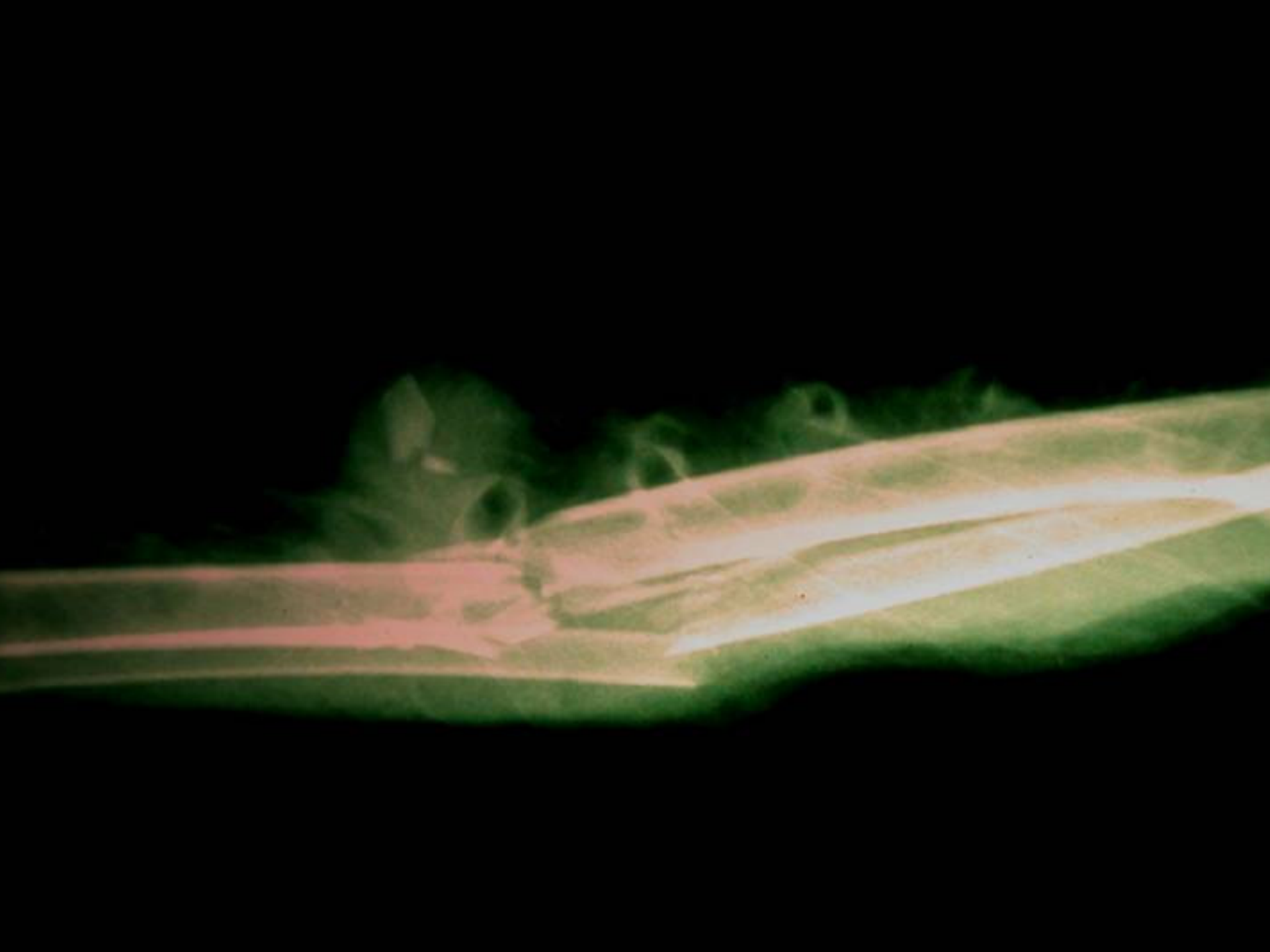


Wing AP View

- Dive bombing position
- Head on plate
- Body up in air
- Extended wing close to the plate







Gastrointestinal Contrast Study

- Abnormalities noted on the plain films
- Barium sulfate
 - 25-50ml/kg
- Gavage feed
- Fast transit time
- Shots to take: immediate + 15, 30, 60 & 90 minute intervals





Vet Wrap Turtle Neck

Fluoroscopy

- Evaluate GI motility
- Fluoroscopy unit capable of horizontal beam
- Same barium dose
- Cardboard box for restraint



Ultrasound

Challenging

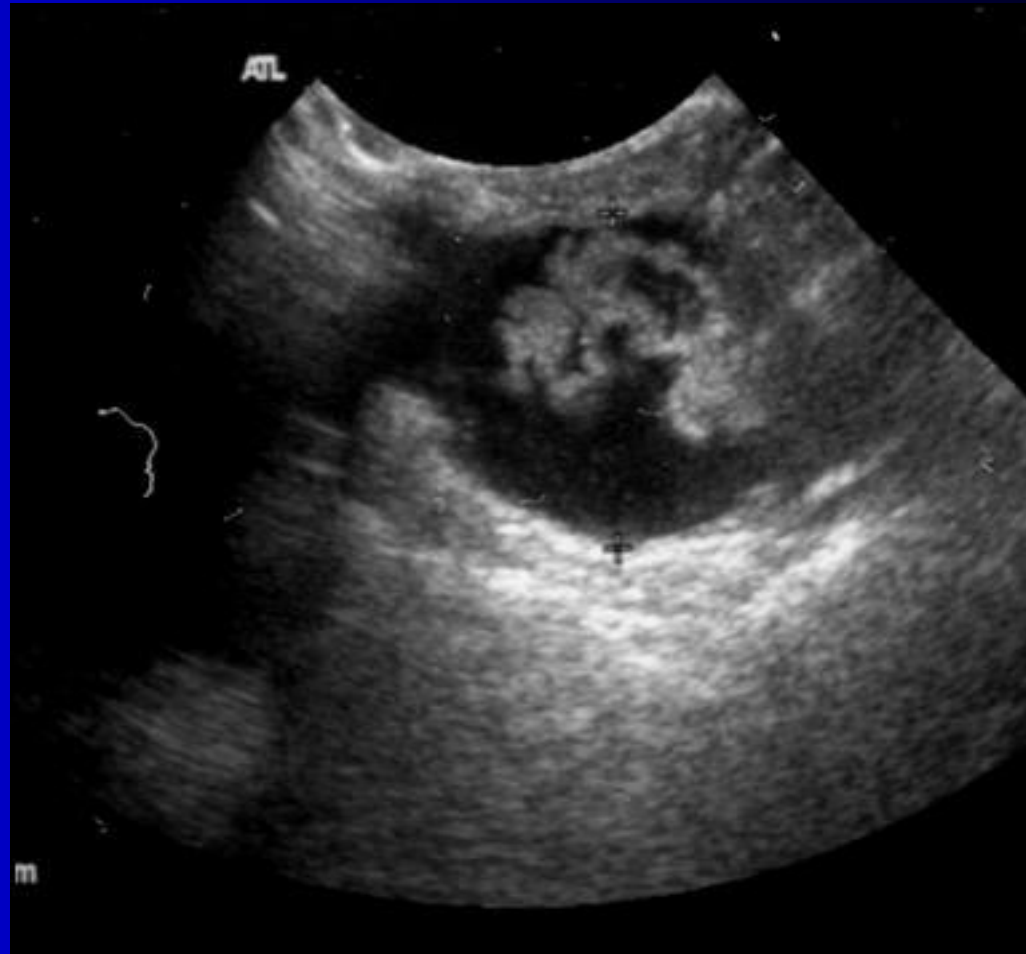
- Air sacs

Awake or with sedation

- Midazolam (0.25-1.0 mg/kg)

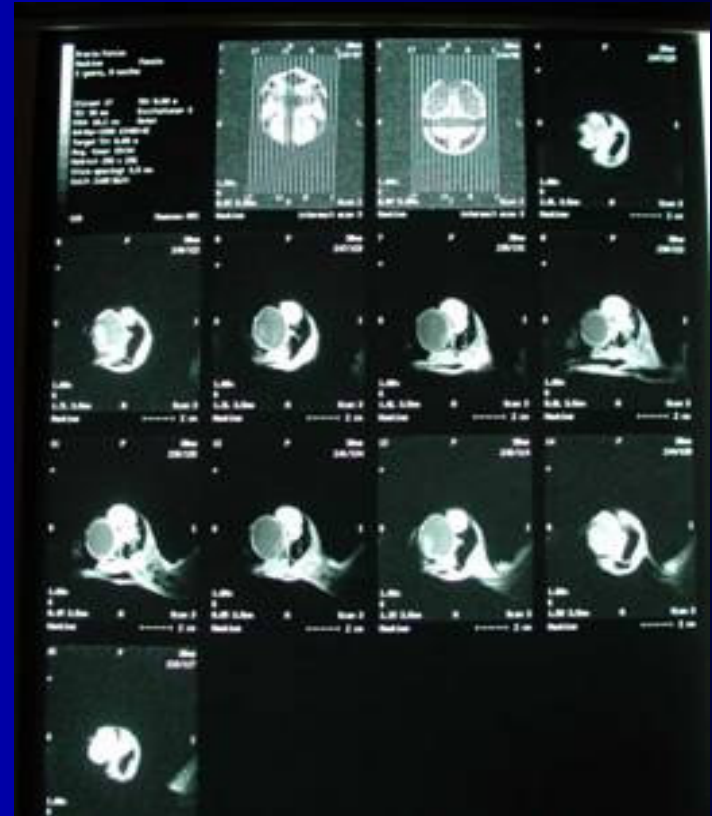
Can appreciate

- Organomegaly
- Soft shelled eggs
- Coelomic fluid
- Cystic masses



CT & MRI

- CT & MRI are superior for evaluating head trauma and spinal cord injuries
- Most clinics don't have this luxury
- Requires anesthesia
- Some hospitals will perform scans on pets after hours



Hospitalization

- Separate room from canines & felines
- Adjustable temperature (80-90 degrees)
- Cages & perches easy to disinfect
- Heat lamps & wall thermometers
- Heating pads
- Oxygen cages

Infectious Disease & Zoonoses

➤ Prevent the spread of infectious disease

- **Don't be a fomite**
- Disposable attire
- Hepa-filter masks (N95)
- Gloves-Latex or Vinyl

● Beware Zoonoses

- *Chlamydophila psittaci*
- *Mycobacterium spp.*
- *Cryptococcus spp.*
- *Salmonella spp.*



Cage Set-up

- Bird room
- Escape proof room & cages
 - Lyon
 - Snyder
- Pre-fabricated hospital cages
 - PCV pipe
 - Different sizes
- Comforts of home



Patient Enrichment

- Pet birds are highly intelligent
- Radio
- Music
 - News talk
 - TV
- Mirror
 - Cockatiels & budgies
- Toys



Thermal Support

- Heat lamps
- Increase the room temperature
- Heating pads
 - thermal burns can occur with electric
 - can use under half of enclosure
- Hot water bottles
- Wall thermometers to monitor



Humidity & Nebulization

- Therapeutic
 - Respiratory problems
 - Sinus problems
 - Egg stasis
- Deliver medications
 - Acorn nebulizers



Avian Diet



Occasional nuts & treats



10% Fresh fruits



40% Vegetables



50% Pellets



Hospital Diet

- Healthy balanced diet
- Pellets
- Seeds
- Fruits & Vegetables
- Favorite treats
- May need creativity
- Smorgasbord



Supplemental Nutritional Support

- Hand feeding formulas
- Lafeber's Emeralds
 - Carbo-Boost
 - Nutri-Support
 - Critical Care
- Ensure
- Tube feeding
 - feeding needles
 - red rubber feeding tubes



Gavage Tube Placement

- Assistant restrains the bird
 - Small birds-one person
- Speculum or gauze strips to open mouth
- Enter oral cavity from the bird's left commissure
 - Advance slowly
- Palpate the instrument in the esophagus and in the crop
- Administer fluid or food



Treatment Time: Be Prepared

- Have everything ready before restraint
- Proceed in a timely fashion
- Know your patient's limitations
- Develop a routine

Order of treatments

- Weight the patient first!
- SQ fluids & injections
- IM injections
- Tube & force feeding last
- Treat any infectious disease patients last
 - To prevent the accidental spread of disease

Critical Patients



Emergency Drugs

- Excel spread sheet to calculate
- Atropine
 - 0.01- 0.4 mg/kg
- Glycopyrolate
 - 0.01 mg/kg
- Epinephrine
 - 0.1 mg/kg
- Doxapram
 - 2.0 mg/kg



Fluid Replacement Therapy

- Maintenance = 50ml/kg/24hours
- Deficit calculation:
 - **Body wt (grams) x 10% (0.10) = fluid deficit in mls**
 - Replace 1/2 deficit over 1st 24 hours
 - Replace remainder over the next 48 hours
 - Crystalloid fluids are most commonly used

Fluid Therapy

➤ Routes of Administration

- Oral
- Subcutaneous
- Intravenous
- Intraosseous



Oral

- ▶ Balanced electrolyte solution
 - Pediatric Electrolyte Solution
 - Gatorade
 - LRS
- ▶ Administer via gavage tube
- ▶ Alert patients:
 - Syringe feed
 - Spoon feed



Volumes to Deliver

(pg. 392 in Richie, Harrison & Harrison)

- Finch .01-0.3 ml q 4 hours
- Parakeet 0.5-1.0 ml QID
- Cockatiel 1.0-2.5 ml QID
- Conure 2.5-5.0 ml QID
- Amazon 5.0-8.0 ml TID
- Cockatoo 8.0-12.0 ml BID
- Macaw 10.0-20.0 ml BID

Subcutaneous

- Inguinal region is the preferred site
- Use small gauge needles
 - 25g - 30g
- Dorsal
 - caudal half of body
- Axillary
 - flapping makes this area risky



Intramuscular Injections

- Use small gauge needles
- Pectoral muscles are preferred site
- Not too close to midline
- Do not use muscles in the legs
 - renal portal system



Intravenous

- Maintenance of an IV catheter—difficult
- Patients usually chew out the catheter
- Butterfly catheter slow administration of fluids
- Same sights used for blood sampling:
 - Medial metatarsal vein
 - Jugular vein
 - Ulnar vein only in anesthetized patients
 - lacerates easily
 - large hematomas

Intraosseous Catheter Placement

Same benefits as IV

Debilitated patients will usually leave alone

Distal ulna and Proximal tibia

Pneumatic bones cannot be used

Requires anesthesia

➤ **Painful procedure**

Catheter in place for several days

➤ 18g - 22g spinal needles

Suture & glue to skin

Figure-of-eight wrap—immobilize wing

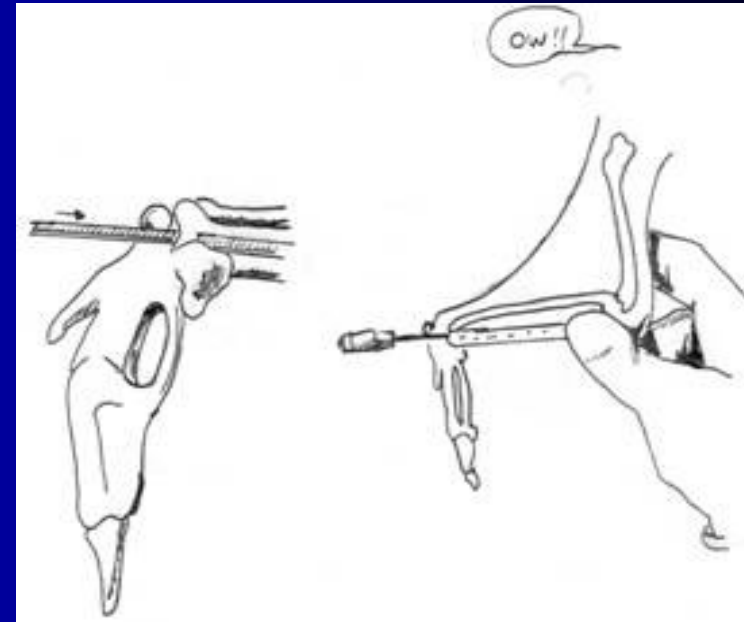


Figure-Of-Eight Bandage

- Wing fractures soft tissue wounds
- Distal to elbow
- Immobilize joint above & below
- Humeral fractures require body wrap
- Monitor
 - Swellings
 - Abrasions



E-Collar Placement

- Prevent chewing/picking
- Many different kinds and sizes
- Manufactured
 - Collar alone
 - Collar w/Elizabethan
 - Spherical
- Home made
 - Pipe insulation
 - X-ray film
- Monitor closely after placing
- Stressful



Special Thanks!

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