

# Ultrasound in Birds: From Finch to Goose

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## I. Introduction

- a. The avian diagnostic work up has historically been based on physical examination, hematology, blood chemistry, and radiography. Together with endoscopy this approach can provide important information.
  - b. Ultrasonography has become an increasingly important diagnostic tool in avian medicine.
- Advantages of ultrasonography (U/S) over celioscopy or CT scan in the avian patient?
    - Non-invasive when compared to endoscopy
    - U/S is available in nearly all veterinary hospitals
    - U/S allows us to visualize the interior of organs (compared to celioscopy)
    - FNA of selected and precise parts of the tissue/organ
    - Low budget compared to CT scan
  - Disadvantages or challenges of U/S
    - Size: In my experience, U/S is feasible in birds as small as a 12-gram Gouldian finch
    - Air sacs, their presence causes reflection
      - Extension of air sacs differ from species to species
      - Depending on our area of interest and the species, the probe can be placed
        - Ventrally (caudal to the sternum)
        - Laterally (parasternal), ex: chicken
      - Lack of literature, lack of reference values can cause difficulties in interpretation of pathologies
  - How to perform U/S in birds
    - Many birds are anorectic when presented to the vet, but if the animal is eating fasting is often recommended for better visualization and when anesthesia is needed
    - Fasting times vary by species
      - Songbirds (finches) should not be fasted (rapid GI transit time)
      - Parrots 3-6 hours
      - Vultures up to 48 hours
  - Anesthesia?
    - Evaluate each case separately
    - Pros
      - Minimizes stress
      - Relaxes abdominal musculature
      - Improves access to acoustic windows
    - Cons
      - Risk in a probable sick bird

- Changes cardiovascular properties
  - Short exam time to reduce anesthesia time
- Indications for U/S exam
  - Suspect reproductive tract disorders
    - Egg binding is a common presentation
      - An egg w/o shell is not visible on survey radiographs
      - Multiple eggs can be present in the oviduct
      - To improve the accuracy of the prognosis in egg binding cases, an U/S exam is essential
    - Case examples include...
      - Active ovary
      - Eggs
      - Ovocentesis
- c. Suspect hepatopathies
  - i. Evaluate hepatic vessels and texture of the liver
  - ii. In mammals we compare the echogenicity of the spleen and fat with the liver but this is rarely possible in birds
    - Can compare echogenicity of fat in obese birds
    - Case examples include...
      1. Normal liver
      2. Hepatic cysts
      3. Hepatitis
      4. Toxoplasmosis
      5. Hepatic lipidosis
  - Suspect cardiopathies, hydropericardium
    - Cardiopathies are very common in birds
    - Case examples include...
      - Normal heart
      - Hydropericardium
      - Cardiac lipidosis
  - Gastrointestinal examination
    - Evaluation of the stomach and intestines is always a part of a complete U/S exam
      - Proventriculus is easiest to see in parasternal view
      - Typical layers of the intestines (as seen in mammals) may not be visible, depending on patient size
    - Case examples
  - Eye
    - Sterile U/S gel
    - Pressure on the eye can stimulate the vagal reflex
  - Planning surgeries of tumors, cysts, or other masses
- d. U/S-guided fine-needle aspirate
- e. Follow-up treatment outcome