ROTTEN EGGS – REPRODUCTIVE DISEASE IN TORTOISES

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MALES

Anatomy

Male tortoises have two testes which are located within the body cavity near the kidneys. Sperm passes from here into the cloaca and to the base of the copulatory organ – tortoises have a single penis which functions only for reproduction and not for urination.

Mating is triggered by pheromones and the biting and butting behaviour is an important component of mating and may stimulate ovulation in the female.

Penile prolapse

This is where the penis fails to return to the cloaca (Fig. 1) and becomes dessicated and eventually necrotic. It is normal for the penis to come out from time to time especially if the tortoise is mating but it should usually return to the cloaca by itself. In the early stages the prolapse can be replaced; until veterinary attention can be sought it should be kept moist and clean. Remove any substrate and keep the tortoise on a damp towel. At the vet's swelling is reduced with hypertonic solutions and anti-inflammatories; any infection is treated and the penis can be lubricated and replaced. Tacking sutures may be used to keep the prolapse in place until the tissues have healed. A check is made for underlying causes such as parasites or bladder stones which may have caused excessive straining.

If the tissues have become necrotic then surgery is required to amputate the penis; this is usually done under general anaesthesia.

Fig. 1. Prolapse of the penis.

FEMALES

Anatomy

Female tortoises have paired ovaries inside the body cavity at the level of the kidneys. All tortoises are oviparous (egg layers). The oviduct lies lateral to the ovary and has a funnel-like opening, the ostium. This receives the follicles produced by the ovary when ovulation occurs. The follicles move through the different areas of the oviduct including the shell gland where the shell is laid down. Eggs are passed into the vagina region where they are held until oviposition (egg laying).

Follicular stasis

This is a chronic disease which can take years to develop. It is not completely understood at present. Follicles form within the ovary but do not progress to ovulation. Factors involved can include: diet, husbandry and hibernation history, or lack of a suitable nest site. Isolation from male tortoises is often a factor. The symptoms are vague and non-specific and can include: anorexia (often prolonged), inactivity, reduced weight, hind limb paresis and absence of faeces. Blood samples, x-rays, ultrasound and endoscopy may all be used to help make a diagnosis. Surgery is usually the treatment of choice. This

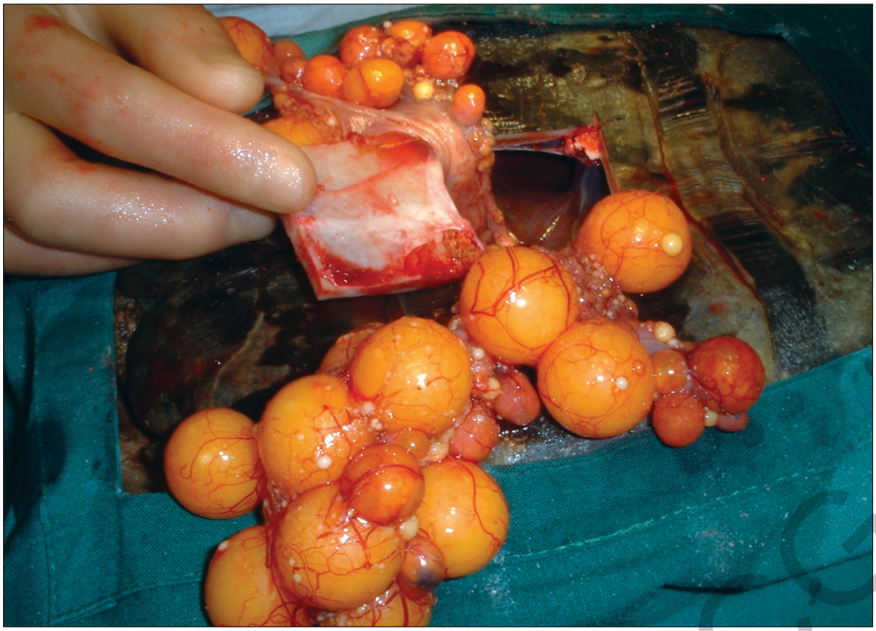

Fig. 2. Removal of numerous follicles through a flap in the plastron. A strip of connective tissue has been retained on one edge of the opening to make a 'hinge' which allows for accurate replacement of the shell, leading to faster healing.

Fig. 3. Tortoise with an oesophagostomy tube in place post-operatively, for ease of administering fluids and liquid feeds.

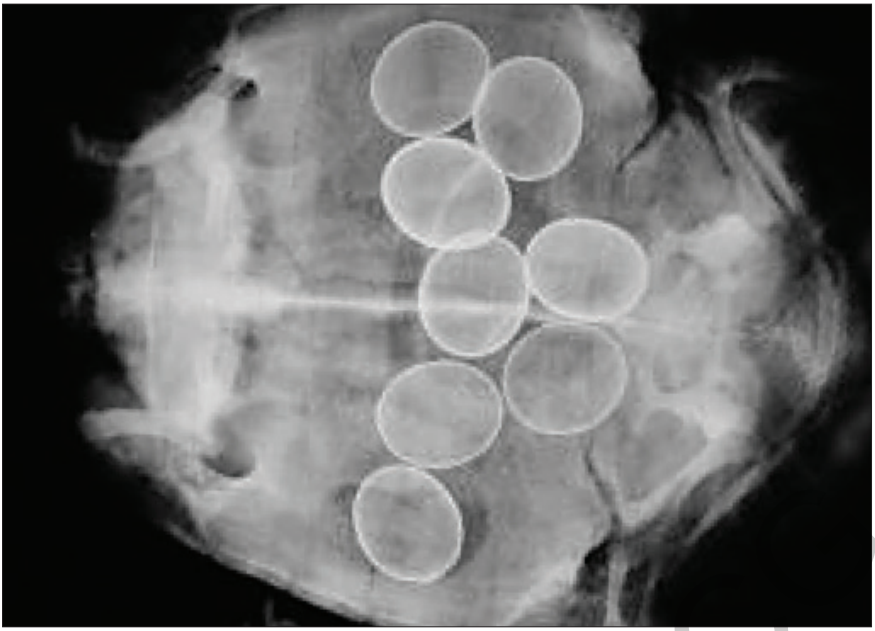

Fig. 4. X-ray plate of a tortoise carrying calcified eggs.

involves drilling through the shell to make a flap for access to the body cavity and removing both ovaries (Fig. 2). In some larger tortoises keyhole (laparoscopic) surgery may be possible carried out through a small incision in front of the hind limb. Supportive treatment such as fluid and electrolyte replacement and nutritional support is important (Fig. 3) and may be required for many months after surgery. Hepatic lipidosis (fatty liver) is a common concurrent illness and requires supportive care. To prevent follicular stasis careful management of temperature and photoperiod appropriate for the species is required. Maintaining in groups may be helpful as well as allowing mating every few years.

Dystocia

This is failure to lay eggs within the time period expected for the species. In many cases this time period is unknown and there is a wide variety of gestation periods amongst different species and even within species. This can make diagnosis of dystocia difficult and the presence of shelled eggs on x-ray does not necessarily mean there is a problem and may not be the cause of clinical symptoms seen.

Dystocia can be due to obstruction of the eggs where there is not enough room for them to pass. Causes for this include: oversized eggs, abnormally

shaped eggs, abnormal size of the female pelvis, strictures in the oviduct, cancers or bladder stones.

Non-obstructive causes can include: poor husbandry, lack of nesting site, poor nutrition, obesity and poor muscle tone, or other illnesses such as infection of the oviduct or ectopic eggs (these are eggs in the wrong place, e.g. in the bladder).

Signs of dystocia include: abnormal posture, hind limb paresis, anorexia, lethargy, straining, cloacal discharge, faeces and/or urine retention and cloacal prolapse. Diagnosis is achieved by checking the history of illness and the weight history of the tortoise; eggs may sometimes be felt adjacent to the hind legs. X-rays (Fig. 4) and ultrasound are useful, and sometimes keyhole surgery with a camera (laparoscopy). Blood samples may be taken to check underlying health status and for evidence of other disease.

Treatment involves providing a suitable nest site, rehydration and treatment with calcium and oxytocin hormone to encourage egg-laying. Surgery is indicated if there is no response to medical treatment and usually involves an approach through the plastron. An incision in front of the hind leg may be used in larger tortoises.