

GASTROINTESTINAL DISEASES IN PSITTACINES

Panagiotis Azmanis
Dubai Falcon Hospital
22a Street, Zabeel 2, Dubai
United Arab Emirates

Gastrointestinal (GI) diseases are a common concern in avian medicine, particularly in pet parrots. These conditions can range from simple dietary imbalances to severe, life-threatening infections. A thorough understanding of the clinical signs, diagnostic methods, and treatment options is crucial for effective management. This lecture will refresh the gastrointestinal anatomy and highlight the common problems.

Anatomy of the Psittacine Gastrointestinal Tract

Parrots (Order: Psittaciformes) possess a gastrointestinal tract (GIT) that is highly specialized to accommodate their primarily herbivorous and granivorous diets. While the fundamental architecture of the avian GIT is conserved among birds, parrots exhibit distinct anatomical and physiological adaptations that optimize nutrient extraction from fibrous plant material, seeds, fruits, and occasionally animal protein.

The gastrointestinal process begins at the beak; a robust and keratinized structure adapted for debulking seeds and cracking nuts. Mechanical breakdown is initiated by the beak and assisted by the muscular tongue, which manipulates food with remarkable dexterity. Salivary glands secrete mucinous saliva, facilitating lubrication but contributing minimally to digestion, as salivary amylase is typically absent or in low concentration. Parrots possess a prominent **crop**, a diverticulum of the esophagus located at the thoracic inlet, which functions as a temporary storage chamber. The crop allows parrots to ingest large volumes of food quickly and digest it gradually.

The proventriculus is the glandular portion of the stomach where enzymatic digestion begins. It secretes hydrochloric acid and pepsinogen, initiating protein hydrolysis. The pH in this region is acidic, promoting the activity of digestive enzymes and softening ingested food particles. Following the proventriculus is the **ventriculus** or gizzard, a muscular organ responsible for mechanical digestion. In parrots, the gizzard is moderately muscular and often contains **gastroliths** (small ingested stones) that aid in the grinding of hard food items such as seeds and nuts. The gizzard lining, the **koilin layer**, protects the underlying tissue from abrasion.

The small intestine is composed of the **duodenum**, **jejunum**, and **ileum**, and is the principal site for enzymatic digestion and nutrient absorption. Digestive enzymes from the pancreas and bile from the liver (via the gallbladder or direct hepatic ducts) enter the duodenum. Although parrots lack a gallbladder in many species (e.g., budgerigars), bile secretion continues directly from the liver. The intestinal epithelium is adapted for efficient absorption of monosaccharides, amino acids, fatty acids, vitamins, and minerals. Parrots possess **paired ceca**, though they are typically small and vestigial compared to those in more herbivorous avian species. As such, microbial fermentation in parrots is limited, and hindgut fermentation plays a minimal role in their overall digestion. The large intestine is relatively short and leads into the cloaca, a common chamber for the passage of feces, urates, and reproductive products. The cloaca is divided into three regions: the **coprodeum**, **urodeum**, and **proctodeum**. Absorption of water and electrolytes occurs primarily in the colon and cloaca, which contribute to the formation of the semisolid excreta characteristic of birds.

Symptomatology of Gastrointestinal Pathology

Clinical signs of GI disease in parrots are often non-specific and can overlap with other systemic illnesses. Common indicators include:

- **Changes in droppings:** The most common sign is a change in the volume, color, or consistency of droppings. This can manifest as diarrhea, polyuria (increased urine component), or a change in color (e.g., green, yellow, or blood in the droppings).
- **Weight loss:** This can be a subtle but significant sign of chronic GI malabsorption or a sign of a more acute disease.
- **Vomiting or regurgitation:** It's important to differentiate between vomiting (a forceful expulsion of stomach contents, often with head shaking) and regurgitation (a more passive, head-bobbing motion often associated with courtship or feeding young). Vomiting is a more serious sign of GI disease.
- **Lethargy and depression:** Birds with GI issues often appear dull, have ruffled feathers, and may spend more time on the cage bottom.
- **Abdominal distension:** A swollen abdomen can indicate an enlarged proventriculus, ventriculus, or liver.

Common Causes of Gastrointestinal Disease

The conditions affecting the gastrointestinal tract can be classified in two main categories

1. Infectious Diseases:

- **Bacterial infections:** Often caused by opportunistic bacteria like *Salmonella*, *E. coli*, or *Clostridium*. These infections can lead to severe enteritis.
- **Viral infections: Proventricular Dilatation Disease (PDD)**, caused by avian bornavirus, is a fatal and highly feared disease in parrots. It causes nerve damage to the GI tract, leading to a "paralyzed" stomach that cannot digest food. **** Other viruses, such as avian polyomavirus and circovirus, can also affect the GI tract.
- **Fungal infections:** *Candida* and *Macrorhabdus ornithogaster* (formerly known as megabacteria) are common fungal and yeast-like organisms that can cause GI disease. *Macrorhabdus* causes "going light" syndrome, characterized by chronic weight loss despite a good appetite.
- **Parasitic infections:** Intestinal parasites like giardia, cryptosporidia and coccidia can cause diarrhea, poor feather quality, and weight loss.

2. Non-Infectious Diseases:

- **Dietary issues: Poor nutrition** is a leading cause of GI problems. Diets high in seeds and low in essential vitamins (especially Vitamin A) can lead to mucosal damage, making the GI tract susceptible to infection. Foreign body ingestion, such as toys or cage materials, can also cause impactions or perforations.
- **Toxicity:** Heavy metal poisoning, particularly from zinc and lead, is a common problem in parrots. These metals are often found in galvanized cages, bell clappers, and paint. Heavy metals can directly damage the GI tract and cause neurological signs. ****
- **Neoplasia:** Tumors of the GI tract, while less common, can cause obstructive signs and chronic weight loss.

- **Proventricular and Ventricular Impaction:** This is often associated with foreign bodies, but can also be due to a poor diet (e.g., indigestible fibers) or PDD.

Diagnosis and Treatment

A definitive diagnosis requires a combination of diagnostic tests:

- **Fecal analysis:** A wet mount and Gram stain of a fresh fecal sample can help identify bacteria, yeasts, and parasites.
- **Radiography:** A radiograph can reveal an enlarged proventriculus (suggestive of PDD), foreign bodies, or gas accumulation.
- **Hematology:** A complete blood count and chemistry panel can assess the overall health of the bird and identify signs of inflammation, infection, or organ dysfunction.
- **Endoscopy:** This allows a veterinarian to visually inspect the GI tract and take biopsies.
- **Crop wash and culture:** A sample from the crop can be analyzed for infectious agents.
- **PCR:** for Avian Bornavirus, Chlamydia or other pathogens.

Treatment is tailored to the specific diagnosis. It may include:

- **Antibiotics, antifungals, or antiparasitics:** To treat specific infections.
- **Supportive care:** Providing warmth, fluids, and easily digestible food is critical for sick birds.
- **Dietary correction:** A shift to a high-quality pelleted diet, with a variety of fresh fruits and vegetables, is often the most important long-term treatment.
- **Surgery:** In cases of foreign body obstruction or severe impaction, surgery may be necessary.

References

1. Hollwarth A, Prieto LG. Avian Gastroenterology: Anatomy and Assessment. *Veterinary Clinics: Exotic Animal Practice*. 2025 May 1;28(2):413-24.
2. Hollwarth A, Prieto LG. Avian Gastroenterology: Noninfectious and Infectious Disease. *Veterinary Clinics: Exotic Animal Practice*. 2025 May 1;28(2):425-51.
3. Wissink-Argilaga N, Pellett S. Psittacine nutrition and common deficiency diseases. *Companion animal*. 2015 Sep 2;20(9):526-31.
4. Speer, B.L. (2014). Gastrointestinal parasites. In: *Current Therapy in Avian Medicine and Surgery*. Elsevier Saunders.