

## **Reproductive Problems in Pet Birds**

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This is one of the most common problems faced in avian practice; the bird without a mate that begins egg-laying activity (the vast majority of which are cockatiels). Many owners are unaware that unpaired hens can lay eggs and many do not know the sex of their bird.

Birds can be stimulated to lay eggs through several means. In the wild, the photoperiod plays a role as increasing daylight and shorter nights herald spring and summer, an ideal time to raise young. However, in the home environment, birds are essentially exposed to perpetual long days, as when it darkens outside, the inside lights are turned on so that the bird cannot follow a natural cycle. Thus they could undergo an egg-laying cycle at any time of the year. Reproductive activity is prompted by the photoperiod but other cues seem to get the cycle functioning. Some other forms of stimulation appear to be involved as well. Birds are frequently seen masturbating on toys, cage accessories or on people in the household. Mirrors or favorite toys can be objects of desire for the bird. The bird can be stimulated by other birds vocalizing in the home or merely by gently petting the bird. The bird must be comfortable in its environment, relatively free from stress so that a cycle can begin. Significant changes could upset the cycle.

In the normal situation a bird will lay a clutch of eggs varying from 3-6 eggs then sit on the eggs until they hatch. On occasion, a solitary bird may lay a clutch of eggs and then sit on them as if they were fertile. This is why many people recommend leaving the eggs in the cage with the bird. However, more frequently, the bird lays one egg after another, usually ignoring the eggs that are laid. It depends upon the individual bird if the eggs should be left in the cage or taken out. If the bird clutches and sits on the eggs and does not lay anymore while she sits on them (until she tires of this) they should be left in. Conversely, removing the eggs to eliminate the stimulus usually does not work by itself. Other means must be undertaken to stop this activity.

Egg laying is dangerous for the bird as excessive egg-laying can lead to calcium depletion which could result in egg binding (dystocia), weakness, fragile bones with a great risk of fracture and even seizures. It is essential during egg-laying, desired or otherwise, that increased vitamins and especially calcium are added to the diet. If the bird is not using the cuttlebone or mineral block, it should be scraped over the food or provided with a mineral supplement in the water. If the bird is already on a balanced diet the dangers are not as severe, however most birds are on unbalanced diets so the stress of egg laying can have grave consequences.

There are varying degrees of aggressiveness in the control of egg-laying behavior. It is preferable start with the conservative measures first. If these fail then more involved steps should be taken. Initially, it is recommended to change the photoperiod to simulate winter-long nights and short days. That means placing the bird in complete darkness for 16 hours and daylight for 8 hours. This should be done for 2 weeks. A light cover is not enough; it must be dark. Usually placing the bird in a darkened room, away from the stimulations in the household, with a cover is

adequate. In addition, removal of stimulating toys and objects (mirrors, etc.) are helpful. The owner should be instructed to not physically stimulate the bird through petting. If the bird is stroked and getting especially responsive then the handling should stop. If there are other birds in the vicinity they need to be removed to prevent visual or vocal stimulation. Changing the environment or surroundings of the bird by rearranging objects in the cage or placing it in a new location to throw her off can prove useful in control. These measures will work if followed strictly. They can be instituted whenever the bird is showing sexual behavior, the owners should not wait until egg laying has begun. These measures can also calm sexually aggressive birds of either sex during their cycle.

If these measures do not work the use of hormonal therapy may be indicated. Testosterone or a synthetic testosterone to negate the effects of the female hormone and cease the egg-laying have been used in the past. It will also calm a sexually aggressive female, however, if the sex of the bird is unknown it should not be used, as it would provide more testosterone to an already testosterone-driven male. The testosterone is usually given by injection or can be added to the water. Mibolerone (Cheque Drops) has been helpful in controlling bouts of egg laying behavior but it has been described to cause oviductal enlargement on some occasions. However, due to abuses of these drugs (anabolic steroids), especially by athletes, these drugs have become difficult to obtain and if they can be formulated have become prohibitively expensive.

Medroxyprogesterone (Depo Provera) has an overall calming effect. It is effective in stopping egg-laying activity and was used extensively in quelling sexual aggression in birds of both sexes. However, there are dangerous side effects, increased water consumption, increased appetite, watery droppings, excess weight gain, lethargy and with repeated use the risk of diabetes. This drug should be used cautiously. If used periodically it can be safe but repeated, frequent use could lead to problems. Due to the serious nature of the side effects it has fallen out of favor.

A treatment protocol that has shown some promise involves the use of human chorionic gonadotropin (hcG, Pregnyl). Three doses of hcG are given, day 1, day 3 and day 7 and it seems to be effective in holding off egg laying for several months. Unfortunately the efficacy of the drug seems to diminish over time, possibly due to the development of antibodies to the hcG. Nonetheless, some avian veterinarians use hcG as a first line drug in combination with behavior modification and photoperiod control.

Long acting leuprolide acetate (Lupron), a superactive gonadotropin-releasing hormone, has been safely used to prevent egg laying in cockatiels and budgerigars. Cockatiels are injected every 14-18 days with 100 µg/kg to cease chronic egg laying; budgerigars require the same dose given every 12-14 days to achieve the same effect. Usually three injections are needed for the best effectiveness. In some instances additional injections may be required.

If all other measures fail the last resort is a salpingectomy (“hysterectomy”). It is difficult and dangerous to remove the ovary so removal of a portion of the oviduct is usually effective. The advantage is that with surgery there will be no more eggs. However, as the ovary remains the bird will still display sexual behavior and the possibility exists that ovarian cysts may develop. Also there is always a risk when surgery is performed. So the decision to undergo surgery should be weighed heavily and done only in chronic problem egg-laying.

### **Egg Binding**

Egg binding (dystocia) is a term related to the inability of a hen to deliver an egg with normal effort in a reasonable time. There does seem to be a species predilection with frequent occurrences in cockatiels, budgerigars, and lovebirds, but other psittacines and occasionally canaries and finches can have dystocia. Egg binding is an emergency situation as quite often the bird is in shock, respiratory distress or circulatory collapse. Sometimes the first egg produced will be a problem, especially for pets on an inadequate diet. Other causes include structural or mechanical interference, abnormally shaped or soft-shelled eggs, infection, nutritional deficiencies, inadequate dietary supplementation for hens during breeding, repeated breeding cycles and other poor husbandry practices.

Signs include weakness, labored breathing, depression and inability to walk or perch in some cases. A posterior paresis (weakness in the legs) much like that seen in dairy cattle has been speculated upon. The vent is usually dilated due to the reproductive cycle. Abdominal enlargement is typically a characteristic sign, usually with a palpable egg present in the abdomen. Care must be taken when palpating the abdomen to avoid rupturing the egg as quite often they are thin or soft-shelled. Not every hen with a palpable egg is egg bound however, because the egg remains in the shell gland for 18 hours during development. When egg laying is difficult or prolonged then dystocia can be diagnosed. An obturator paralysis-like syndrome (nerve weakness in the legs) also is seen occasionally in hens which may have had a problem with egg laying. Several weeks may be required before the bird can walk normally. A single injection of dexamethasone (cortisone) early on may be of some help.

Diagnosis usually is made by palpation of the egg, but eggs high in the oviduct may require radiographs. Determine if the condition of the bird will allow it to tolerate the stress of any diagnostic procedure. Evaluation of the abdomen can be difficult if the egg is soft-shelled. Administering calcium prior to radiographic procedures may help delineate poorly calcified eggs. Another diagnostic aid, if there is no clearly delineated egg, is to check for the presence of endosteal bone formation (also termed hyperostosis), stimulated by the female hormones. The medullary cavities (center portions) of the bones will appear white due to the deposition of the calcium needed for egg production and serve to indicate that the reason for the abdominal enlargement has a reproductive origin. Ovarian cysts, some ovarian and some testicular tumors can cause these changes as well.

The initial therapy involves stabilizing the bird as usually their condition is compromised. An essential part of any therapy is the administration of calcium, usually given intramuscularly. Usually most minor cases of dystocia will respond to heat, humidity, calcium supplementation and other supportive care. Lubricating the vent probably does not accomplish much. Oxytocin (hormone that stimulates uterine contractions) can be given but could be problematic if the egg is adherent to the oviduct. If the bird is stable and acting normally then 1-2 days of calcium therapy can be given before determining that more aggressive measures are required.

If no egg is forthcoming after medical management, then manipulation (milking) can be tried if the egg is very close to the vent. This process can be facilitated through the use of isoflurane anesthesia. The egg can be gently manipulated down to the vent where it can be removed. An aid to the procedure is the placement of a small amount of lubricant (K-Y Jelly) in the cloaca which

moistens the membranes which can become dry and adhere to the shell. Puncturing the egg, withdrawing the contents, and collapsing the egg laterally are popular strategies for low eggs that cannot be milked out. A 22-gauge needle may be placed into the egg through the wall of the ventral abdomen if the egg is readily palpable in this location. Egg fragments may require at least 48 hours to pass; antibiotic therapy is recommended. In severe cases, the only alternative is laparotomy (surgical intervention) with removal of the egg and usually a portion of the oviduct (salpingectomy) to prevent repeat occurrences. No matter what technique is used there will be an evaluation for the presence of additional eggs which will be removed as well. Following egg removal the bird should be placed on a protocol to prevent further reproductive activity (outlined in the previous section) including environmental management and possibly hormonal therapy.

### **Yolk Peritonitis**

Egg yolk peritonitis is a general term used to describe peritonitis associated with the presence of yolk material, usually caused by conditions such as ectopic ovulation (the follicle ruptures and the egg does not enter normally in the oviduct) or oviductal disease. Budgerigars and cockatiels seem to be especially affected by this condition.

Clinical signs of egg yolk peritonitis are not very specific and include weight loss, lethargy, anorexia and on some occasions, abdominal enlargement or ascites (abdominal fluid). An association should be made with recent egg-laying or reproductive behavior.

Leukocytosis (increased white blood cell count) with a relative heterophilia (increase in a particular type of white blood cell termed heterophils) is a common hematologic finding and there may be hypercalcemia (high blood calcium), hypercholesterolemia (increased blood cholesterol) and hyperglobulinemia. (increased blood protein) An abdominal tap may reveal yolk or fat globules. Radiographs may be non-specific but usually endosteal bone formation (hyperostosis) will be seen.

Treatment depends upon the condition of the bird. Mild cases resolve with supportive care alone. More severe cases need therapy for shock, antibiotics and supportive care. When the bird is stable surgical intervention can be performed if required. The egg yolk and any egg material should be removed, break down any adhesions and if possible perform a salpingectomy.

It is preferable to prevent this condition through the inhibition of reproductive behavior before egg-laying is initiated. These measures were described in an earlier section.

### **Ovarian Cysts**

Ovarian cysts are commonly seen in budgerigars and cockatiels. The cause appears to have an endocrine basis. The cysts can become quite large, causing significant abdominal enlargement. Diagnosis can be aided by radiography as endosteal bone formation (hyperostosis) is usually seen indicating reproductive activity. It can be difficult to distinguish abdominal structures due to the presence of ascites. Ventricular (gizzard) position (facilitated by grit in the gizzard) can provide a clue by its displacement from normal position. Barium radiographs can further aid in delineating the origin of the abdominal enlargement. Fluid obtained by an abdominal tap of the ascitic fluid can vary from clear to yellow in color. Treatment includes transabdominal aspiration of the cysts, surgical removal of the ovarian cysts or ovary, or hormonal therapy.

### **Ovarian Tumors**

Ovarian tumors can occur in any species but are most commonly seen in budgerigars. Clinical signs include abdominal enlargement and associated complications, such as abdominal herniation. Diagnosis can be accomplished through radiography (possibly a barium study) or exploratory laparotomy. Various varieties of tumors have been described. The prognosis is poor.

### **Prolapsed Cloaca**

Apart from the cloacal papilloma, other prolapses involving the cloaca also are seen. The entire cloaca (proctodeum/urodeum) may evert out of the vent, although this fortunately is uncommon. It does seem to occur more frequently in cockatoos and is rare in other psittacines. The etiology (cause) of these prolapses is unknown. Viruses were theorized to be the cause but it is most likely due to breakdown of attachments to the body wall by sudden increases in intrabdominal pressure (as in herniation), possibly related to reproductive behavior.

If the prolapse has been untreated, the bird may require intensive support therapy; dependant upon how much tissue has prolapsed, how long it has been prolapsed and if necrosis has occurred. If it is the first occurrence and was easily reducible with minimal tissue damage, a purse string suture can be placed around the vent. Before the bird is released from the hospital evaluation is made to be certain that the bird is able to pass droppings normally. The sutures can remain in place for an extended period of time to facilitate the development of attachments to the cloaca and prevent further prolapses. Unfortunately this may not have long term success, because many of these birds have repeated prolapse episodes. In these situations, a cloacopexy involving a midline incision and stay sutures attaching the proximal portion of the cloaca to the caudal ribs usually is recommended to correct this condition.

### **Prolapsed Oviduct/Uterus**

A prolapse of the caudal reproductive structures is most commonly seen after a bout of egg laying, but it also can occur prior to or during a reproductive cycle. Prolapsed oviducts are most often seen in the parakeet and cockatiel. An egg may or may not still be contained within the prolapsed structure. Obviously these cases need to be seen as soon as possible to prevent necrosis of the exposed tissues.

If the egg is present in the prolapsed oviduct it could be manipulated out if the opening is present and dilated enough. Quite often the tissues are dried out and the egg is stuck in the oviduct. In these cases moistening the tissues and exposed portions of the egg with saline may enable the loosening of the adhesions. If the opening is too small or if the egg is too adherent then the oviduct can be incised with a scalpel blade and the egg removed. The prolapse then needs to be replaced. In cases that are treated early the tissues can usually be easily replaced. If the tissue is swollen, topical applications of 50% dextrose can reduce the swelling and ease replacement. Once the prolapse is replaced a purse string suture or stay sutures can be placed around the vent. However, by the time veterinary care is sought in most of these prolapse cases, the tissues have been prolapsed for a long period of time and quite often already undergoing necrosis. The prognosis is guarded as the tissues do have a tendency to prolapse again. Although a cloacopexy-type operation may be performed, it is not unusual for sutures to tear through the wall of the oviduct. A salpingectomy has been suggested for managing some of these cases, but

the bird may already be compromised, and intensive supportive care including heat, fluids, antibiotics and dexamethasone is recommended.

## **Sexual Behavior**

### *Sexual Aggression*

During their reproductive cycles birds can show varying degrees of sexual behavior and aggressiveness. Egg-laying and masturbation are manifestations. However, some birds can become very aggressive and demonstrate undesirable behaviors such as screaming and biting. Sexually active birds can become very protective about their cage or the object of their desire, be it a toy or family member. When such behavior begins it is recommended to institute means to calm the reproductive cycle. The conservative means outlined above to control egg-laying behavior (changing photoperiod and behavioral modification) should be initially tried. If the bird is able to fly, sometimes wing-clipping limits their independence and seems to calm them. If none of these methods work and the behavior is irritating to the owner medical therapy may be tried. In the past medroxyprogesterone (Depo Provera) has been used for calming sexual behavior in birds of both sexes, however, due to side effects it be used with great caution, if at all. Calming or mood altering drugs such as those used for feather-picking (doxepin, clomipramine, fluoxetine and haloperidol) have been used.

### *Mate Aggression*

Mate aggression is related to the sexual aggression displayed during reproductive activity. This behavior is commonly observed in cockatoos. It typically occurs because the male is ready to breed and the female is not. If a nest box is present the male will force the female to remain inside. The male may brutalize or kill the female, usually crushing the beak or traumatizing the head. There are several suggested means of preventing it. The wings of the male should be clipped to give the female a better opportunity for escape. More than one exit should be available in the nest box so that the male cannot prevent the female from exiting. Filling the nest box with small pieces of wood has proven effective as the time needed to remove the wood delays nesting time and mimics the natural cycle. The female is more likely to be ready when the male is finished clearing the nest. It also provides the male with the opportunity for chewing behavior and also to work out aggressions on the wood pieces. If these methods do not work, then the pair can be separated and eventually the male could be tried with another female. If the male is a chronic offender then he should not be used for breeding.

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