Cloacal Disorders and Diseases of Birds

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The cloaca is a complex structure in the avian patient. Its primary function is the retention and expulsion of intestinal, reproductive, and urinary products. Due to the complexity of the cloaca and the anatomical structures associated with it, the health of this structure is pertinent to the well being of the avian patient. The anatomy and physiology of the cloaca will be reviewed as well as the diagnosis and treatment of different cloacal conditions. Cloacal disorders discussed will include cloacal infection and inflammation, prolapse, obstruction, and neoplasia. Specific case examples are included for many of these categories.

The cloaca is comprised of three compartments: the proximal coprodeum, the middle urodeum, and the distal proctodeum. The coprodeum is the connection between the distal colon and the cloaca. The urodeum contains the openings of the ureters and the genital ducts. The coprodeal fold is a sphincter like ridge of tissue that separates the coprodeum from the urodeum. A second ridge within the cloacal lumen called the uroproctodeal fold separates the urodeum the proctodeum. The proctodeum communicates with the outside of the bird's body through the vent. The opening and closing of the vent is controlled by striated sphincter muscle. The Bursa of Fabricius is a diverticulum of the dorsal wall of the proctodeum. The bursa is involved with the immune function of the bird and is the location of B-lymphocyte differentiation. The bursa reaches its largest size at eight to twelve weeks of age and decreases in size as the bird ages. In male birds of some species, a copulatory organ may be housed within the cloaca. Anseriformes, ratites and an occasional psittacine species (Vasa parrot, Coracopsis vasa) have phallic bodies housed within the cloaca. The coprourodeal fold prevents fecal contamination of the urodeum and proctodeum, and during defecation protrudes through the vent to serve this function. During the egg laying process the coprourodeal fold will protrude in a similar manner. Most avian species reabsorb water from the urine held in the urodeum. Urine deposited from the ureters into the urodeum often moves retrograde into the rectum where this reabsorption takes place. Stress-induced polyuria can occur if the bird releases the cloacal contents too quickly for normal urine processing and water reabsorption to occur. The cloacal blood supply is via the pudendal artery and vein. The pudendal nerve provides innervation to the dorsal cloacal wall.

The causes of cloacal disease can be related to any of the systems associated with this structure. Causes of cloacal abnormalities include bacterial or fungal infection, inflammation, fecalith or urolith formation, retained eggs, prolapse, or neoplasia. Cloacaliths, with multiple lamellar layers, can develop into large concretions of several centimeters in size causing severe dilatation and obstruction of the cloaca. Masses can develop from the cloacal mucosa or associated structures. Cloacal papillomatosis can produce proliferative lesions of the cloacal mucosa. This author has had a case of complete cloacal obstruction in an umbrella cockatoo (Cacatua alba) from a fungal granuloma. Cloacal neoplasia is an infrequent diagnosis, but should be included as a differential for a cloacal wall thickening or luminal masses. Cloacal lymphoma was diagnosed by the author in an Indian ring-necked parakeet (Psittacula krameri) from cloacal mucosa biopsies obtained via cloacoscopy. Vent stricture and subsequent cloacal obstruction can occur in avian patients secondary to distal cloacal and external vent sphincter abnormalities.

Diagnosis of cloacal disease is often possible during the initial examination of the bird. A thorough anamnesis should include information on age, gender, reproductive status and activity, diet and management. The avian patient with a blockage of the cloaca will present with clinical signs of obstructive disease. Clinical signs of cloacal disease can vary but include tenesmus, hematochezia, decreased dropping production, diarrhea or change in dropping appearance, flatulence, soiling of vent area, lethargy, anorexia, change in perching posture, inability to breed or produce eggs normally, prolapse of cloacal mucosa or other cloacal structures, or mass effect in the caudal abdominal region. If cloacal disease is due to a mass effect within the cloacal lumen, respiratory signs may be apparent due to impingement of the abdominal airsacs. Routine hematology including a complete blood count and chemistry profile will often be normal. Some birds may develop a heterophilic leucocytosis due to secondary bacterial infections or inflammation associated with a cloacitis. A protein electrophoresis may show changes related to inflammation. If cloacal obstruction prevents the normal passing of excrement, congestion of the ureters can occur, causing possible renal failure and hematological changes such as an elevation in uric acid values.

A thorough cloacal examination should be performed on every bird as part of the routine physical assessment. The vent, or cloacal orifice, should be examined prior to performing an internal cloacal exam. Change in vent size or symmetry, tone or sensation may be present. After the vent has been evaluated, an internal cloacal exam can be performed. A cursory examination can be performed in the restrained bird. A sterile, lubricated, appropriately sized swab should be gently inserted into the cloaca. Intraluminal masses will be detected with this swab technique. The distal cloacal mucosa can then be gently everted for examination. The mucosa should appear moist and pink with a uniform appearance. Any masses or changes in mucosal consistency should be further evaluated. Papillomatosis of the cloaca can cause proliferative mucosal changes. Application of dilute acetic acid (vinegar solution) to the cloacal mucosa has been reported to increase suspicion of papillomatous changes by causing a white discoloration of the affected mucosal tissue. The definitive diagnosis of papillomatosis is made from histopathologic examination of a biopsy. Swab samples for bacterial or fungal

cultures can be collected. A Gram's stain should be performed on a fecal sample collected from the cloaca. Cloacal cytology can be useful in diagnosing disorders of the lower intestinal tract, reproductive tract, urinary tract or cloaca itself. Cell samples collected from the cloaca may originate from any of these organ systems and additional diagnostics are required to localize abnormalities. Normal cloacal cytology often includes epithelial cells (noncornified squamous or columnar), urate crystals, extracellular bacteria, plant and fecal material and other background debris.

Direct visualization of the cloacal lumen is the most effective way to diagnosis partial or complete cloacal obstruction. The internal visual cloacal exam can be performed in several ways. The size of the patient dictates equipment potential. In small birds, it may not be possible to safely insert anything into the cloaca. In medium to large-sized birds, however, there are several options. An otoscope with a sterile cone tip can be used but has limited range of view. The small endoscope is the ideal modality for internal cloacal visualization. A small diameter 1.9mm flexible or 2.7 mm semi-rigid endoscope is the ideal modality for an internal cloacal examination. Internal cloacal structures such as the ureteral openings, oviductal orifice or distal colon can often be examined. Insufflating the cloaca with an infusion of a liquid such as sterile saline will aid in visualization. Cloacal mucosal biopsies may be taken at the time of endoscopic examination. Care must be taken to choose a biopsy site devoid of pertinent anatomic structures, and full-thickness biopsies are contraindicated in most cases.

Radiography is a useful diagnostic modality in the diagnosis of obstructive cloacal disease. For initial assessment, survey radiographs can be taken. A whole body ventrodorsal and lateral view should be taken to allow for evaluation of the entire gastrointestinal tract, reproductive organs and urinary systems. Obstructive conditions in the cloaca can cause subsequent dilatation of the proximal intestinal tract or changes in other related organ systems. If survey radiographs indicate any abnormalities of the gastrointestinal system, contrast radiology can then be utilized to further delineate structures. Gastrointestinal emptying times vary according to species and patient size, and references should be consulted when evaluating the contrast films. Fluoroscopy can be utilized to evaluate the gastrointestinal motility and function of the bird. A localized contrast study can be performed on the cloaca itself. This diagnostic test, although useful, is rarely necessary for the diagnosis of cloacal obstruction since direct internal visualization is often diagnostic. For this study, a flexible catheter can be inserted into the cloaca, and the contrast agent (usually 3- 6 mls) can be directly infused, into the cloacal lumen. After the contrast agent has been infused an immediate radiograph can be taken. Any masses within the cloacal lumen will be outlined with the contrast agent. Retroperistaltic movement of the contrast agent into the colon is normal and will often be noted with this study.

Cloacal conditions can either be managed medically or surgically or in combination. The optimal treatment program is dependent on the underlying cause of the condition. Because many cloacal disorders are caused by a prolapse or mass effect within the cloaca, surgical intervention if often required. Cloacoscopy can be utilized for the biopsy and debridement of internal cloacal masses and the treatment of papillomatosis. A technique was developed utilizing diode laser application via cloacoscopy with fluid insufllation by Dr. Stephen Divers at the University of Georgia, College of Veterinary Medicine. There is potential for bipolar cautery to be used through the rigid endoscope as well. Laser ablation therapy via cloacoscopy was utilized at the University of Georgia, College of Veterinary Medicine to treat a case of cloacal adenocarcinoma. For maximum visualization of the cloacal lumen and resection of large masses, a cloacotomy is the procedure of choice. A cloacotomy allows for direct visualization of the cloacal lumen and facilitates removal of masses (e.g. cloacaliths, or eggs) or resection or biopsy collection of abnormal tissues. Biopsy samples can be collected, or in the case of papillomatosis, resection of affected tissue can be performed.

Obstructive cloacal conditions can lead to vent stretching and atony. If indicated, ventplasty surgery can be performed in order to reduce vent size and prevent future prolapse. Care should be taken to maintain adequate vent diameter to allow for normal defecation and reproductive activity. If there is a history of cloacal obstruction due to egg binding in a female bird not intended for breeding, medical or surgical prevention of egg laying may be indicated. The patient should be supported post-operatively with analgesics, fluids and general supportive care. Inflammation and infection of the cloacal mucosa can lead to ascending infections of the gastrointestinal tract, reproductive tract, or ureters; antimicrobial and/or antifungal medications should be given, if indicated.

Nutritional support should be initiated as soon as the patient can be fed. A readily digestible diet such as an extruded commercial avian food is recommended as the base of the diet. If the bird is normally on a seed-based diet, a gradual conversion to the formulated diet is recommended.

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