EGG BINDING, DYSTOCIA

GOLDEN RULE: PREVENT AND/OR ACT IN TIME

Keep the female in line with naturalistic chameleonoculture healthy, well nourished and safe; observe the female with increased focus towards the end of gravidity; in case of problems, go to VET in time.

The oviparous chameleon species lay their eggs at the end of several weeks of gravidity various ways.
We have still very few data and observations about egglaying aspects from the wild. There are few types of species concerning the way how they lay the eggs.

1. **Deep diggers:** e.g. *Furcifer verrucosus, Furcifer labordi, Chamaeleo gracilis* - species from dry biotopes mustdig deep (20–40cm to ensure the eggs are laid in a favorably moist environment to survive and develop).
2. **Shallow diggers:** vast majority of species, including the most commonly kept ones.
3. **Dropper:** small species usually just drop the eggs on forest floor and eventually cover them under a leaf or little debris.
4. **Specialists:** *Archaius tigris* lays the eggs loosely between the leaf and the stem of palms.

SYMPTOMS

1 APPEARANCE

Female full of eggs: eggs visible or palpable in the posterior part of belly close to cloaca.

Gravid colors: with possible discoloration (light, whitish tones) in the belly area close to cloaca.

Eyes sunken: due to stress and possible dehydration.

Weakness: the more time is progressing the weaker and slower the females are, the weak grip is a good indicator, as is sleepiness.

2 BEHAVIOR

Digging a tunne for more than 2 days.
Dropping the eggs from branch or while crawling around on bottom or on branches.
Crawling through the cage atypically and/or nervously.
Restlessness
Staying on the ground
Refusal to eat and/or drink
Sleepiness at daytime
Weakness
Exhaustion
Not sleeping at night
Discoloration(s)

3 CLINICAL PICTURE

Low level of oxytocine in blood
Hypoglycaemia (low level of sugar in blood)
Muscular weakness
Dehydration
Obstruction

REASONS

1 WRONG NUTRITION

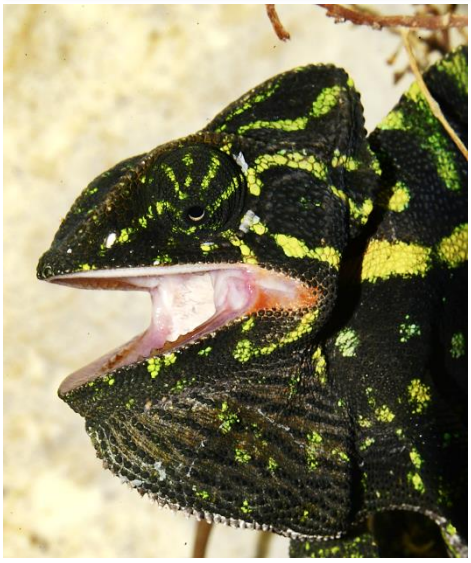
Mistakes in food spectrum.
Too little food: not enough energy.
Too much food: risk of constipation, blockage of oviducts with eggs by gut content.
Too big feeders: constipation, blockage, autointoxication by decaying gut content.
Wrong supplementation: too little calcium leads to decalcification of bones while the female tries to redirect the calcium deposited in bones into the eggs; not saturated demand in vitamins and minerals leads to collapse of homeostasis, organ failure and/or low egg quality and female weakness, often demonstrated by gular edema.
Too much food and obesity combined with high temperatures leads often to huge amounts of eggs, blocking inner organs, exhausting the female and increasing the demand in nutrients.

2 WRONG HYDRATION

Too little water: dehydration, thickening of body fluids, collapse of homeostasis and general weakness.
Too much water: hyperhydration, too much dissolved body fluids, collapse of homeostasis, edematic swellings, immobility.
Wrong unnatural way of hydration: absence of humid nights or too much air humidity at daytime leads to collapse of homeostasis and to increased susceptibility to infections; absence of fog is compensated by heavy drinking, causing osmotic shock in intestines, micro-ruptures of intestine wall, digestion problems, intestine inflammations and infections, autointoxication.

3 WRONG ECOSYSTEM

Improper inner design of the cage, wrong temperature and humidity levels and gradients during day and night.



4 WRONG LAYING SITE

Absence of laybin: stress, inability to lay eggs.
Wrong design of laybin: wrong color, transparent, too small or too large.
Too deep substrate: exhaustion by too much digging.
Too dry substrate: the tunnel collapses, female will refuse to lay eggs.
Too wet substrate: female may refuse to lay eggs.
Too loose substrate: the tunnel will collapse.
Too low substrate temperature: female may refuse to lay eggs.
Too high substrate temperature: female may want to dig deeper.
Wrong placement of the laybin: no privacy, too much light, wrong color of environment, disturbance by cats, dogs, birds, children, breeder, traffic.

5 ANATOMICAL DISORDER

Stenosis of the oviducts.
Knits or obstructions of oviducts as result of previous infections, injuries, surgeries.
Crossing or blocking of oviducts.
Anomalies of inner organs blocking oviducts.

6 PHYSIOLOGICAL DISORDERS

Inability to produce enough oxytocine.
Wrong calcium and potassium metabolism.
Disballance in calcium intake can cause decalcification of bones in the favor of calcification of eggs, a gravidity - based MBD can quickly develop.

7 SMALL SIZE

Small females produce standard sized eggs, which might be too big to pass through the pelvis and cloaca.

8 OBESITY

The fatbody filling substantial part of the body cavity can block the eggs in the oviducts either itself or while pressing other organs in unnatural positions.
Obesity destroys homeostasis, so weakness, organ failures, inner intoxications can be the result
Obesity causes collapse of various inner organs.

9 PATHOLOGY, DISEASE

Injuries (healed or fresh) and scars can block the eggs:

- MBD
- Tumors
- Infections
- Inner organ failures

10 STRESS

Stress from any above plus e.g. presence of birds, cats, dogs, children, breeder etc. can have a negative influence on the well-being of the gravid female.
Cohabiting is an absolute NO for a gravid female, especially with males.

11 INBREEDING

The more inbred the captive population is, the more often problems with egg laying arise, strengthened by improper care.

PREVENTION

Naturalistic chameleonoculture with focus on simulating all vital factors, great nutrition, health and welfare, absence of inbreeding and cross–breeding. The development of infertile eggs can be prevented in keeping the female slim while feeding it in a way she does not become fat and keeping it at environmental conditions resembling a season out of breeding season (usually lower temperatures).

TREATMENT

If egg binding is suspected, the sooner the following actions happen, the better the prognosis of successful treatment and saving the female's life is:

1. Consult online a specialist.
2. Fix all above failures if possible.
3. If the animal dies, try to save the eggs just after its death.
4. Self-medication impossible, egg binding is a call for VET.

VET ACTIONS

Inspect the animal.	Do X-ray or infrasound investigation.	Decide about the use of oxytocine (calcium, glucose etc.).
Decide about surgery and eventually do it.	The eggs are eventually surgically removed and oviducts left or removed based on the state, same with ovaries (in case of heavy problems, spaying is an alternative to eventually prolong the life of the female, while the risk of egg-binding raises tremendously after previous egg-binding).	

If the eggs are fertile and healthy, they can be incubated.

DO NOTS

1. **Never palpate the body with force.**
2. **Do not try to massage the eggs out, you can cause a rupture of inner organs incl. oviduct.**
3. **Do not wait too long with calling for advice.**
4. **Do not wait too long to go to VET.**

DISCLAIMER

Animals are not machines, there is a wide inconsistency of how the females react on such unpleasant situation, so symptoms are subject of big variability. The egg bound state can be total or partial: even after laying a clutch, there can be still eggs remaining in the oviducts.