Management of Common Psittacine Reproductive Disorders in Clinical Practice

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KEYWORDS

• Chronic egg laying • Dystocia • Prognosis • Psittacine

The reproductive organs play a key role in the maintenance of normal homeostasis in psittacine birds. For this reason, sex determination should be part of the baseline data collected on every avian patient. Disorders of the psittacine reproductive tract can have a negative effect on the function of other organ systems in the body. Reproductive organs may be plagued by a multitude of problems ranging from infection and neoplasia to inflammation and idiopathic issues that affect fertility. Detection of reproductive problems may require the use of a variety of modalities. The ability to treat these problems often depends on the presenting complaint as well as the clinical condition of the avian patient. Improvement in detection and treatment of reproductive conditions will occur as new information is presented through publication of research and clinical cases.

REVIEW OF FEMALE REPRODUCTIVE ANATOMY

The reproductive tract of all psittacine birds is present only on the left side of the bird. During embryonic growth of the female, a right gonad does exist for a brief period before its development is arrested. From this point on, the left-sided organs become the dominant reproductive organs.

From the cranial to the caudal aspect, the reproductive tract of the mature hen consists of the follicle-containing ovary, an infundibulum, the magnum, the isthmus, the uterus (also known as the shell gland), and the vagina. The size of the follicles in the breeding hen tends to vary from small to very large, giving the appearance of a large cluster of grapes. At this stage of development, the follicles may occupy a larger part of the cranial aspect of the reproductive tract. In the mature, nonbreeding hen or

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Vet Clin Exot Anim 13 (2010) 429–438
doi:10.1016/j.cvex.2010.05.006 **vetexotic.theclinics.com**
1094-9194/10/$ – see front matter

the immature hen, the follicles are regressed in appearance and tend to be tiny to small in size.

The infundibulum, which represents the first part of the left oviduct, serves a key function that requires successful capture of the oocyte in its funnel-like cup. The second part or tubular region of the infundibulum is the likely site for fertilization of the oocyte by the spermatozoon.

The magnum with its thick mucosal folds and coiled regions follows the infundibulum. After the magnum, a short isthmus is followed by the uterus. In general, it may be difficult to grossly distinguish the boundaries between the magnum, the isthmus, and the uterus. The uterus is the primary site for formation of the shell of the egg. It is also the primary place in the oviduct where the egg spends most of its time during formation.

A vaginal sphincter abruptly marks the junction between the caudal aspect of the uterus and the cranial aspect of the vagina. The sphincter area of the vagina is where the storage of spermatozoa occurs. The main compartment of the vagina is characterized by a thick muscular wall. In general, it takes an egg about 25 hours to pass down the entire extent of the oviduct.[1,2]

FEMALE REPRODUCTIVE DISORDERS

Polyostotic Hyperostosis

Polyostotic hyperostosis is a normal physiologic process in which calcium is deposited into the nonpneumatic long bones of hens before the beginning of egg laying. Radiographically, this condition may be seen as increased calcium deposition in the bones of the radius, ulna, femur, tibiotarsus, or vertebrae.[3] A similar pathologic condition called osteomyelosclerosis may be seen in hens with disease of the reproductive tract, such as ovarian cysts or egg yolk peritonitis, or in males with gonadal tumors.[4] The cause of both these processes has not been fully determined, but reproductive hormones such as estrogen or testosterone are thought to play a role. The pathologic lesions associated with osteomyelosclerosis usually resolve with resolution of the disease process.[5,6]

Chronic Egg Production

Chronic egg laying is another common disorder seen in female birds. Species that tend to be overrepresented as chronic egg layers include parakeets (*Melopsittacus undulatus*), cockatiels (*Nymphicus hollandicus*), and lovebirds (*Agapornis* spp). In captivity, most normal egg layers lay no more than 2 to 3 clutches per year. A bird that lays eggs chronically may have multiple clutches per year—some as frequently as once monthly or every 2 months. Other chronic layers may lay more than the average 2 to 4 eggs per clutch. The cause of this condition may differ among individual birds. Suspected causes include increased photoperiod, increased temperature, bonding with a bird of either sex, bonding with a favorite toy, providing substrate in the cage that resembles nesting materials, or potentially abnormal bonding with the owner.[7,8]

One of the main risks of overproduction of egg in these birds is the potential to deplete calcium stores necessary to form a proper egg.[9] Initially, birds may lay calcified eggs, but as calcium stores decrease, the eggs produced may become thin or soft shelled. These birds are also susceptible to depletion of energy stores because of the constant egg laying and pathologic fractures. Such birds are the classic future candidates for dystocia. Management of these birds may include nutritional adjustment, such as oral calcium supplementation, and minimizing exposure to some of the potential environmental causes previously described.[7,8]