

# Exotic Pet

P R A C T I C E

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## FEATURE ARTICLE

### Stabilization of Ill Reptile Patients

*Wm. Kirk Suedmeyer, DVM*

Reptiles are commonly brought in to clinicians in advanced deteriorated states. Stability of the patient is critical to diagnosis and treatment. The stable patient is more likely to tolerate sampling of diagnostic specimens, radiographs, and long-term treatment. A few general rules apply when providing basic emergency care for a reptile.

Reptiles that are in an advanced state of deterioration will not tolerate stress and long-term manipulation. Providing a warm, quiet environment will go a long way toward stabilizing the patient. Preparing instruments, syringes, needles, medications, and fluids before the treatment will lessen the actual time spent restraining the reptile.

In critically ill patients, maintenance of a patient's airway and pulmonary function is paramount to stabilization. Physical removal of mucus and debris from the nares and glottis, followed by oxygen supplementation via face mask, induction chamber, or direct intubation may be necessary in hypoxic reptiles. Caution must be used in providing oxygen therapy, as the primary driving force in reptile respiration is  $PO_2$ , not  $CO_2$ . Thus, supplementing all reptiles with lower respiratory tract disease may actually suppress respiration. Proper humidity (in general, 60%-70%) will help to maintain the function of mucociliary filaments in removing lower respiratory tract debris.<sup>1</sup> Use of pulse oximetry may provide the clinician a baseline for monitoring improvement.<sup>2</sup>

Proper temperature is probably the most important factor in stabilizing reptile patients. It is well known that reptiles rely on external sources of heat to maintain their metabolism. Providing an environment that meets the optimal temperature for the particular reptile is the first step in stabilizing the patient. Most reptiles can be placed in a cage that provides a thermogradient upwards of 90°F-95°F (32.22°C-35.0°C) without overheating.

Proper lighting is essential for ill reptiles. The combination of a fluorescent light (Vitalite, Durotest Corp. Chroma-50, General Electric) and a black light (Sylvania) providing a 290- to 320-nm wavelength of light is necessary to activate cholecalciferol (vitamin  $D_3$ ).<sup>3</sup> These lights must be placed within 20 to 30 cm of the reptile to have a significant effect. It has been demonstrated that this simple step improves the appetite in reptiles.<sup>4</sup>

The assessment of hydration and administration of proper fluids will aid most ill reptile patients, except those suspected of drowning. An animal's hydration status can be evaluated by taking a blood specimen and evaluating the packed cell volume and total protein. The values obtained can be compared with normal values for hydrated reptiles.<sup>5</sup> We generally use Tyrode's salts (Sigma Chemical, St Louis, Mo), which provide 0.8% sodium chloride and glucose and can serve as a temporary energy base in an unstable reptile. This fluid matches the isotonicity of reptile plasma and helps to

maintain hydration. Other commonly used replacement fluids include 2 parts of 2.5% dextrose in 0.45% sodium chloride and 1 part Ringer's solution, or a 1:9 solution of 0.9% sodium chloride and sterile water.<sup>5</sup> The fluids must be warmed to the particular reptile's preferred temperature range. Routes of administration include subcutaneous, intraosseous (for chelonians and lizards), and intravenous. Intravenous fluid administration is difficult in reptiles; cut-down procedures under local analgesia are necessary to place an intravenous catheter. Fluids are then administered with pulse syringe at 1 mL/kg per hour.<sup>5</sup>

The control of hemorrhage and the stabilization of major open wounds are also essential in stabilizing the patient. Reptiles have low blood pressure, and hemorrhage is generally easily controlled. Sterile

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lavage of open wounds should be attempted, followed by temporary closure until the patient is stable for surgery. Systemic antibiotics such as piperacillin (Pipracil, Lederle, Puerto Rico) at 100 mg/kg, given intramuscularly every 48 hours, and/or metronidazole at 250 mg/kg given by mouth with a gastric tube are good initial choices for critically ill patients.<sup>1</sup>

Depending on the nutritional status of the animal, force-feeding may be necessary; this can help reverse catabolic processes in an anorexic reptile. In chelonians, the best way to administer nutritional support is with a pharyngostomy tube. The technique for placement has been described in several articles.<sup>1</sup> Emerald II (Lafeber, Odell, Ill) is a good overall initial choice for nutritional support in chelonians.<sup>3</sup> In snakes and lizards, passage of a soft rubber feeding tube into the stomach is a simple procedure. The practitioner passes a lubricated tube past the glottis and into the pharynx. The length of tube inserted is two thirds of the body length in snakes and just past the ribs in lizards. In cachectic reptiles, the use of complex sugars and proteins places too much demand on the energy reserves and actually causes rapid deterioration. Such is the case in feeding prey items such as waxworms to emaciated lizards. Instead, highly digestible simple sugars, fats, and high-quality protein diets are better suited for the energy reserves in anorexic reptiles. In moderately ill reptiles, portions of their normal diet can be used. Caution must be used when attempting to force-feed reptiles. Clinical assessment of the patient's body condition must be weighed against how long the reptile has been truly anorexic.

Fracture stabilization can be accomplished by adapting the standard protocols used in small animal practice until surgical repair can be performed. A thorough assessment of the nutritional status of the animal should occur before attempting surgical repair.

Stabilization of the reptile patient does not differ in approach from the style practiced in small animal medicine. The individual animal's natural history and unique requirements must be addressed if one is to have a good chance of success with the critically ill reptile patient. Once the animal is stabilized, blood samples, radiographs, ultrasound, endoscopy, etc can be obtained and evaluated as part of the diagnosis and therapeutic rationale.

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# PRACTICE TIP

Shawn Messonnier, DVM

## Hyperadrenocorticism in Ferrets

Laboratory diagnosis relies on endocrine panels testing plasma steroid assays (University of Tennessee, [615] 974-5638). Routine clinical pathology, adrenocorticotropic hormone stimulation, and dexamethasone suppression tests are not helpful. Remember that hyperadrenocorticism is NOT Cushing's disease. For the pets of owners not wishing to pursue endocrine testing, the diagnosis is fairly straightforward based on clinical signs if you rule out estrus or ovarian remnant. Concurrent disease (eg, insulinoma) can occur.

## ROUNDTABLE

### Malocclusion in Prairie Dogs and Rodents

#### Q. Define *malocclusion*.

**Dr Johnson-Delaney:** *Malocclusion is the condition in which there is improper occlusion of the teeth. It can involve the incisors and/or the cheek teeth (molars). All rodents have open-rooted incisors. Some (chinchillas and guinea pigs) have open-rooted molars. Others (mice, rats, hamsters, gerbils) have closed-rooted molars. Prairie dogs have rooted molars. Incisors must continually be ground together to keep them in proper condition. Growth is at the base. The tooth is a segment of a true circle. It is continuously being pushed out of the end of the jaw, compensating for the portion worn away by cutting hard materials. The outer surface of the tooth is harder than the inner surface, so that it is rather self-sharpening. There is no nerve in the tooth except at the growing base. The grinding and cheek teeth consist mostly of dentine. Enamel forms the outer layer, and it also forms*

*loops or folds in the body of the teeth to form various patterns of grinding surfaces. In the rooted molar, cement occupies only minor space. In open-rooted teeth, it fills the space between the folds of enamel. The enamel wears less rapidly than the dentine and cement and forms sharp ridges on the crown of the tooth. The molariform (cheek) teeth may be either high- or low-crowned. The articulation of the lower jaw with the skull that is present in rodents allows for considerable rotary motion. When a rodent cannot grind its teeth, the tips soon grow past each other and continue to grow in spiral form. The result is that the upper incisors may grow backward and upward and may pierce the roof of the mouth. The lower teeth grow upward in front of the nose. Molariform mandibular teeth grow inward, whereas maxillary molariform teeth grow outward. In the guinea pig and chinchilla, the*

*mandibular molariform teeth may actually entrap the tongue and grow into the hard palette, effectively preventing the animal from eating and swallowing.*

**Dr Suedmeyer:** *Simply stated, an improper alignment of the dental arcades.*

**Dr Campbell:** *Malocclusion is the malalignment of the teeth resulting in overgrowth of the incisors and/or cheek teeth; the overgrowth occurs because the teeth of rodents grow throughout life.*

#### Q. Which teeth are most commonly involved?

**Dr Johnson-Delaney:** *In my experience, in guinea pigs and chinchillas malocclusion usually starts with problems in the molariform teeth. For all others, it is the incisors. Hamsters are frequently fed a soft, bird seed-type diet so there is little wear, and the teeth can curl into the cheek pouches and pierce the skin before owners notice.*

**Dr Suedmeyer:** *Although the incisors are the most obvious teeth noted, we have seen an equal number of molars with malocclusion. Practitioners should be aware that, at least in our experience, when the incisors are maloccluded, so are the molars. These teeth must be given a thorough examination.*

**Dr Campbell:** *The incisor teeth commonly overgrow in rabbits and most rodents. In guinea pigs, it is the cheek teeth.*

#### Q. What are the presenting signs?

**Dr Johnson-Delaney:** *In guinea pigs and chinchillas, the owners usually report that their pet*

## WHAT'S YOUR DIAGNOSIS?

### Castrated Ferret With Hair Loss

Terry W. Campbell, DVM, PhD

*You are presented with a castrated 4-year-old male ferret (Mustela putorius furo) with hair loss. The physical examination reveals an apparently healthy ferret with hair loss on the tip of the tail. The tip of the tail was enlarged with a rounded, smooth, firm mass. The skin on the mass appeared pink and was hairless.*

#### Questions

1. What are the most likely causes for this mass?
2. What would be your recommended treatment, assuming your diagnosis was correct?
3. What is the prognosis for this disorder?

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"slobbers" or there is drooling and a wetted chin and face fur. The owners may also hear a lot of grinding and note that the animal picks up food and seems like it is chewing, and then the food is dropped back out of the mouth. The animal usually acts hungry, but isn't swallowing the food. Droppings become scarce or abnormal. Frequently the animal is brought in for weight loss or diarrhea, but the owner has not looked at the mouth. Occasionally, there may be bleeding from the mouth if a tooth has been broken; prairie dogs like to try to climb, and they can break the incisors off at the gum line.

**Dr Suedmeyer:** The first signs observed are improper alignment or broken incisors, excessive salivation, dropping food, and losing weight.

**Dr Campbell:** Rodents with malocclusion and overgrown teeth typically present with anorexia and weight loss. Many of them are starving to death. Some have halitosis, and others may exhibit ptyalism. The lower cheek teeth often overgrow in a lingual direction, creating ulcerations on or entrapment of the tongue. The upper cheek teeth usually overgrow into the buccal side, creating ulcerations in that part of the mouth.

**Q. How is malocclusion diagnosed? Describe your technique for an oral examination including type of sedation/anesthesia with dosages, if applicable. Explain how to do an oral exam in these pets.**

**Dr Johnson-Delaney:** Diagnosis is usually made by physical and visual examination. Radiographs are useful to look at the roots of the teeth, particularly the molariform teeth if root abscess is suspected. I use an otoscope with a speculum designated for oral exams—it is one of the larger cones. I also use a small canine vaginal speculum with spread-

able sides. I use a Finoff head to transilluminate the skull; you can see teeth well in some of the less pigmented species of smaller rodent. This can be done in the examination room so the owner can also see some of the problem. Full examination, radiographs, and corrections are done under anesthesia. We usually use isoflurane and either intubate or keep a nose cone on because these animals will still breathe through their noses when you have the mouth open. Medetomidine with or without ketamine works too, and the medetomidine is reversed with atipamezole quickly. Under anesthesia, I use a couple of different types of small canine mouth specula to get exposure. My choice of anesthesia is often based on how debilitated the animal is and how long I think the correction procedure will take.

**Dr Suedmeyer:** Diagnosis is based on history, a thorough physical/oropharyngeal exam, and in some cases, radiographs. We use metal otocones with a strong light source for examining the molar arcades. While the veterinarian examines the rabbit, a well-trained technician gently restrains the animal—this works very well. Most lagomorphs will tolerate the veterinarian gently sliding the cone along the buccal pouch. We have seldom found the need for sedating rabbits for oral examination. For small rodents, we fully immobilize them with ketamine hydrochloride at 30 to 60 mg/kg, and then supplement with isoflurane, or we use isoflurane in an induction chamber. The fleshy tongue is retracted with a small piece of gauze.

**Dr Campbell:** A general anesthetic is required to properly evaluate malocclusion and tooth overgrowth in rodents. Isoflurane induction by facemask is commonly used to allow rapid inspection of the mouth. A human nasal speculum with its own light source and moveable blades that allow the cheeks to be spread away from the teeth is an excellent

instrument for performing an oral examination on rodents the size of a hamster or larger. An otoscope and cone may be used for this purpose, but the view of the oral cavity is usually limited.

**Q. How is malocclusion treated?**

**Dr Johnson-Delaney:** Treatment depends on the initiating problem. For guinea pigs, subclinical vitamin C deficiency can be an inciting factor. I give all guinea pigs with dental problems parenteral vitamin C before even starting the procedure. Root abscesses usually require that the tooth be removed. The alveolar abscess space needs to be cleaned out and flushed. I then pack it with a metronidazole paste made out of half of a metronidazole tablet mixed with triple antibiotic ophthalmic ointment containing hydrocortisone. This treatment is based on one used in human periodontal treatment and has worked very well for me. For chronic infections, more bone deficits, and osteomyelitis, antibiotic impregnated polymethylmethacrylate beads can be packed into the jaw. I have not used the calcium hydroxide packing methods, but the calcium hydroxide has the potential of causing tissue damage.<sup>1</sup> This works if essentially one molariform tooth or the incisors are involved. However, in many cases with chinchillas, it may be difficult to tell which tooth is primarily involved or whether the entire arcade is. I have had to pull all the cheek teeth on one side, upper and lower, to stop the problem in some chinchillas because all the teeth roots were affected. The opposing ones then have to be removed. Chinchillas more than the others, in my experience, have severe overgrowths even after multiple corrections and resolution of root abscesses. Removal of just one of the cheek teeth, either upper or lower, doesn't usually cause a problem—the other teeth realign for occlusion. You do have to instruct the owner on what is happening, and advise that the

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animal will need to be brought back periodically just to have the teeth checked. Prairie dogs seem to get occluding lumps in the nose, hard palate, and mouth in association with dental problems. Often they will be brought in exhibiting dyspnea or open-mouth breathing. On radiograph, a root abscess or mass (some have been odontomas) will be present. The incisors may have elongated somewhat but are still occlusive. I have seen more dental problems in prairie dogs because of incisor fracture. The treatment in these cases is to cut the teeth back to the appropriate length and shape and get occlusion. Depending on the size of the animal, different instruments are used. I use a dental cutting disk, a small rongeur, and a small file that resembles a tiny equine float to work with the teeth. Care must be taken not to cut the cheeks, tongue, or gums. On some patients I use a dental bur to shape and grind teeth as well. I don't use clippers, as the torque put on the tooth can damage the root.

**Dr Suedmeyer:** In general, lifelong trimming of the teeth is necessary. This is most commonly and correctly done with slow-speed dremel tool sanders. Cutting with toenail trimmers tends to shatter teeth, resulting in tooth root damage and subsequent infection. In some

instances, removing the incisors is warranted. This technique has been described in detail.<sup>2</sup>

Domestic rabbits ingest and masticate food just fine without the incisors, which negates time-consuming, stressful visits to the veterinarian.

**Dr Campbell:** Overgrown teeth can be trimmed using a variety of instruments. Small rongeurs provide a rapid and efficient method of trimming the cheek teeth of rodents the size of a hamster or larger. A sharp clipper (eg, jeweler clippers) can be used to trim the incisors. A dental bur attached to a drill may reduce the risk of fracturing a tooth or creating chips. Small files can also be used, but these require more time. Antibiotics, such as a trimethoprim-sulfa combination, should be given to those with oral ulcers.

### Q. What is the long-term prognosis? What about prevention?

**Dr Johnson-Delaney:** The long-term prognosis is always guarded in chinchillas. The teeth seem to continue to grow abnormally, even in the ones for which you are sure the inciting problem is corrected. The molariform teeth roots elongate retrograde and will push up through the orbit and down through the mandible even with a "normal" oral appearance. In guinea pigs, if we can get the vitamin C deficiency corrected, and all abscesses cleared up, and the guinea pig on a good diet, the prognosis is usually good. For other rodents,

if the root abscess is contained, and there is no osteomyelitis, secondary infection, or adjacent tooth root infection, then the prognosis is good. Many of the abscess cases, however, end up being chronic because of the spread to other teeth and the low-grade osteomyelitis. In prairie dogs with odontoma, the prognosis is poor for the long term, as it is usually impossible to excise the tumor.

**Dr Suedmeyer:** Lifelong trimming is needed. Owners should be discouraged from breeding rabbits with this problem because it appears that most malocclusion problems in rabbits are genetically related. I have seen numerous cases of malocclusion in prairie dogs, and most appear to be traumatically induced. This is apparently from chewing on metal gaging, which stresses and fractures teeth. Subsequently, the teeth do not wear evenly, predisposing to malocclusion. We give most of our rodents enrichment items in the form of nontoxic limbs and branches. In most instances, though, the teeth wear evenly because of proper apposition, not because of items chewed on.

**Dr Campbell:** Because the teeth overgrow as a result of either loss or malalignment of the teeth, this condition will remain a chronic problem. Therefore, the teeth should be inspected frequently (eg, every 6 months), depending on the severity of the malocclusion and the growth rate of the teeth. Severely overgrown teeth that rapidly grow following trimming can be extracted.

## Castrated Ferret With Hair Loss

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### Answers

1. The most likely cause for this lesion is a neoplasm, most likely a chordoma or chondrosarcoma. Other less likely possibilities would be an abscess or granulomatous lesion.
2. Surgical removal of the chordoma by amputation of the tail at several caudal vertebrae proximal to the lesion is the treatment of choice.
3. Chordomas are slow growing tumors that arise from remnants of the notochord. Chordomas resemble chondrosarcomas morphologically, and special histochemical testing may be required to differentiate the two. The prognosis is guarded because of the potential for metastasis, especially in the case of chondrosarcomas. Recurrence has not been reported.

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## Client Teaching Guide

# Exotic Pet

## CARE SHEET

*James K. Morrissey, DVM, Dipl ABVP—Avian Specialist*

### Diagnostic Testing in Exotic Pets

Laboratory tests are an important part of the clinical evaluation of exotic pets, especially when they are ill. Each test provides certain information about your pet's health. The following is a list of tests and the information that test provides. This will help you to understand what the veterinarian is looking for with each test.

- ✓ **Complete Blood Count (CBC):** This test measures the number and different types of white blood cells and red blood cells in your pet. An increase in white blood cells can indicate infection or inflammation, whereas a decrease can occur with chronic, debilitating diseases, viral infections, and other causes. Each type of white blood cell has a different function in the body, so it is important to know the numbers of each type of cell (called the differential). Some types of cancer can also affect the number and type of white blood cells. The number of red blood cells can change with anemia, dehydration, and chronic disease.
- ✓ **Serum or Plasma Biochemical Profile:** This test measures many different enzymes and biochemical elements that are important for normal body functions, such as glucose (blood sugar), blood protein, calcium, and electrolytes. The purpose is to test the function of major organs, like the kidney and liver, and to determine whether there are any metabolic problems.
- ✓ **Bile Acids Evaluation:** This test is a liver function test. It measures how the liver makes, releases, and resorbs certain chemicals (called bile acids). The bile acids are abnormal if any part of this entire cycle is not working properly.
- ✓ **Protein Electrophoresis:** This test separates the total protein in the blood into different fractions, such as acute and chronic inflammatory markers and antibody levels. This test helps determine whether the immune system is responding to an infection.
- ✓ **Fecal Examination:** This test evaluates the feces for the presence of intestinal parasites or their eggs. Special stains, such as a Gram's stain, may be done to evaluate the bacterial population within the feces and to look for abnormal organisms, such as yeast and disease-causing bacteria.
- ✓ **Culture and Sensitivity:** This test is performed to determine the type of bacterial or fungal organism that is causing an infection. The organism is then tested to determine which antibiotics are effective against it.
- ✓ **Virus Testing:** Sometimes veterinarians are able to test for the presence of a virus in a sample or for antibodies working against that virus in the blood. This test can be very helpful when we are looking for a specific cause of disease, but the results must be interpreted carefully in conjunction with other tests and with an assessment of how the pet is doing. Often, viral tests are repeated after a few weeks or months because many viral infections may resolve.
- ✓ **Psittacosis, aka Chlamydiosis Testing:** There are many different types of tests that look for the bacteria responsible for this disease; some test for antibodies, some for different parts of the organism itself. Many of these tests can have false negative and false positive results, so it is common to perform several tests at the same time.
- ✓ **Heavy Metal Testing:** These tests look for toxic metals such as lead, zinc, and other heavy metals in the blood.

## CASE REPORT

## Avian Mycobacterial Infection

Gregory Rich, DVM

A worker at the local animal shelter brought in a Lutino cockatiel (*Nymphicus hollandicus*) for examination of an eye problem. This cockatiel was confiscated from a house with 143 other small psittacines (parakeets, cockatiels, lovebirds, Quaker parrots, and 3 cockatoos), 5 critically ill cats, and 2 dogs. The house was condemned by the local health department due to the squalid conditions of the pets and living conditions inside the house. There were dead rats found inside bird cages and piles of feces in every cage. All of the animals were brought to the local humane shelter for triage, cleaning, and treatment where necessary. I was there for the initial check in.

This cockatiel, an adult male, was in a cage with 5 other cockatiels when it was brought in. The bird weighed 82 g at initial presentation, and its physical examination revealed normal muscle condition and feather condition. Auscultation of heart and lungs was within normal limits, and the results of an examination of skin, ears, nostrils, oral cavity, and musculoskeletal system were unremarkable. The bird's medical condition centered around a raised, inflamed 3-mm mass in the inferior conjunctival sacs of both eyes. A caseous plaque was present over each mass.

In an attempt to limit expense and arrive at a diagnosis with the most expedient turnaround time, the decision was made to excise the abnormal conjunctival tissue and send it to the laboratory for histopathology. The cockatiel was anesthetized with isoflurane gas, and the conjunctival tissue was

excised using an Ellman radio-surgery unit. The tissues were placed in formalin and sent to the department of Pathology at the University of Georgia.

Histopathologic evaluation of the tissues read as follows: "This mass is composed of a diffuse infiltration of epithelioid macrophages with foci of caseous necrosis surrounded by multinucleated giant cells. Massive numbers of acid fast bacilli are present in the cytoplasm of the macrophages and free within the caseous debris." The diagnosis was mycobacterial granuloma.

The personnel at the animal shelter were alerted to this diagnosis, and I informed them of the potential for a zoonotic disease present within this hold of animals, considering the condition of the house where they were found. The decision of the director of the shelter, the head physician at the local health unit, and myself was to euthanize the cockatiel and send tissues to the local tuberculosis lab for identification of the acid-fast organism present in the remaining conjunctival tissue.

The cockatiel was euthanized. Conjunctival tissue and portions of the liver, kidney, duodenum, jejunum, and ileum were sent to the lab for polymerase chain reaction analysis of the tissues.

The laboratory results using high-pressure liquid chromatograph (HPLC) Fluorescence revealed a 4+ concentration of *Mycobacterium avium* complex. After this information was received, the remaining cockatiels from the cage were placed in an isolation room away from the other birds.

I performed a random, daily fecal swab of 10 of the 32 total bird cages. These swabs were placed on glass slides and sent to the lab for acid-fast staining and analysis. All of the slides submitted were negative for acid-fast organisms.

Through a court order, the birds were placed under the jurisdiction of the animal shelter, and the birds were all placed up for adoption to cover the costs of housing, feeding, and labor incurred while this lot of confiscated birds was held. To help educate the public and to release the shelter from the potential of a future medical liability, I composed a release document that explained that a potentially contagious disease was identified in one of the birds from the same household as the birds being put up for adoption. The public was warned to have the bird or birds they were adopting examined by a competent avian veterinarian and the fecal swabs checked for acid-fast organisms. It was also recommended in the document that anyone with any type of compromised immune system disorder should refrain from adopting any of these birds.

*Mycobacterium avium* complex is an infrequent infection noted in psittacines. It is more commonly associated with intestinal or hepatic lesions. The organism is a common soil contaminant and is most often associated with avian patients that have had constant exposure to soil for a period of time (ie, importation with holding pens dug in the ground, aviaries with ground contact, or rodent and vermin contact). This case most likely would have fallen into the latter category. Rodents and roaches could have carried the infectious organism from outside or from an existing carrier bird within the household.

**Readers:** We welcome your questions, practice tips, and case reports. Please submit any materials to Susan Sibiski, 526 Cole Ln, Baltimore, MD 21220; ssibiski@home.com.



This question is based on the experience of Dr Cathy Johnson-Delaney.

A client has presented a juvenile male prairie dog with a request for neutering. What anesthetic would you recommend? Also, are there any common problem areas?

*For prairie dogs, we use isoflurane anesthesia, as with rabbits or chinchillas. Intubation takes practice, as it does with guinea pigs, but we usually just use a small cone mask, non-rebreathing system. The surgical assistant keeps the mouth clear of secretions while monitoring the animal's vital signs. The neutering procedure is essentially the same as with a guinea pig, although there may be more fat in the inguinal area. The testicles are small in the nonbreeding season (usually fall and winter) and are easier to find in spring and summer. Off-season testicles are often virtually lost in fat. Physical examination and discussion with the owner will allow you to plan the best time to make surgery easier.*

*A good postoperative analgesic (I use butorphanol at 1-2 mg/kg SC q3-4h) is necessary for the first day, followed by baby aspirin (100 mg/kg PO q4h) mixed with apple juice given at home. I sometimes use the metronidazole paste formula if the prairie dog begins to chew, although I use subcuticular sutures that make chewing more difficult. Either a central incision or incisions made over each testicle can be done—the amount of fat present sometimes determines which method will work better. Prairie dogs do have open inguinal rings like guinea pigs, but fat may obscure the openings and it may not be possible to put a “tuck” in the ring as it is with guinea pigs.*

## UPCOMING MEETINGS

**American Association of Zoo Veterinarians**, New Orleans, LA; September 16. For information, call (610) 892-4812.

**American College of Zoological Medicine**, New Orleans, LA; September 17. For information, call (336) 879-7630.

**American College of Veterinary Surgeons (ACVS)**, Hyatt Regency Crystal City, Arlington, VA; September 21-23. For information, call (301) 913-9550 or visit [www.acvs.com](http://www.acvs.com).



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