

Exotic Pet

P R A C T I C E

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SCIENTIFIC ARTICLE

Telescoping Fish Syndrome

Julius M. Tepper, D.V.M., Long Island Fish Hospital, Shirley, New York

Telescoping fish syndrome is a traumatic condition that can occur while fish are feeding. It is caused by the accidental ingestion of a small fish by a larger fish and the inability of the larger fish to either swallow or expel the small fish. It has been encountered in both the community aquarium and the outdoor pond.

Any fish remaining uncharacteristically immobile in the water, especially one displaying rapid, intermittent side-to-side whipping of the head, should be netted and observed closely. The presence of a caudal fin protruding from the mouth is diagnostic (Fig 1).

Treatment

In order to treat this condition, the larger fish (Fish A) is eased into a fenestrated plastic sleeve or sock net and then wrapped in a towel to calm it. A curved hemostat (e.g., Rochester Pean or Carmalt) is applied and closed onto the caudal fin and/or tail of the ingested fish (Fish B) (Fig 2).

While gently supporting the hemostat in one hand, a second curved Rochester Pean or Carmalt clamp is introduced into the mouth of Fish A in a closed position. It is then passed along the body of Fish B to the head area, then angled dorsal and anterior to the dorsal fin of Fish B (Fig 3).

While pushing Fish B slightly into the mouth of Fish A with the first clamp, the closed clamp is withdrawn along the dorsal fin of Fish B, disengaging the dorsal spines from the upper palatine area and allowing Fish B to be withdrawn from the mouth of Fish A (Fig 4). No local treatment is necessary for Fish A. Fish B is dead in most cases.

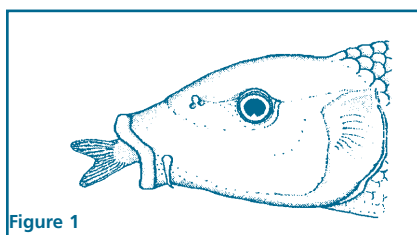


Figure 1

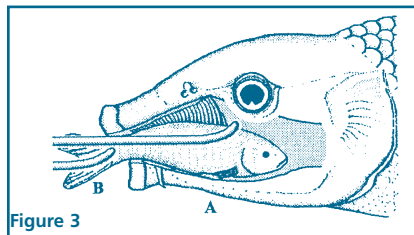


Figure 3

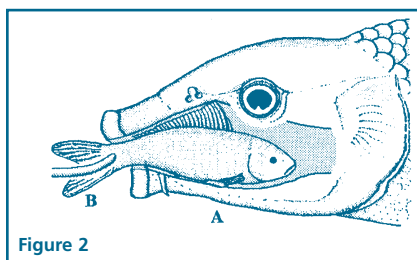


Figure 2

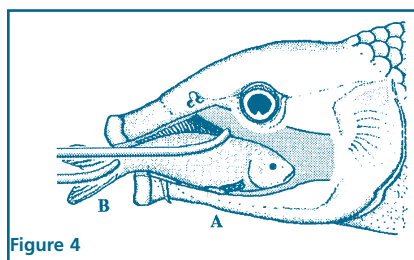


Figure 4

Discussion

Telescoping fish syndrome is descriptive of the clinical presentation of a smaller fish wedged into the buccal cavity of a larger fish. In most cases, the larger fish are representative of non-predatory, omnivorous bottom feeders usually accepted as peaceable enough for the "community" tank or pond. As suction feeders, they rely first on odors picked up by the bilateral olfactory organs located antero-ventral to the eyes, then on taste buds located on the exterior surface of the lips and face (and in the catfish, elsewhere on the body) to locate the general presence of edible morsels. They then simply suction the material into the buccal cavity by rapidly opening the opercula with the mouth open. Once in the mouth, any non-edible material is rapidly identified by taste buds (and possibly tactile stimuli) by the tongue

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Telescoping Fish Syndrome

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and rapidly ejected by forcing the opercula closed with the mouth open.¹ Koi [*Cyprinus carpio*] have often been observed to inadvertently ingest small acorns floating amongst several large floating food pellets, and the speed with which the acorn is identified as non-edible material and ejected, while any food pellets simultaneously are retained in the mouth, can be startling. All edible material is then forced to the throat, where pharyngeal teeth grind hard or overly large food particles into an acceptable size and texture to be swallowed.

In many species, the mouth is not well equipped for ripping or tearing apart food material larger than that which can easily fit into the buccal cavity. A koi or catfish may uproot and eat decorative plants such as water lilies, however, it does so by creating a vacuum hold with its lips sealed on a portion of leaf or stem and rapidly turning its head from side to side to tear off a small, ingestible piece. No cutting or slicing action is evident, as might be observed in predatory fish equipped with teeth along the mandible and maxilla.

Consequently, it is unlikely that the larger fish deliberately ingested the smaller fish. Some species will eat their own fry (young) and the fry of other species; this occurrence is probably inadvertent and occurs during rapid suction feeding. Once ingested, there seems to be little aversion in most fish species to swallowing fry. In those species that protect fry, many of which do so in the buccal cavity, there may have evolved a taste recognition to be able to distinguish between fry and all other edible organisms. In most species of fish, the parents do not protect the fry, and caution in the presence of larger fish would cause fry and small fish to rapidly swim away from an actively feeding bottom fish such as koi and catfish. This greatly reduces the chance of inadvertent ingestion. Even in the event of accidental ingestion of a fish small enough to fit into the buccal cavity but too large to swallow whole, Fish A would rapidly eject Fish B if it was ingested tail-first in the buccal cavity.

In the wild, most bottom fish forage for food continuously throughout the day. However, it is common practice for most pondkeepers and aquarists to feed at regular intervals once or twice daily. This results in an energetic and rapid feeding event usually described as a "feeding frenzy." The use of floating-type pelletized food is usually chosen, as it brings these bottom feeders to the surface where they can be better viewed by their owners. The overall sensation of splashing, eager fish jostling at the water's surface to feed energetically is a sharp contrast to their usual quiet bottom feeding and is quite pleasurable for the aquarist or pondkeeper to watch.

In reviewing the normal sequence of the feeding event, it is evident that the fish in a community tank or pond will first smell the presence of food, locate the general direction with smell and taste, and finally locate and ingest an individual food morsel by sight. This sequence, with conditioning, may be shortened to simply approaching the feeding area at the sight of the owner.

The design of the fish eye, with its round lens protruding through the iris, is likely to give fish a good depth perception.² Although near-sighted, fish rarely have any difficulty judging the distance in approaching a food morsel in their normal feeding environment. The approach to food is usually rapid and prehension is consistent. Often, if conditions seem threatening, rapid retreat to safety follows, with the sequence repeating only when it seems safe to do so.

This system does not work well in the case of bottom feeders like koi and catfish when they are forced to feed at the surface of the water. Their mouth openings, designed to allow a wide field of vision to watch for predators while feeding on the bottom, forces them to approach food at the surface at an acute and unnatural angle. This hinders their ability to locate food by sight when it is directly in front of their mouths. Consequently, during the

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PRACTICE TIP

Shawn Messonnier, D.V.M.

Another Technique for Treating Patients with Myiasis

Rabbits (and sometimes other exotic pets) may be brought in with myiasis. Infestation with larvae, usually *Cuterebra* larvae, occurs in animals housed outdoors or with exposure to flies. The flies lay their eggs on vegetation; as the eggs hatch, the larvae attach to plant material. As the animal passes through the vegetation, the larvae enter the skin and form a breathing hole. The clinical sign is a swollen area with a breathing hole that may or may not be crusted over. Traditional treatment involves enlarging the hole (usually without sedation) and removing the larvae with forceps.

Another technique (reported by Dr. Karen Updike in the December 1997 issue of *Veterinary Medicine*, p 1021) involves injecting 0.1 mL of lidocaine directly into the body of the larva with an insulin syringe. The needle is directed through the larvae's breathing hole or through the animal's skin and into the body of the larva. The lidocaine immediately kills the *Cuterebra* larvae, and the dead larvae can be extricated from the skin, usually without enlarging the breathing hole.

ROUNDTABLE

Nutrition in Exotic Pets

Q. How important is nutrition in exotic pets?

Dr. Campbell: *The underlying cause for most illness involves husbandry problems, including malnutrition. We do not know the nutritional requirements of most exotic pets, which makes it easy to create malnutrition.*

Dr. Morrissey: *Proper nutrition is important for all pets. This topic receives more attention in exotic pets because we do not usually know their full nutritional requirements.*

Dr. Tynes: *I feel that the number 1 cause of illness and death in exotic pets is improper nutrition.*

Q. What are some common mistakes owners make when it comes to nutrition?

Dr. Campbell: *Feeding birds an all-seed diet is common; feeding pellet diets has reduced the incidence of nutritionally related diseases. Rabbits often develop disease if they are only fed pellets and not offered hay. Carnivorous animals do well with whole prey. Gut-loading of the prey (with crickets, mealworms, etc.) before feeding optimizes the nutritional value. Proper storage of the diet is important to prevent nutritional problems as well.*

Dr. Morrissey: *The most com-*

mon mistake is ignorance; many owners acquire a pet with no knowledge of its proper diet. Clients must research the proper diets for their pets.

Dr. Tynes: *The most common problem is when the owner does not educate him- or herself before purchasing the pet. Listening to advice from friends, neighbors, and pet store employees is another problem. Because proper feeding of exotic pets is challenging and time-consuming, many owners are unwilling to do it correctly.*

Q. What diseases resulting from improper nutrition are commonly seen?

Dr. Campbell: *Hypovitaminosis A occurs in birds (especially Amazon parrots) and chelonians. Iodine deficiency can occur in budgerigars on an all-seed diet, and hypocalcemia is seen especially in African grey parrots. Obesity and hepatic lipidosis also occur on the high-fat seed diets. Vitamin C deficiency is seen in guinea pigs fed diets not supplemented with vitamin C. Metabolic bone disease can occur in all young animals fed diets deficient in calcium and vitamin D. Conure hemorrhagic syndrome appears to be related to hypocalcemia.*

Dr. Morrissey: *Calcium and vitamin D deficiencies are most*

WHAT'S YOUR DIAGNOSIS ???

Several rabbits varying in age were examined. The bunnies were housed outdoors until about 2–3 weeks ago. One of the rabbits exhibited "paralysis" in its rear legs. All of the animals were eating and acting fine except for the 1 with the paralysis. Physical examination revealed a rabbit that was sternal and not using its back legs.

Neurological testing showed normal rear limb reflexes, except for negative proprioceptive reflexes from the rear limbs. Normal pain perception was present in the rear limbs. Before this visit, another rabbit from the same owner developed similar signs. Radiographic tests revealed no significant lesions; the rabbit responded to enrofloxacin and prednisolone. In addition to the paralysis, both this rabbit and the others brought in that day were exhibiting subcutaneous swellings.

Questions

1. How would you proceed?
2. What causes paralysis in rabbits?
3. What causes subcutaneous swelling in rabbits?

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common; protein excess is more likely in herbivorous species, leading to renal disease and growth abnormalities. Vitamin A deficiencies are common in birds and reptiles, resulting in skin and color abnormalities.

Dr. Tynes: Improper nutrition is at least partially to blame in causing metabolic bone disease in iguanas. Obesity in potbellied pigs is usually caused by an improper diet. Trichobezoars and most other enteric diseases in rabbits are also related to inappropriate nutrition.

Q. How do you change the diet of a pet that is "hooked" on the incorrect diet?

Dr. Campbell: This is challenging, but the general approach involves slowly introducing the new diet (10% each week).

Dr. Morrissey: New foods should be introduced slowly. Hand-feeding the new food works well with psittacines. With herbivorous reptiles, cutting the food into small pieces and mixing the food items together is helpful.

Dr. Tynes: I urge my clients to be patient and persistent and warn them that it takes months to habituate most animals to a new diet. My recommendation involves the continual addition of the new food to the old diet. Even if the pet is picking through the new food, it slowly becomes familiar with the smell, taste, and appearance of the new diet. Eventually, the amount of the former diet can be decreased and the amount of new food increased. Whenever possible, finely chopping old and new foods together can be a good way to expose an animal to the tastes and smells of the new foods, and it makes it difficult for the pet to pick through it.

Q. Is vitamin or mineral supplementation recommended for most exotic pets? Do you recommend this even if the pet is on a proper diet?

Dr. Campbell: If the pet is on a proper diet, I usually do not recommend supplementation. Animals fed whole prey items usually do not require supplementation either.

Dr. Morrissey: Yes, if the pet is not eating a commercially prepared complete diet for that species. If a pet bird is eating a complete prepared diet, vitamins and minerals are not needed and may be harmful due to toxicity. Similarly, animals fed whole prey items do not require supplementation.

Dr. Tynes: I try to impress clients that you can't make a "bad" diet "good" just with supplementation. However, since I believe there is still a lot we don't know about the nutritional needs of many exotic pets, supplementation can be helpful even if the pet is eating a "proper" diet.

Q. What are some references for doctors who wish to learn about the proper diets for exotic pets?

Dr. Campbell: For birds, I suggest *Avian Medicine: Principles and Application* by Harrison, et al. (Lake Worth, FL, Wingers, 1994); *Reptile Medicine and Surgery* by D.R. Mader (Philadelphia, WB Saunders, 1996); and *The Biology of the Laboratory Rabbit* by P.J. Manning (San Diego, CA, Academic Press, 1994).

Dr. Morrissey: There are many good reference books for practitioners that discuss proper diet, and client information manuals may also contain this information. On-line literature searches may also be helpful, especially for unusual species.

Dr. Tynes: For iguanas, I like Dr. Fredric Frye's book, *Iguanas: A Guide to Their Biology and*

Captive Care (Malabar, FL, Krieger Publishing, 1993). The Herpetocultural Library, published by Advanced Vivarium Series, covers the care and feeding of most species of reptiles. These books are inexpensive and can be sold by the doctor to the client.

Q. What do you recommend for force-feeding anorectic exotic pets (birds, rodents, rabbits, ferrets, iguanas, snakes, turtles)?

Dr. Campbell: Noncarnivorous birds can be fed Emeraid (Lafeber), Isocal HCN (Mead Johnson), Ensure Plus (Ross Laboratories), or gruel made from pellets. Carnivorous birds can be fed the same diets, except the pelleted gruel is replaced with blended whole raw egg or a hyperalimenation formula (such as 4 oz of meat-based baby food with 60 mL of 30% Nutrical [EVSCO Pharmaceuticals, Buena, NJ] in lactated Ringer's solution). Herbivorous reptiles can be fed Ensure brand supplement or a gruel made from alfalfa pellets; carnivorous reptiles are fed meat-based baby foods or a gruel prepared from canine A/D (Hills). Small mammals can be fed gruel made from pellets supplemented with yogurt, Ensure, or Nutri-prim (NutriPrime, Ken Vet, Ashland, OH). Ferrets can be fed Nutrical, meat-based baby foods, and gruel made from ferret or cat food.

Dr. Morrissey: For birds I use hand feeding formulas or human enteric formulants. For herbivores such as iguanas and rabbits, I use mixed vegetable human infant foods. Rabbit pellets may be soaked in water and mixed in to increase the fiber content for rabbits, guinea pigs, and chinchillas. For carnivorous reptiles, I feed prepared dog or cat formulas, although there is

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FROM THE LITERATURE

Nutrient Composition of Crickets

An nutrient composition analysis of pinhead (nymphal) and adult crickets (*Acheta domestica*) was undertaken. Crickets were obtained from a commercial source and were fed a standard cricket diet before the analysis. Both pinhead and adult crickets met the established levels for vitamin E composition, whereas vitamin A levels in adults and pinheads fell below the established minimums. Adult crickets had significantly more nitrogen and a higher fat content than pinheads. Mineral contents (ash levels) were low for adults and pinheads. The pinhead crickets had a significantly higher calcium content than adult crickets despite identical diets.

Barker D: Preliminary observations on nutrient composition differences between adult and pinhead crickets, *Acheta domestica*, *Bull Assoc Rept Amphib Vet* 7:10-13, 1997.

HOW I ...

Diagnose the Cause of Hematuria in Rabbits

Rabbits can have cystitis, cystic calculi, bladder "sludge," and cystic neoplasia. I rarely see true hematuria in rabbits. Often, an owner will complain about a pet's brown or red urine, but examination reveals this to be porphyrinuria, a normal occurrence in the rabbit.

For any rabbit with suspected

hematuria, a urinalysis should be performed. Close attention should be paid to the presence or absence of blood on the dipstick and in the sediment. If no blood is detected, the color of the urine is probably normal.

If blood is detected, the rabbit can be treated symptomatically for

Editor's Note: As discussed in this article, we do not yet know the exact mineral requirements for insectivorous reptiles. Crickets are a common source of food for many of our clients' insectivorous reptilian pets. Regarding calcium content, pinhead crickets contained higher levels than adult crickets; however, the adults contained more fat and protein than pinheads. It is probably wise to continue recommending supplementation of the crickets as well as mineral and vitamin supplementation of the insectivorous reptiles. Additionally, offering a varied insect diet is preferred to offering only 1 insect species. More research needs to be done in order to determine the best diet for each species and how we can best feed the prey that is used as the diet for our insectivorous patients.

cystitis; a culture and sensitivity test of the urine may be applicable. If no improvement is noted, radiographs are taken to check for sludge or cystic calculi. If no abnormalities are discovered and the bleeding continues, exploratory laparotomy is indicated. For intact female rabbits, always consider the possibility of uterine neoplasia, endometritis, or endometrial venous aneurysms.

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some controversy regarding the amino acid composition of these diets. Alternatively, you could feed whole prey. For ferrets, prepared dog or cat formulas work well.

Dr. Tynes: *There is really no one product that is appropriate for all species, but I use Emeraid I and Emeraid II (Lafeber) more than other products. Although developed for use in birds, it is useful in many species of reptiles. Alfalfa rabbit pellets mixed with water is a good diet for force-feeding rabbits and iguanas.*

What's Your Diagnosis ???

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Answers

1. Close inspection of the subcutaneous swellings showed *Cuterebra* larvae. These were removed by gently opening the stoma of the swelling, and manually extracting each larvae from its swelling. Squeezing and rupturing the larvae are to be avoided to prevent shock and possible death of the rabbit associated with an anaphylactic response. Oral trimethoprim-sulfa (30 mg/kg q12hr for 2 weeks) and an antibiotic-steroid topical ointment (Dermagen) were prescribed for treating the areas. The rabbits quickly recovered after larval removal.
2. Paralysis in rabbits is most com-

monly caused by spinal cord trauma resulting from a fracture of the thoracic or lumbar vertebrae. Disk disease is also possible, as is neurological disease caused by spinal tumors or *Encephalitozoon cuniculi*. In this case, it was theorized that the temporary paralysis was caused by cuterebriasis, possibly as a result of some toxin caused by the parasite, because the paralysis quickly resolved following removal of the larvae.

3. Commonly, subcutaneous abscesses caused by pasteurellosis are seen in rabbits. Tumors are also encountered. *Cuterebra* larvae are not commonly diagnosed in pet rabbits unless they have access to the outdoors. These particular rabbits were housed outdoors.

Client Teaching Guide

Parrot

CARE SHEET

Amy B. Worell, D.V.M., Dipl. A.B.V.P.—Avian Specialist

Pionus Parrots (*Pionus species*)

- ✓ **Place of Origin:** Pionus parrots are New World birds that range throughout many parts of Mexico and Central and South America.
- ✓ **Life Span in Captivity:** Ranges from 25 to 50 years.
- ✓ **Predominant Species in Captivity:**
 - Blue-headed pionus
 - White-capped pionus
 - Bronze-winged pionus
 - Dusky pionus
 - Maximillian pionus
- ✓ **Range of Body Weights:** 150–275 g
- ✓ **Total Number of Species:** 8 species
- ✓ **Characteristics of *Pionus sp.*:** Pionus parrots are generally quiet birds and, hence, are often recommended for apartments. They can be aggressive to other birds, and males can be quite territorial. Pionus parrots often exhibit a “respiratory wheeze” when they are stressed and anxious. Someone unfamiliar with pionus parrots might confuse this with true respiratory disease, which it is not. These birds are inquisitive, do not chew a lot (unlike many of the parrot species) and often readily accept new food items into their diet. Many pionus parrots will learn to say at least several words of speech.
- ✓ **Common Medical Considerations:** Pionus parrots are generally hardy birds in captivity. The most common medical conditions encountered in *Pionus sp.* are respiratory diseases. These vary from sinusitis to infections involving the lower respiratory tract. The causes may be bacterial, viral, or fungal in origin. Pionus parrots are considered to be a species fairly susceptible to aspergillosis.
- ✓ **Less Common Medical Considerations:** In the past when pionus were commonly imported, these birds demonstrated noticeable susceptibility to poxvirus and to Pacheco’s disease. Both of these viral conditions are rarely observed in pionus parrots since the close of importation in the United States.
- ✓ **Incubation Period of Eggs:** 22–26 days.
- ✓ **Age Commonly Weaned:** 12–16 weeks. Pionus love to be hand-fed, and often resist weaning.



CASE REPORT

Cloacal Prolapse in an Umbrella Cockatoo

Amy B. Worell, D.V.M., Dipl. A.B.V.P.-Avian Specialist

History and Case Progression

A 4-year-old unsexed umbrella cockatoo (*Cacatua alba*) was brought in with a 3-week history of straining to defecate. The owner noted that the bird sometimes had smelly droppings and that pink tissue protruded when the straining occurred. The bird was otherwise eating and feeling fine.

Physical examination of the bird revealed a slightly decreased body weight for an umbrella cockatoo and a dilated vent. A sterile cotton-tipped applicator was moistened with sterile water and the cloacal tissue was slightly exteriorized. The everted cloacal tissue was slightly hyperemic, and there was no evidence of cloacal growths, lesions, or papillomas. The physical findings and history were therefore suggestive of cloacal prolapse.

Diagnostic testing included a CBC, serum chemistries, a bile acids test, a fecal parasite examination, whole body radiographs, and a cloacal culture. The bird was hospitalized, and treatment with injectable piperacillin (Pipracil, Lederle) was started. The diagnostic tests revealed normal radiographs and blood work, a negative fecal parasite examination, and heavy growth of *Escherichia coli* from the cloacal culture. The *E. coli* was considered to be a potential pathogen. A cloacapexy was scheduled for the next day.

The patient was anesthetized with isoflurane and oxygen by mask and prepped for a midline ventral celiotomy. A technician gently placed a gloved finger through the vent into the cloaca to aid in visualization. Prolene brand suture material was used to anchor the cloaca to the most distal rib on each side of the coelomic cavity. The suture material was placed so that the first "bite" entered into the interior of the cloaca and then extended around the last rib by way of the adjacent intercostal space. As an additional securing technique, the ventral surface of the cloaca and inner abdominal wall musculature was carefully scarified, and several sutures in the abdominal musculature closure included the ventral cloacal wall. The abdominal musculature and skin were closed with 4-0 Vicryl suture material.

The cockatoo awoke from the procedure without incident and was hospitalized for an additional day. Externally, the vent was still flaccid and extended somewhat inward toward the coelomic cavity.

Discussion

Prolapse of the cloacal mucosa is an infrequent occurrence in avian medicine, especially if one does not include those birds with an egg laying-related cloacal prolapse. Once this category is excluded, birds brought in for cloacal

prolapse are almost always members of the cockatoo family and are pets. And in my experience, they have been exclusively umbrellas.

Etiology of cloacal prolapse (other than egg-related causes) is generally thought to be idiopathic. Whether underlying factors such as genetics, an enteritis, or abnormal cloacal sphincter function are significant or contributory is currently unknown.

Clinical signs are often representative of a chronic, on-going situation in which the bird has intermittently had straining associated with defecation, intermittent malodorous stools, and a dilated vent opening. Most birds with this condition are in fair to good body condition otherwise, though they may have had previous surgery for a cloacal prolapse.

Surgical techniques vary slightly but basically involve a tack-down procedure in which the cloaca is anchored to either the ribs, the sternum, or both. Additional tack-down procedures include securing the ventral cloacal surface to the inner abdominal musculature. A variety of suture materials, including both absorbable and non-absorbable types, can be used. With any technique, the possibility of breakdown of suture material (and subsequent reoccurrence of the cloacal prolapse) are possible. Abdominal and skin closures are similar to those for other abdominal surgeries.

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feeding frenzy these species are often seen (and heard) sucking blindly in the general area of the pellets.

This minor inconvenience rarely presents a problem for them because there is usually adequate food provided for all, and the taste and tactile sensitivity on their lips and in their mouth easily supplant their visual field problem.

However, it is not unusual during the feeding for 2 fish of considerably different size to rapidly approach a pel-

let from opposite directions—the larger fish, sucking blindly and forcefully, ingests the smaller fish with the pellet. If the smaller fish fits tightly into the buccal cavity and is facing caudally, the spines at the leading edge of its dorsal fin will engage the dorsal surface of the buccal cavity when the larger fish tries to expel it, wedging the smaller tightly in place.

Prophylaxis

It is recommended that fish small enough to be ingested not be kept with larger fish. This may mean choosing appropriate species for an aqua-system

with knowledge of their growth rates and eventual adult sizes. It is also recommended to remove fry hatched in established ponds when they reach the critical size to venture up to the feeding area.

References

1. Gratzek JB, Matthews JR: *Aquariology*. Blacksburg, Va, Tetra Press, 1992, pp 169–176, 190.
2. Williams CR, Whitaker BR: Anatomy of the fish eye, in *Sem Avian Exotic Pet Med* 6:160–162, 1997.



Answer by Shawn Messonnier, D.V.M.

Should the ovaries be removed when spaying an iguana?

It appears that folliculogenesis requires feedback from the shell glands of the oviducts. This would mean that ovaries left in an iguana that has undergone a salpingectomy might be nonfunctional. There is always the concern that leaving the ovaries might result in egg peritonitis, although this is not usually the case in birds in which the oviducts and uterus (but not the ovaries) are removed. Because of the possibility of ectopic ova and peritonitis, many clinicians prefer to remove the ovaries at the time of salpingectomy.¹

Reference

1. Divers SJ: Medical and surgical treatment of pre-ovulatory ova stasis and post-ovulatory egg stasis in oviparous lizards. *Proc Assoc Amphib Rept Vet* 119-123, 1996.

UPCOMING MEETINGS

Association of Avian Veterinarians Annual Conference and Expo, St. Paul, MN; August 25-29. (303) 756-8380.
Central Veterinary Conference, Bartle Hall Convention Center, Kansas City, MO; August 29-31. (800) 255-6864. *Dr. Shawn Messonnier will be speaking.*

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