



Care of the Critically Ill Breeding Hen

April Romagnano, PhD, DVM, Dipl. ABVP (Avian Practice)

***Affiliation:* Animal Health Clinic, Jupiter FL**

Summary

The critically ill breeding hen presents many challenges to the avian veterinarian. Various obstetrical problems such as egg binding, dystocia, egg yolk peritonitis, prolapse, chronic egg laying and associated osteoporosis and pathological fractures, can occur in the breeding hen. Obstetrical problems are multifactorial and prognosis varies. The avian clinician must obtain a thorough general and reproductive history. Physical examination, blood work, cloacal culture and sensitivity, and radiography are indicated. Radiography may reveal medullary bone formation, called hyperostosis or osteomyelosclerosis, which occurs under the influence of estrogen in the laying hen. Physiologic hyperostosis is most commonly seen in the femur, tibiotarsus, radius, and ulna. Ultrasound and endoscopy may also be important. In addition to obstetrical problems, mate trauma can also affect the captive breeding hen. Forced multiple-clutching, inappropriate diets, and small cages limiting exercise and escape areas, all contribute to the problems described above. Exacerbating these problems is the fact that hens spend a good deal of time in their nest boxes. Although this may be good for breeding, it makes routine observation difficult. A hen's problems may therefore go unnoticed, making triage medicine of the critically ill hen, the rule, and not the exception.

Egg Binding and Dystocia

Egg binding, the failure of an egg to pass through the oviduct at a normal rate, is the most common obstetric complication in birds. Dystocia, the mechanical obstruction of an egg in the caudal reproductive tract, can occur at the level of the caudal oviduct/uterus, the vagina, or the vaginal-cloacal junction. Clinical signs include depression, lethargy, and tachypnea. The bird has a wide non-perching stance and may have uni- or bilateral paresis/paralysis. The abdomen is usually doughy and the cloaca swollen. An egg is typically palpated in the abdomen. Tail wagging, straining, decreased defecation frequency, increased defecation volume, dyspnea, or excessive broodiness, may also be seen. In cases of severe dystocia, the birds feet may go "blue-white", indicating vascular compromise and warranting immediate intervention.

The etiology of egg binding is multifactorial. Causes include hypocalcemia and other nutritional deficiencies, oviduct, uterus, or, vaginal muscle dysfunction, excessive egg production, large, misshapen, or soft shelled egg (s), age of hen, obesity, oviduct tumor, oviduct infection, lack of exercise, hyper- or hypothermia, breeding out of season, first time



layers, hens afflicted with persistent cystic right oviduct, lipomas, abdominal wall herniation, and genetics.

Following physical examination, patient stabilization is critical. Fluids should be given subcutaneously (SQ), but initially supplementation with an intravenous (IV) bolus may be needed. Placement of an IV jugular or an interosseous catheter should be reserved for cases of severe dehydration. Calcium should be given intramuscularly (IM) in all situations. Vitamin A and E/selenium may also be helpful. The patient should be placed in a warm, humid, and steam-filled oxygenated incubator.

Prostaglandin F2a, Oxytocin, and Prostaglandin E2 (PGE2) have all been used to help the bound egg pass. However, only PGE2 has been shown to relax the uterovaginal sphincter. PGE2 gel (Prepidil, Pharmacia and Upjohn, Kalamazoo, MI) is recommended topically, applied to the uterovaginal sphincter, at a dose of 0.1 cc per 100 grams of bird.

If oviposition does not occur post medical treatment, non-surgical techniques such as digital pressure or ovocentesis, should be attempted. Surgical removal is warranted if the egg is lodged in the caudal oviduct or cloaca. An episiotomy should be attempted in these cases. A ventral laparotomy, or possibly a hysterectomy, is indicated, if the egg is severely adhered to the oviduct wall, the uterus is ruptured, a soft shelled egg is located cranial to the oviduct, or the egg is ectopic.

Egg Yolk Peritonitis

Septic egg yolk peritonitis is a term used to describe a highly fatal condition associated with the presence of infection and egg yolk material in the coelomic cavity. It causes a severe inflammatory response, paralleled by that seen with chlamydia, aspergillosis, and osteomyelitis infections, where white blood cell counts may be greater than 30,000 WBC's/ul. Non-septic yolk peritonitis has a better prognosis, since the yolk itself only causes a mild histiocytic response and is gradually re absorbed. A group of syndromes may contribute to egg yolk peritonitis and include: ectopic ovulation secondary to reverse peristalsis, salpingitis, metritis, neoplasia, cystic hyperplasia, ruptured oviducts, and stress or physical restraint of the egg laying hen.

Egg yolk peritonitis is most frequently described in cockatiels, budgerigars, lovebirds, ducks, and macaws, especially scarlet macaws. Clinical signs include decreased, or ceased egg production, depression, anorexia, mild weight loss, and a history of broodiness, or recent egg laying. Abdominal swelling and ascites are common clinical signs in smaller psittacines.

Other syndromes associated with egg yolk peritonitis include: egg-related pancreatitis which may lead to temporary diabetes mellitus, and yolk emboli which can result in a stroke-like



syndrome, especially in cockatiels.

Treatment includes long term parental antibiotics, based on culture and sensitivity, supportive care, and abdominocentesis to reduce abdominal pressure and relieve dyspnea. Endoscopy can be used to assess internal pathology. If an excessive amount of yolk, an inspissated egg, or adhesions exist, then a laparotomy with abdominal flushing is indicated. Traditionally, most cases resolve with medical therapy, but prognosis is dependent on early detection and treatment. However chronic egg yolk peritonitis remains the most common fatal obstetrical condition in avian species.

Prolapsed Oviduct

The uterus is the most commonly prolapsed tissue, but the vagina and cloaca may prolapse in part. Prolapse of the oviduct, uterus, vagina and/or cloaca can occur secondary to dystocia, normal egg laying, physiologic hyperplasia, various disease states affecting these tissues, general debilitation, and malnutrition.

Exposed tissues must be treated immediately and kept moist and clean. Parental antibiotics and fluids should be administered. Next, topical sterile lubricant mixed with sterile 50% dextrose (1:1) or steroid preparations containing antibiotics or dimethyl sulfoxide gel (DMSO) can be applied to help decrease inflammation. Cleaned moistened, shrunken, tissues are gently replaced with a lubricated swab. Recurrence is common, and replacement required. If necessary, a cruciate stay suture can be placed laterally on either side of the vent. This allows the tissues to regress naturally in size, but also leaves an exit for urine, urates and feces. If the cloaca repeatedly prolapses, cloacalpexy is warranted. Cloacal surgical debridement, or possibly a hysterectomy may be required once the patient is stabilized.

Chronic Laying Hen

Chronic or excessive egg laying occurs when a hen has successive clutches, or when she lays larger than normal clutch sizes. This phenomenon occurs commonly in cockatiels, budgerigars, and lovebirds. Excessive or chronic egg laying leads to calcium deficiency, and eventually to egg binding, osteoporosis, and pathological fractures. Sexual stimulation induced by toys, nest boxes, human beings, inappropriate mates, or natural mates should be eliminated. Decreasing the photoperiod to 8-10 hours of light per day interrupts the hormonal balance, ceasing egg production. The eggs of an excessive or chronic egg layer should be left in the nest, or replaced with artificial ones, as an empty nest stimulates the hen to lay again, exacerbating the problem.

Further treatment of chronic or excessive egg laying includes balancing nutrition, medical/pharmacological therapy, and potentially salpingiohysterectomy.

Pharmacological medical management of chronic egg layers is controversial and varied.



Controversial medroxyprogesterone injections or implants have historically been used in cases of chronic egg laying to interrupt the laying/ovulatory cycle. Side effects include obesity, hepatic lipidosis, weight gain, lethargy, polyuria, and polydipsia. Long acting leuprolide acetate (Lupron, TAP Pharmaceuticals, Deerfield, IL) a superactive gonadotropin releasing hormone (GNRH) has been safely used to prevent egg laying in cockatiels. Cockatiels injected every 18 days with 100 ug/kg cease chronic egg laying. Budgerigars need to be injected, every 12-14 days with the same dose, to achieve the same effect. It has been suggested by some authors that the LH activity of human chorionic gonadotropin (HCG) given at the appropriate stage of avian follicular development may cause atresia. Dosages of 500 - 1000 IU per kg IM are generally effective, but may need to be repeated every three to six weeks.

Ultimately, only a salpingiohysterectomy will permanently stop a chronic egg layer. This intricate surgery is generally considered safe in most medium to large sized psittacines, but requires a very skilled surgeon for cockatiels, budgies, and lovebirds. If left untreated chronic or excessive egg laying can lead to hypocalcemia, egg binding, osteoporosis, and pathological fractures. Thus, preventative medicine and client education is very important in the treatment of this condition.

Mate Trauma

Mate trauma is predominately associated with captively bred cockatoos. However, this phenomenon has also been seen in macaws, amazons, conures, eclectus and thick bill parrots. The male typically attacks the female, except in the case of the eclectus parrot, where the female is known to be more aggressive.

The attacks typically occur at dawn, any time of the year, but are more common early in the breeding season. They occur when sexual advances of the male are thwarted by the female. The caged female is then repeatedly attacked by her frustrated mate. In the wild, the female would fly away escaping the attack. In captivity, attacks typically continue until prostration, death, or human intervention occurs. Male cockatoos are relentless, inflicting the physical damage to their mates heads, faces, mouths, and beaks.

Prevention includes pre-breeding season routine wing clipping and beak dremeling of aggressive males. Special boxes with two entrances and baffled interiors may limit box attacks on females. Other special cage designs focus on elevated escape areas for the flighted female that are inaccessible to the clipped male. Beak acrylic or rubber balls surgically applied to the tip of the maxilla offer limited and temporary protection. Temporary or permanent pair separation is always necessary and occasionally breaks the cycle of aggression.



Conclusion

The breeding hen, a preventative medical challenge, is often presented to the avian veterinarian in critical condition. Hence, triage medicine still predominates avian obstetrical medicine. The avian veterinarian needs to educate the aviculturist and establish a preventative medicine program. First and foremost, nest boxes and hens must be visualized on a regular basis. Pertinent clinical signs observed from a distance need to be made clear. Obstetrical complications, their sequelae, and mate trauma should all be explained in detail. Improved diets, grooming of aggressive males, addressing cage size and design, and performing annual pre-breeding physical examinations are all integral parts of a safe and successful breeding program.

Suggested Reading

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