

A case of an Emergency C-section in chameleon egg stasis

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Abstract: This case report presents an emergency surgical intervention by cesarean section performed on a panther chameleon (*Furcifer pardalis*) for post-ovulatory egg stasis. Female chameleons readily cycle and lay eggs even without a male present. Dystocia describes a series of conditions that prevent the eggs from being pushed out of the oviduct when it is time to be laid. If the eggs are not expelled, the females will die. The chameleon female, 7 months old, was referred to our clinic because of her deteriorating condition during the last few days. The diagnosis of post-ovulatory retention was made on clinical evaluation (the female had a bloated abdomen, signs of distress, and was sitting withdrawn on the terrarium, on the ground or above the holes in the ground) and by X-ray examination that revealed the coelomic cavity full of eggs. After appropriate premedication for rehydration and analgesia, the surgical intervention was performed under inhalation anesthesia using microsurgical instruments. During and after the operation, circulating warm water blankets were used to maintain optimal temperature, as reptiles are temperature-dependent to maintain metabolic activities. Through a small incision in the posterior abdomen, in the mid-lateral region, the thin oviducts filled with eggs were immediately visible at the entrance to the coelom. Salpingectomy and ovariectomy were performed to remove the eggs to prevent subsequent reproductive problems in the females. The oviducts were ligated close to their insertion with the cloaca by using a circumferential ligature and removed. Warm fluids were administrated in the cavity and the operation was completed with typical reptilian everting suture patterns for good healing.

Keywords: chameleon, c-section, dystocia, reptile, surgery, egg stasis

• Introduction

Female veiled chameleons often develop infertile eggs in the absence of a male, leading to frequent complications. Even with proper care, they are at risk of nutritional secondary hyperparathyroidism and egg stasis, both pre- and post-ovulatory, which can cause rapid decline. Preventative measures include year-round access to a nesting site, regular calcium supplementation during breeding season, and timely replacement of UVB lighting. Breeding may reduce the risk of egg stasis and hypocalcemia. This study aims to evaluate the outcomes and effectiveness of emergency C-section procedures in female chameleons with egg stasis, with a focus on clinical signs, surgical indications, and post-operative recovery.

• Material and method

Dystocia in chameleons refers to the inability to lay eggs due to various causes, such as obesity, malformed eggs, or anatomical obstructions. Affected females often show signs of severe distress, including sunken eyes, gaping, and exhaustion as their body attempts to expel the eggs unsuccessfully. If untreated, dystocia is fatal. Emergency surgical intervention, such as a C-section, may be the only life-saving option. Diagnostic imaging aids in identifying egg stasis, which should be treated surgically or with oxytocin and supportive care, depending on the stage. To maximize surgical success, fluid administration during reptile surgery is standard. The standard rate for intraoperative fluid is 3 mL/kg hourly. Ideally, catheters are placed before surgery, and fluids are administered parenterally by the intravenous or intraosseous route. administer fluids during the surgical procedure directly intraperitoneal.

Technique surgery of performing a C-section and removing the eggs

In most lizards, bilateral ovariosalpingectomy is recommended but is not performed routinely in snakes because of the extensive length of the serpentine ovaries and oviducts. The large, numerous blood vessels that supply each oviduct must be ligated with suture or vascular clips [Mader and Bennett, 2006]. Vascular clips and laser greatly reduce surgery time, and often several vessels can be clamped with a single clip. The oviducts are ligated close to their insertion with the cloaca by using a circumferential transfixing ligature and removed. In lizards, coelomitis secondary to follicles ovulated into the coelomic cavity requires removal of the ovaries. In snakes, single or multiple coeliotomy and salpingotomy incisions are preferred, with efforts made to manipulate more cranial and caudal eggs out of the same incision [Grain and Evans, 1984, Millichamp et al, 1983].

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Figure A1. The aspect of the pregnant female

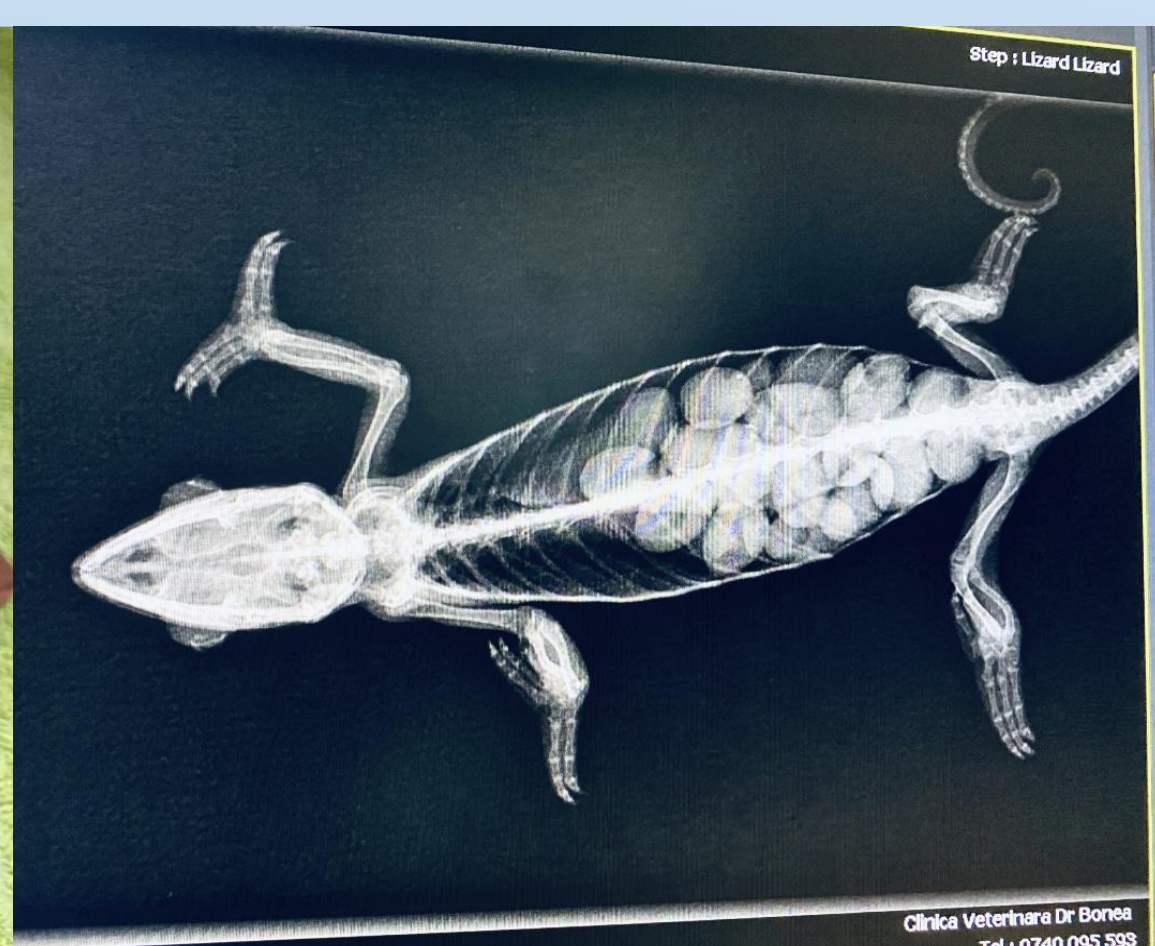


Figure A2. Radiological exam- aspect of egg-retention



Figure A3. Surgical removal of the egg-retention

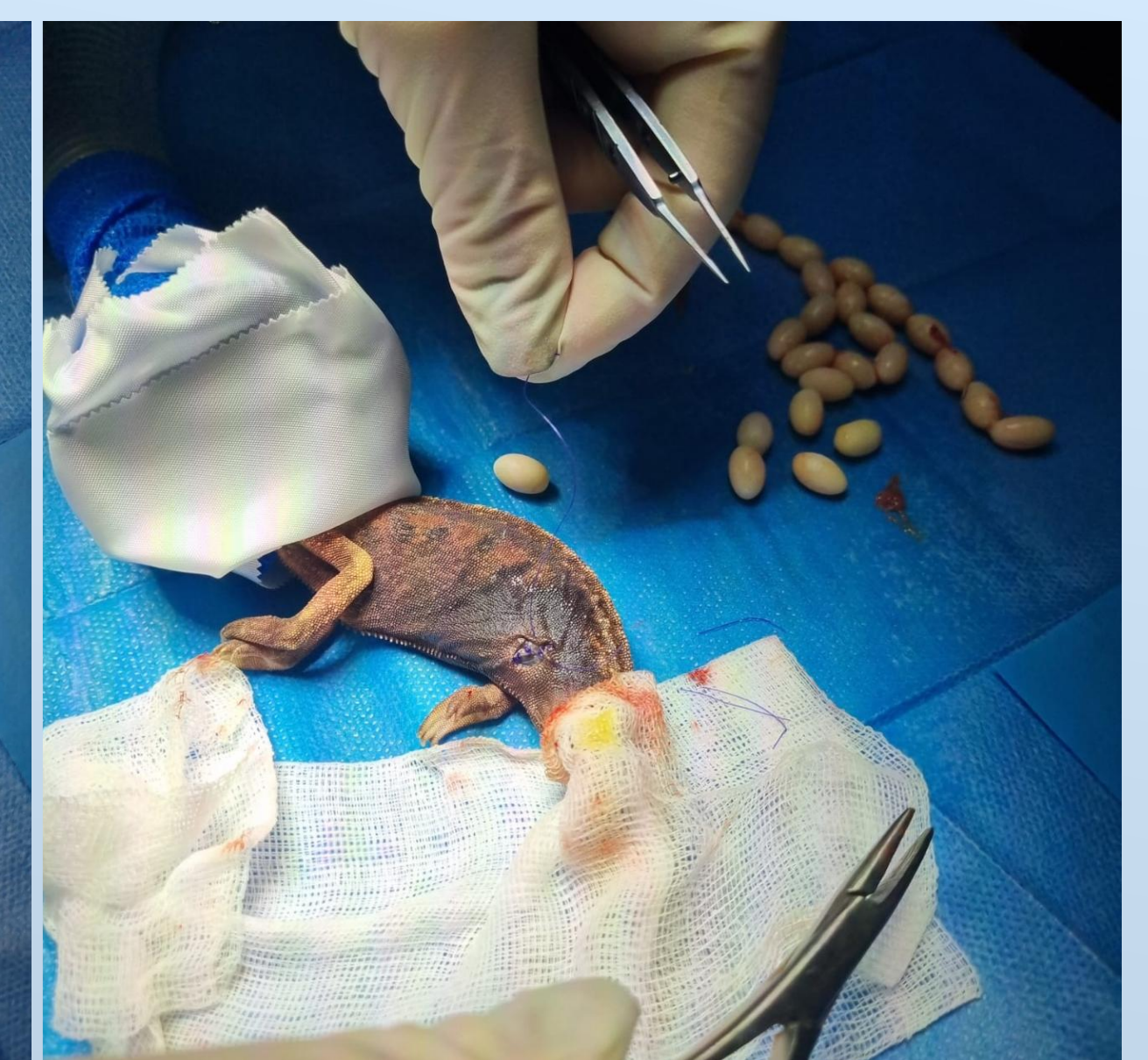


Figure A4. Final aspects of the surgical procedure

• Results and discussions

The diagnosis of post-ovulatory retention was made on clinical evaluation: the female had a bloated abdomen (Figure A1), signs of severe distress, including sunken eyes, gaping,, and was sitting withdrawn on the terrarium, on the ground or above the holes in the ground and by X-ray examination that revealed the coelomic cavity full of eggs (Figure A2). After appropriate premedication for rehydration and analgesia, presurgical preparation described at materials and methods, the surgical intervention was performed under inhalation anesthesia using microsurgical instruments. During and after the operation, circulating warm water blankets were used to maintain optimal temperature, as reptiles are temperature-dependent to maintain metabolic activities. Through a small incision in the posterior abdomen, in the mid-lateral region, the thin oviducts filled with eggs were immediately visible at the entrance to the coelom. Salpingectomy and ovariectomy were performed to remove the eggs to prevent subsequent reproductive problems in the females (Figure A3). The oviducts were ligated close to their insertion with the cloaca by using a circumferential ligature and removed. The surgery finally ended with the suture of the incised muscles and skin closed with an everting horizontal suture pattern, a type of suture that is recommended to ensure opposition of tissue without future dysecdysis (Figure A4).

In cases of postovulatory egg stasis, the thin oviducts full of eggs are immediately obvious on entry into the coelom of lizards and snakes [Drivers, 1996]. Multiple salpingotomy incisions can be made to remove the eggs in an effort to maintain future breeding capacity; however, surgery time is extended greatly. In our case study, this was not possible because of the dehydration of the female and also dehydration of the salpinx, and although salpingotomy with extraction was initially tried, it was unsuccessful, so salpingectomy was finally performed.

Sterile surgical tissue adhesive can be useful for closing the skin, although care must be taken to evert the skin when applying the glue. Given the length of time needed for reptile wounds to heal, sutures should not be removed until at least 6 weeks after surgery. Ecdysis may lead to the premature loss of skin sutures. Dysecdysis is an expected consequence of surgical incisions (particularly in snakes), and future management of the reptile surgical patient should anticipate for this condition [Mader and Bennett, 2006].

• Conclusions

The field of surgery on reptiles is in continuous evolution, with novel, less invasive surgical techniques being progressively developed. This case shows that emergency surgeries, such as chameleon dystocia, can be performed with precision and delicacy, after stabilization of the female and additional care during anesthesia, leading to a satisfactory outcome for the reptile.