

## **DYSTOCIA (EGG-BINDING) IN REPTILES**

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### **INTRODUCTION**

One of the primary aims of herpetology is captive breeding, and certainly the pinnacle of success for any amateur herpetologist must be the successful breeding of his or her animals. Responsible captive breeding is to be applauded in these times of widespread population depletion. Serious reproductive disorders are, fortunately, uncommon; the two main breeding problems encountered being failure to mate successfully and a failure to produce viable eggs or young. Difficulty in producing eggs or young at the end of the gestation period is called dystocia, and it is most prominent in the oviparous (egg laying) species. Dystocia can lead to the death both of the unborn young and of the female and therefore must be treated as an emergency with professional veterinary advice sought as soon as possible.

### **DYSTOCIA**

The phenomenon of dystocia is not uncommon in the polyparturient domestic animals, the dog, cat and pig. In these species dystocia can be caused by an obstruction in the genital tract or by uterine inertia (weak uterine contractions). Obstructive dystocia is often seen when only a few, large offspring are present and resolution usually requires surgery if the obstruction cannot be overcome manually. Dystocia due to uterine inertia can be due to a host of factors but medical treatment with the parenteral administration of oxytocin and calcium will often cause expulsion of the offspring by increasing the strength and rate of uterine contractions.

Dystocia in reptiles can also be obstructive or muscular in aetiology. If, after careful examination, the oviduct and cloaca are free and there seems to be no obstruction, an intramuscular injection of oxytocin (2 units per 100g body weight) will often result in egg laying or livebirth. The molecular structure of the oxytocin is well conserved throughout the animal kingdom and therefore the use of mammalian oxytocin does not seem to pose problems in reptiles. Priming the uterus with calcium prior to oxytocin administration is neither necessary or recommended in reptiles (Frye, 1991). In cases where the cloaca or oviduct is damaged or an obstruction is feared, medical treatment is contraindicated because rupture of the oviduct and consequent peritonitis may occur after the administration of oxytocin. In these cases surgery is the only course of action.

Dystocia occurs with some regularity in captive reptile populations but it is not a random event, indeed there are several well documented pre-disposing factors that increase the likelihood of egg-binding (Frye, 1991; Ross and Marzec, 1990).

1. An incorrect breeding programme may fail adequately to stimulate the reproductive system of the female. Improper cooling, improper diurnal temperature variation and abnormal photoperiod may be involved.
2. Suitable nest sites are important for many species and failure to provide a suitable nesting place may delay or prevent egg laying leading to dystocia. In general; many species of chelonia and terrestrial lizards dig holes and deposit their eggs in a warm, moist substrate, terrapins prefer a fairly dry sandy land area while snakes select the seclusion of a humid hide box. These are generalisations and individual species may have different preferences from the expected norm.
3. Maintaining large numbers of reptiles in a confined vivarium can result in competition for the limited egg laying sites. This is an unfortunate but increasing trend that can result in one dominant female preventing others from accessing the laying site, thereby resulting in a delay in egg deposition and possible egg-binding in the sub-ordinate females.
4. Stress caused by disturbance of the environment such as failure to provide seclusion or the constant interference by the owner, is unfortunately too commonly seen.
5. The transport of pregnant females can result in stress and consequently dystocia.
6. An imbalance of calcium and phosphorous may prevent proper egg calcification or muscular contraction of the oviduct that is essential for the expulsion of eggs. Therefore, the provision of sufficient vitamins and minerals in the diet is important.
7. Concurrent infection of the female's reproductive tract, especially the oviduct, can also complicate egg laying or livebirth.
8. Inbreeding using closely related individuals may cause genetic homogeneity and inbreeding depression by the expression of deleterious or lethal genes, thereby increasing foetal death, egg infertility and dystocia (Ross and Marzec, 1990).

### CASE REPORT - DYSTOCIA IN AN AFRICAN ROCK PYTHON

A female African rock python (*Python sebae*), measuring approximately 3m in length, was presented to the Royal Veterinary College because of dystocia. The female had previously been kept with a male but no purposeful attempt at breeding had been attempted: no changes in the diurnal temperature variation or photoperiod had been employed. The female had become restless and laid 12 eggs before ceasing to lay the remainder of her clutch. A partial prolapse of cloacal tissue or oviduct through the cloacal opening also became evident.

On clinical examination, the prolapsed cloacal tissue had become necrotic and devitalised and several eggs were palpable within the lower third of the body. From the female's aggressive demeanour and perpetual restlessness within the vivarium it appeared that she was in some discomfort. The administration of oxytocin was contraindicated in this case as the damage to the cloaca presented an obstruction to normal laying. Indeed, stimulation of the oviduct by oxytocin, if attempted, might have caused rupture of the oviduct and consequently peritonitis and death. It was therefore decided that surgery was the only course of action, and the snake was promptly admitted for coeliotomy (Frye, 1991; Lawton and Stoakes, 1992).

## DIAGNOSIS

Confirmation that the snake was indeed suffering from egg-binding was achieved by radiography. To facilitate handling, and as a preparation for surgery, the snake was heavily sedated using an intramuscular injection of ketamine hydrochloride. The radiographs clearly depicted many retained eggs within the final third of the snake, and therefore the snake was immediately prepared for surgery.

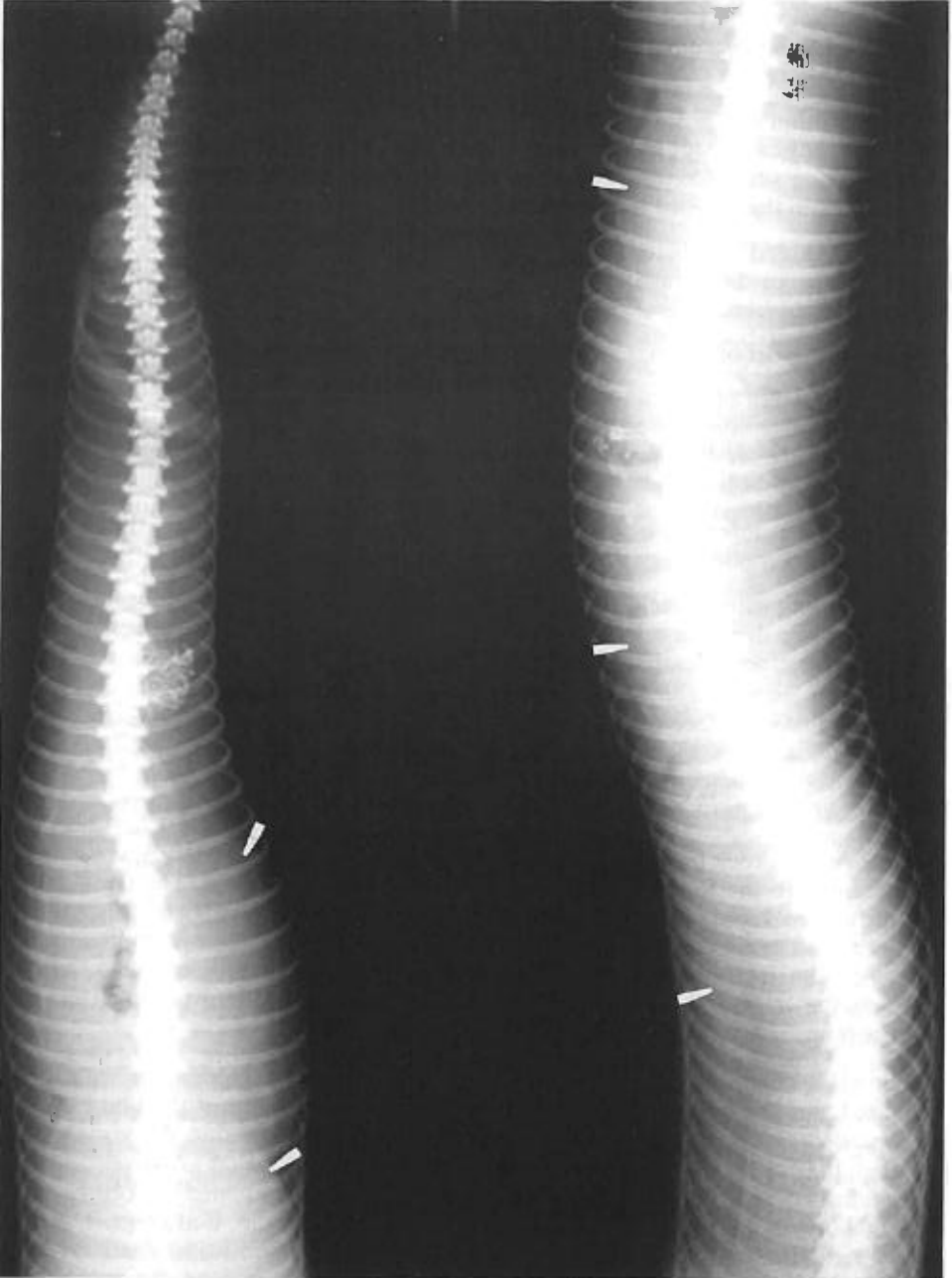


Plate 1: This radiograph was taken prior to surgery. The presence of the retained eggs (indicated by the arrows) clearly confirmed the diagnosis of dystocia in this Rock Python (*Python sebae*).

## SURGERY

After transportation to the sterile surgical theatre, the reptile was placed on a heating pad and intubated. Intubation involves passing a endotracheal tube down into the trachea so that gaseous anaesthetic and oxygen can be delivered directly into the lung. Since there are no standard endotracheal tubes for snakes a shortened dog urinary catheter was employed.

Anaesthesia was maintained with a supply of oxygen and isoflurane. The snake's heart rate was monitored by electrocardiography, while the depth of anaesthesia was judged on the basis of tongue and ventral muscle reflexes. Many reptiles tend to stop breathing during surgery and therefore it was necessary to artificially ventilate during the two hour operation.

An initial longitudinal incision was made along the ventral aspect of the body cranial to the cloaca. Careful dissection through the skin, connective tissues and musculature revealed the oviduct which was then incised and several eggs were removed. The large number of retained eggs required a second incision cranially and the removal of several more eggs. In total, 12 infertile eggs were removed. The thin-walled oviduct, muscles and skin were sutured, and the damaged cloaca and prolapse were resected, sutured and cleaned. The anaesthetic agent was withdrawn but the oxygen supply was maintained until the snake was breathing voluntarily.

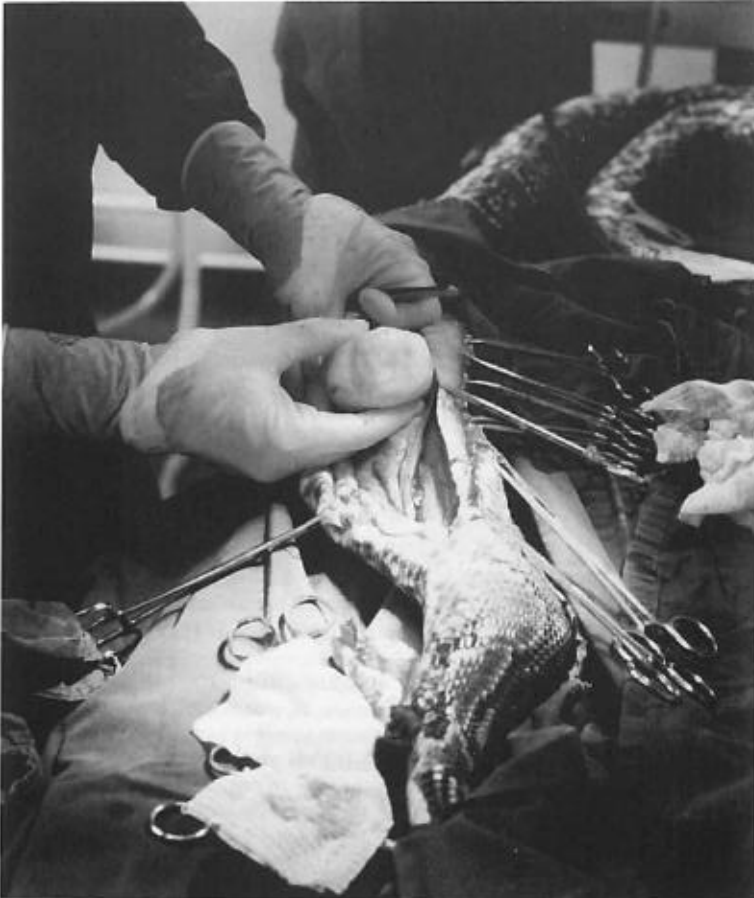


Plate 2: A large ventral midline incision was made in the lower third of the snake and several eggs were removed. A second incision had to be made more cranially in order to remove all the eggs.



Plate 3: Seven of the retained eggs. All the eggs that were removed were infertile as determined by *post-mortem* examination.

Potentiated sulphonamide was given by intramuscular injection to provide antibiotic cover post-operatively and an adhesive bandage was applied to the wound to provide some degree of protection. The snake started regaining her righting reflexes and consciousness almost immediately after the gaseous anaesthetic was stopped, and became active and pugnacious before being returned to her hospital vivarium.

The snake returned home and made a full and uneventful recovery.

### CONCLUSIONS

Within the herpetological hobby as a whole there seems to be the view that veterinary surgeons are unwilling or unable to offer the same level of service for reptiles as they do for our more domesticated animals. We hope that this short report of a relatively simple operation will lay these reservations to rest and persuade all amateur herpetologists to seek professional veterinary advice when disease and illness threaten their reptiles.

## REFERENCES

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