SURGICAL REMOVAL OF EGGS IN AN EGG-BOUND ALBINO CORN SNAKE (*ELAPHE GUTTATA GUTTATA*) - A CASE REPORT.

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Contents: Abstract - Introduction - The patient - The operation - Post-operative progress - Epilogue - Acknowledgments - References.

ABSTRACT

Twentytwo eggs were surgically removed (coeliotomy and sectio caesaria) from an albino corn snake (*Elaphe guttata guttata*). Anaesthesia was accomplished with metomidate (Hypnodyl) using a dosage of 10 mg/kg body weight. During the operation it became clear that the last egg was lying broadside on, in front of the outlet of the oviducts in their common birth canal to the cloaca. The oviducts seemed to be inflammated. During bacteriological examination a colistine resistent *Proteus morganii* was isolated. The walls of the oviduct were sewn up with continuous stitchings according to Lembert, the skin and the ventral muscles were closed with single knotted stitches.
Recovery in the snake was slow. Two days after the operation the animal died, in spite of antibacterial treatment.

INTRODUCTION

As there is an increase in the captive breeding of

reptiles, keepers and veterinarians will be more and more confronted with birth problems in these animals. It is consequently desirable that this subject receives more attention, enabling us to treat and possibly prevent reproductive problems. This report of the surgical removal of eggs in an albino corn snake serves as a contribution to this aim.

THE PATIENT

On 20 May 1986 an adult albino corn snake (*Elaphe guttata guttata*) was brought to be examined as the eggs had not been layed at the proper time. The gestation period had been well exceeded. This could be inferred from the time of the copulation, which was 92 days previously, whereas another corn snake with the same owner had been mated approximately at the same time and had layed her eggs after about 63 days. Furthermore, the owner mentioned the fact that the animal had been showing serious spasms in the abdominal area on the 38th day of gestation. The eggs moved backwards during the following days and concentrated in a 5-15 cm area before the cloaca. Further, it was noticed that the animal had been laying eggs without any problems the previous year.

During examination the animal appeared to be in a reasonable condition. She was lively and had a normal interest in her surroundings. She was hindered in the movements of the abdomen by the accumulation of eggs. The ventral muscles had a good tone. Breathing was normal, the heart beat was strong and regular.

The accumulation of eggs was strikingly symmetrical over a 10 cm long area starting 15 cm before the cloaca. The eggs were well recognizable on palpitation (foto 1 and 2).

As a) the snake had not taken prey for some time,

b) oviposition should have taken place 4 to 5 weeks before, and c) spontanuous oviposition was not considered likely, it was deceided to remove the eggs surgically.

THE OPERATION

The snake was anaesthetized by means of metomidate (Hypnodil) in a dosage of 10 mg/kg body weight. During the operation there was a additional 'dosing on effect' of half of the initial dose. The fluid was injected into the body cavity.
The operation area was disinfected with 70% alcohol. The first skin incision, about 5 cm long, was made some centimeters before the cloaca, just beside the median line (as there is a ventral vein in the median line), also incising the ventral muscles.
The oviducts with their contents became visible immediately (foto 3). An incision of about 3 cm long was made in the right oviduct. The wound in the oviduct was kept open by means of surgical forceps. A sample was taken for bacteriological examination. The eggs were subsequently seized with arterial clips and removed. The most caudally positioned egg appeared to lie broadside on just in front of the outlet of both oviducts in their common birth canal. Presumably this egg had prevented the other eggs from passing into the cloaca

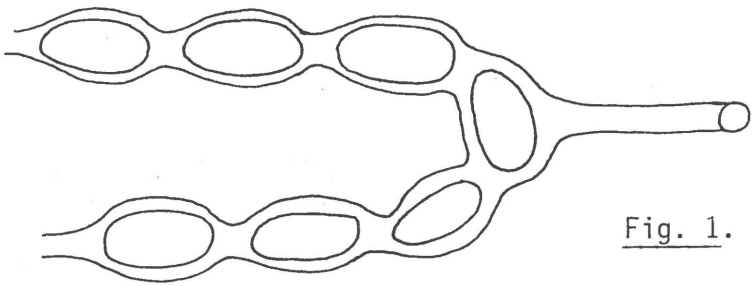

Fig. 1.

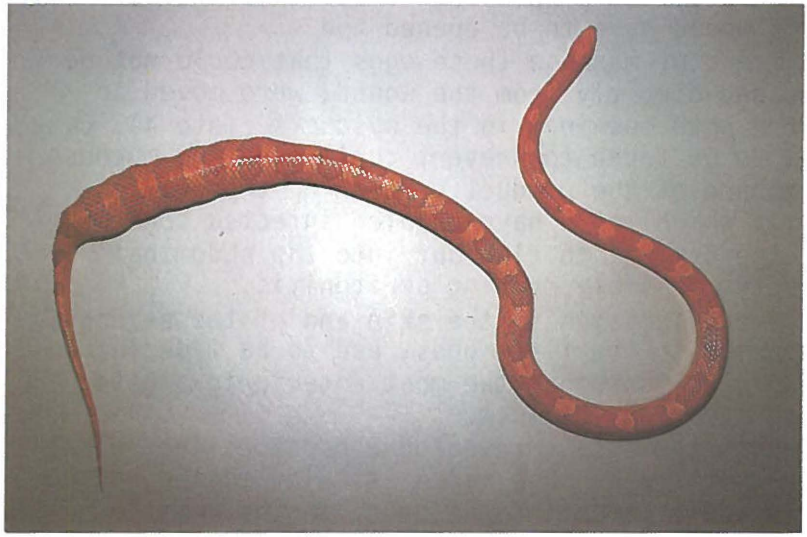

Foto 1. *Elaphe guttata guttata*, albino red phase. Foto: Mark Maas.

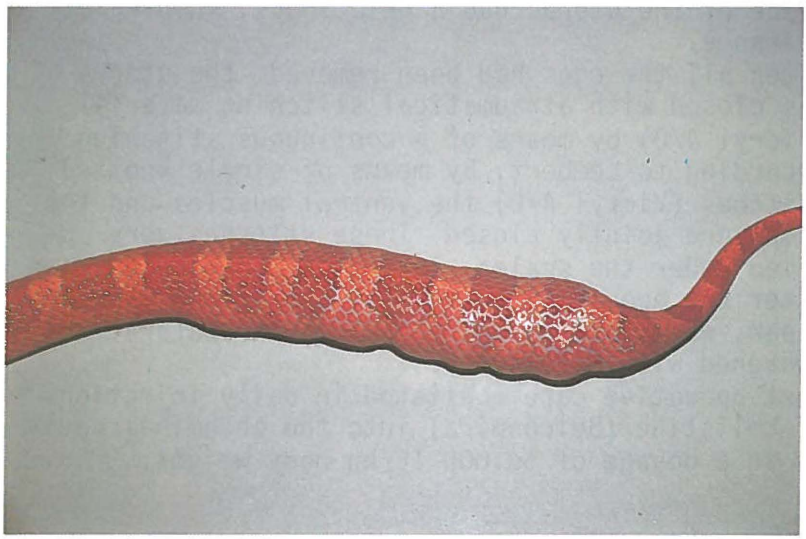

Foto 2. *Elaphe guttata guttata*, albino red phase. Foto: Mark Maas.

(figure 1). It also became clear that the left oviduct would have to be opened too.
By means of massage those eggs that could not be reached directly from the wound, were moved towards both openings in the oviducts (foto 4). Care had to be taken to prevent curling up the mucous membrane of the oviduct or tearing the oviduct wall, which would have enabled infected contents of the oviduct to flow out into the abdominal cavity, possibly causing peritonitis.
A second incision in the skin and of the oviduct, anterior to the first ones, had to be made to enable us to remove the most anteriorly stuated eggs the right oviduct.
Opening the uterus revealed a bad smelling, gelatinous, yellowish mass, also sticking to the eggs. This could be an indication of an inflammated uterus. The wall of the uterus did not seem to be swollen, but this could not be judged well because of the great tension to which the uterus wall had been submitted for a long time. The mucous membrane of the uterus had a gelatinous, shining appearance.
After all the eggs had been removed, the uterus was closed with atraumatical stitching material (Vicryl 4/0) by means of a continuous stitching according to Lembert. By means of single knotted stitches (Vicryl 4/0) the ventral muscles and the skin were jointly closed. These stitches were applied under the scales, in the folds (foto 5).
After the operation the animal was placed in a clean, warm setting (at 28 C in a incubator). She awakened with difficulty.
Post-operative care consisted in daily injections of colistine (Belcospira) into the abdominal cavity in a dosage of 50.000 IE/kg body weight.

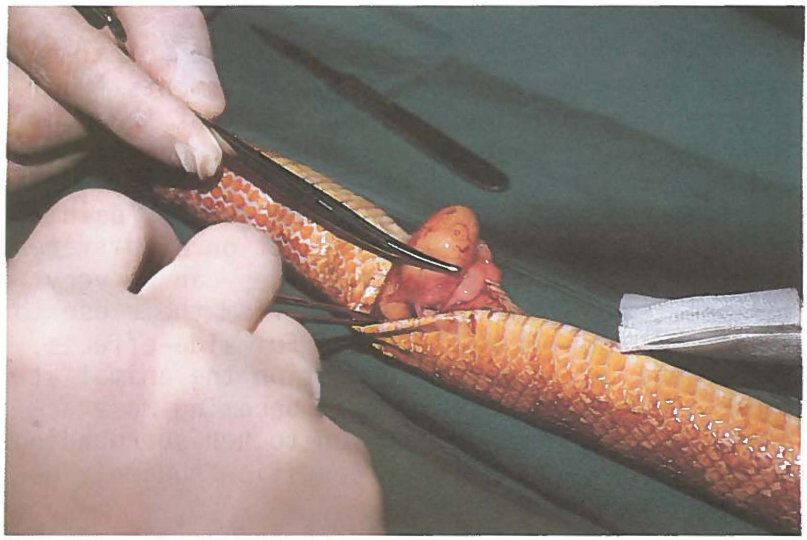

Foto 3. Chirurgische verwijdering van de eieren/ Surgical removal of the eggs. Foto: Mark Maas.

Foto 4. Chirurgische verwijdering van de eieren/ Surgical removal of the eggs. Foto: Mark Maas.

POST-OPERATIVE PROGRESS

During the day after the operation the animal remained very calm, making spasmic movements from time to time with the abdominal part of the body. This could be attributed to traumatic pains. We did look for a good sedative, but there is very little known about the use of analgesics (pain killers) in reptiles. As the reaction of different kinds of animals to these medicines can be very variable, we decided to refrain from their use to avoid the risk of possible harmful side-effects.
The second day after the operation the animal at first sight seemed to recover, becoming more active and paying more attention to her surroundings. In the evening though, her condition suddenly declined, and she died.
The result of the bacteriological examination of the contents of the oviducts was: *Proteus morganii*, resistant to colistine! The autopsy report made mention of an internal and external inflammation of both oviducts at the caudal site of the operation. Furthermore, several bacteria were isolated from organs, among others streptococci and *Proteus morganii* in the oviducts at the caudal operation site and *Proteus rettgeri* in the heart and the liver, all again resistant to colistine.

EPILOGUE

Some possibilties can be given concerning the cause and the progress of the egg retention in combination with an inflammatory oviduct.
One explanation would be that there was first an inflammation of the uterus. This could disturb the function of the muscles in the oviduct wall, causing - possibly premature - movement of the eggs, one egg ending in a position broadside on. A premature egg is smaller and could be more easily

Foto 5. Hechtingen na de operatie/Stitches after the operation. Foto: Mark Maas.

turned over within the available space in the abdominal cavity. This egg would have obstructed the passage of the other eggs.
Another possibility is, that there has been primarily a turning over of one or more eggs (cause unknown), causing a prolonged egg retention and in the end an inflammation (Gabrisch & Zwart, 1984). It is unfortunately impossible to be certain about the origine of the difficulties.
The inflammation of the oviducts and the retention of eggs, which presumably existed for some time, together with a deteriorating condition caused the fatality after the operation. It is recommended that one should resort to an operation sooner, as this will improve the prognosis considerably and provide a deeper understanding of the etiology and pathogenesis of such cases.
The fact that for the post-operative care an anti-

biotic was chosen for which the causative agents were resistant, has just been plain bad luck and was not to be foreseen. Most bacteria in reptiles appear to be sensitive to this antibiotic and it has already proved its value in the treatment of bacterial infections in reptiles.
It is of interest that the bacterium that was found was resistant to colistine. Maybe the sensitive bacterial strains (particularly Gram negative bacteria with the exception of *Proteus* have been selected by previous use of this antibiotic or another with a comparable range of activity. This could be an indication for the importance of specific selection and careful dosage of antibiotics. It is of course very regrettable that the snake died. The experiences and data given in this article might be of use, though, in the future, so that the inevitable death of the animal will eventually help to save others.

ACKNOWLEDGMENTS

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