# CLINICAL APPROACH TO COMMON CASES IN REPTILES AT THE NATIONAL MUSEUMS OF KENYA

# PRESENTATION OVERVIEW

1) National Museums Snake Park
2) Examination and restraint of Reptiles (Snakes)
3) Medical and surgical case management

Professor John Cooper, Dr. Nikhil and Mrs Margret Cooper

# Reptiles housed at Snake Park
# 1. Snakes ( serpentines)

**Jameson's Mamba**

**Forest cobra**

# 2. Chelonians

**Terrapin**

**Tortoices**

## 4. Crocodile

## 5. Monitor Lizard

# REPTILE RECORDS

- ✓Aquisition details
- ✓Feeding
- ✓Shedding
- ✓Monthly growth
- ✓Treatment

# Ecdysis

# EXAMINATION OF REPTILES

## 1. History

- dependent on snake type

## 2. Pre capture assesment

- Environment
- Animal

# 3. Restraint

Physical

Chemical: Ketamine

**Grab stick**

**Hook stick**

# Large thumb Forcepts

# Physical restraint of a Forest cobra

# 4. Physical Examination

- **Body**

✓Hydration status

✓Body condition and whether eaten

✓Ectoparasites (Magnifying glass)

✓Wounds or swellings

✓Scale Rot and disecdysis

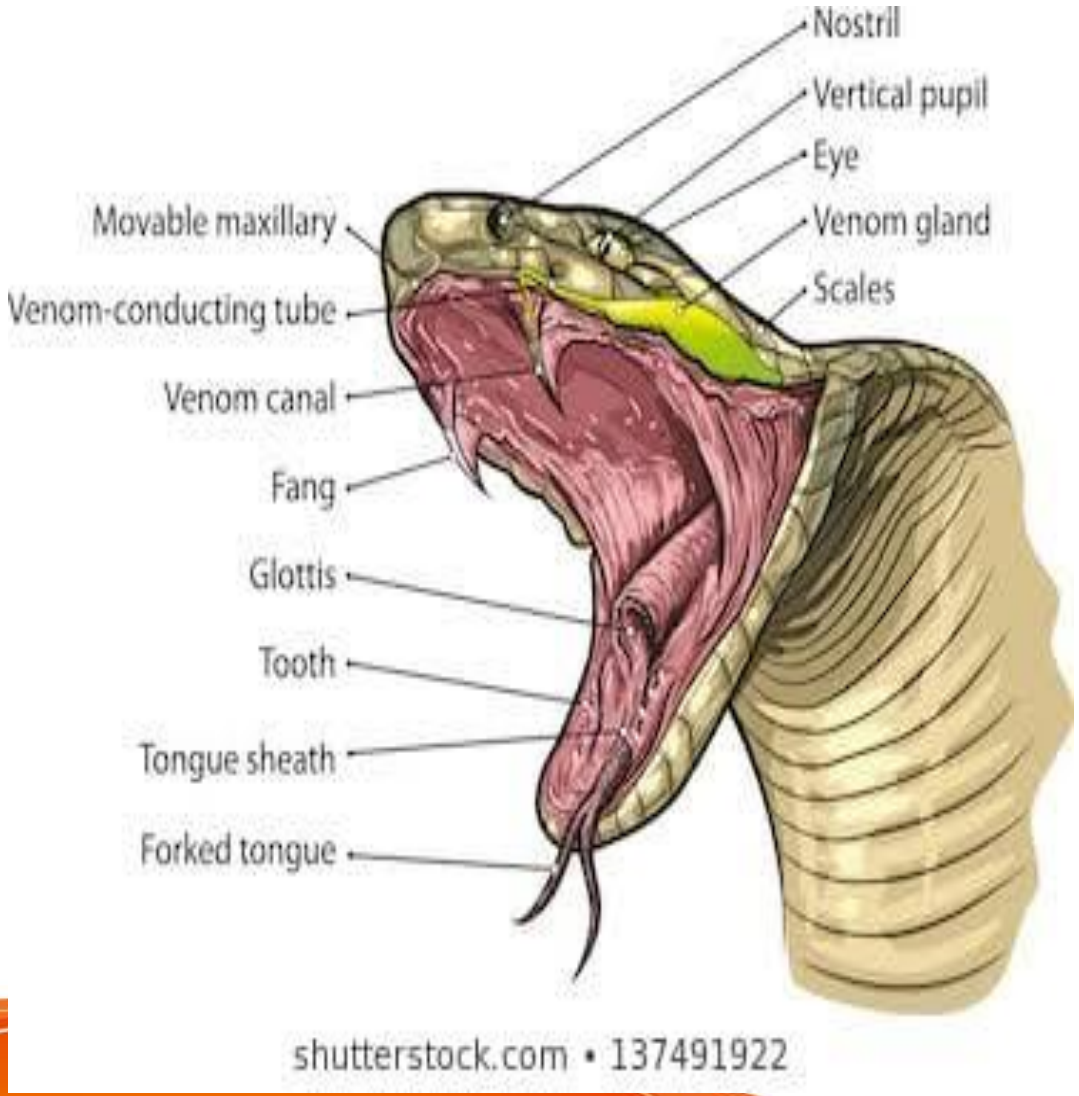
✓Cloacal mattings

✓Nervous tests: Reflexes

✓TPR

# HEAD

- ✓Eyes
- ✓Nares
- ✓Mucous membranes
- ✓Fangs
- ✓Glottis



# COMMON CONDITIONS IN THE SNAKE PARK

## 1. Ectoparasites

- Ticks (*Aponema spp*) in snakes, lizards and **Tortoices**
  - Mites (*Ophionyssus natricis*) *in* ***snakes***

**c/s**

- ✓Disecdysis
- ✓Anorexia
- ✓Pruritus and dermatitis

# Ticks in Tortoises

**Dx**

Ticks- Grossly/ magnifying lenses

Mites- Grossly with a magnifying lenses

**Rx**

Cabaryl powder & Amitraz ineffective

Ivermectin is toxic to chelonians

Fipronil

**Prevention:**

Inspection of new reptiles

# 2. Helminthosis

- Nematodes: *Kalicephalus spp*
- Cestodes: Confirmed grossly
- Trematodes: *Mesocoelium monodi* in bucal cavity
- Pentastomes (Tongue worms)

J.E. Cooper, (1971)

**c/s**

- ✓ Usually an underlying cause of most diseases

**dx**

- ✓ Adult, egg and larvae idenfification (swabs: cloacal/ esophageal)

**Rx**

- ✓ Fenbendazole 50mq/kg q2/52 for 3-4 rx

# 3. Infectious Stomatitis (Mouth Rot)

- Very common; Flaired by stress
- Bacteria, viruses and Fungus

***c/s***

✓Excess salivation and anorexia

✓Swollen hemorrhagic gums

✓Accompanied with loose teeth, eye infection or pneumonia, trauma, mites

*Jeannette W., (2002)*

# Diagnosis

- ✓C/S
- ✓Culture and sensitivity

**Rx**

1. Streptomycin
2. Metronidazole
3. Oxytetracycline

- ✓Mouth wash with iodine/ hydrogen peroxide

msdvetmanual.com

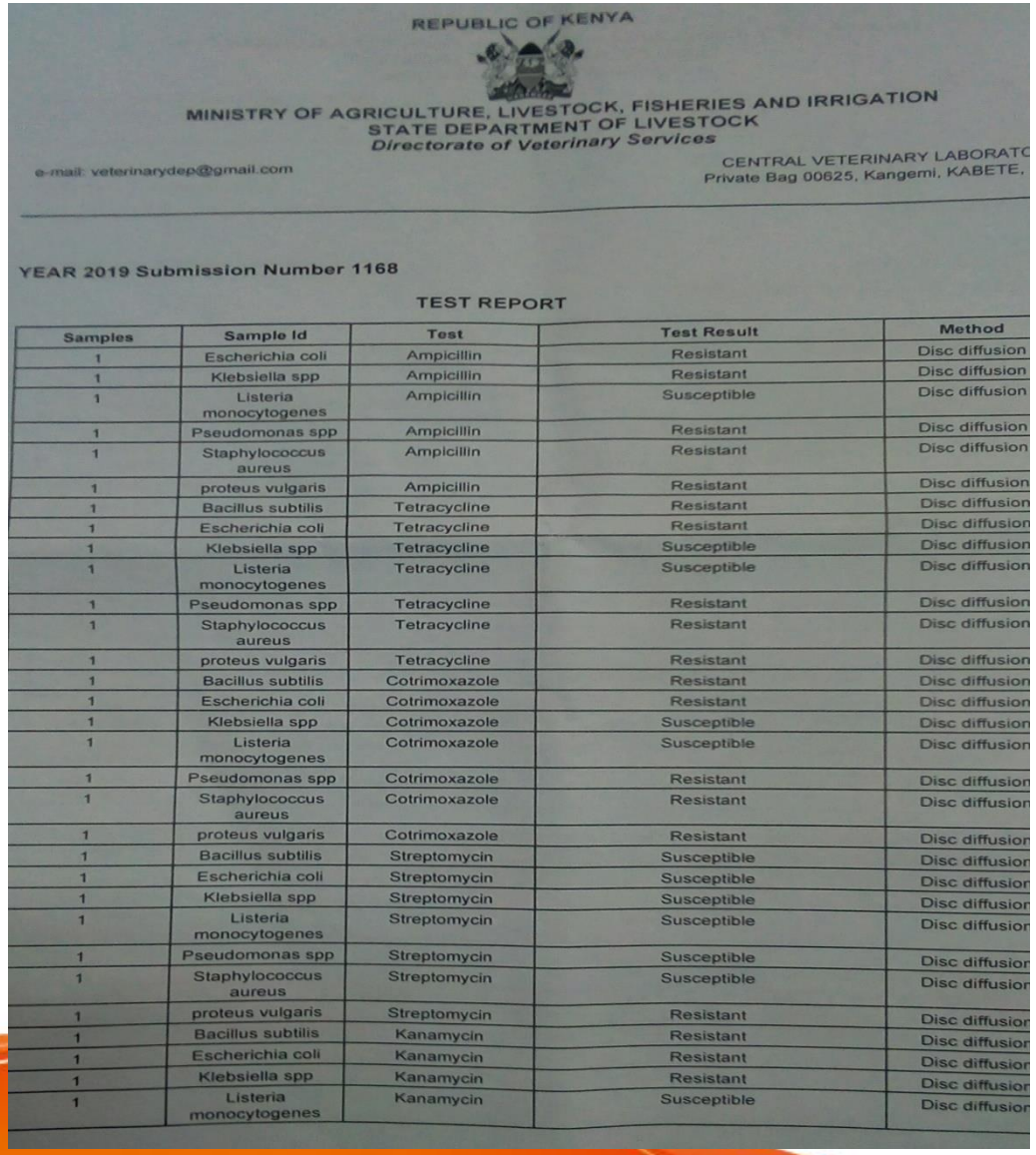
# 4. Gastroenteritis in Monitor Lizards

Hx: Watery, foul smelling diarrhoea

Dx: Culture and sensitivity

Resistance!

*J.E. Cooper and J.H. Leaky, (1976)*



REPUBLIC OF KENYA

MINISTRY OF AGRICULTURE, LIVESTOCK, FISHERIES AND IRRIGATION
STATE DEPARTMENT OF LIVESTOCK
*Directorate of Veterinary Services*

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CENTRAL VETERINARY LABORATO
Private Bag 00625, Kangemi, KABETE,

YEAR 2019 Submission Number 1168

TEST REPORT

| Samples | Sample Id | Test | Test Result | Method |
|---|---|---|---|---|
| 1 | Escherichia coli | Ampicillin | Resistant | Disc diffusion |
| 1 | Klebsiella spp | Ampicillin | Resistant | Disc diffusion |
| 1 | Listeria monocytogenes | Ampicillin | Susceptible | Disc diffusion |
| 1 | Pseudomonas spp | Ampicillin | Resistant | Disc diffusion |
| 1 | Staphylococcus aureus | Ampicillin | Resistant | Disc diffusion |
| 1 | proteus vulgaris | Ampicillin | Resistant | Disc diffusion |
| 1 | Bacillus subtilis | Tetracycline | Resistant | Disc diffusion |
| 1 | Escherichia coli | Tetracycline | Resistant | Disc diffusion |
| 1 | Klebsiella spp | Tetracycline | Susceptible | Disc diffusion |
| 1 | Listeria monocytogenes | Tetracycline | Susceptible | Disc diffusion |
| 1 | Pseudomonas spp | Tetracycline | Resistant | Disc diffusion |
| 1 | Staphylococcus aureus | Tetracycline | Resistant | Disc diffusion |
| 1 | proteus vulgaris | Tetracycline | Resistant | Disc diffusion |
| 1 | Bacillus subtilis | Cotrimoxazole | Resistant | Disc diffusion |
| 1 | Escherichia coli | Cotrimoxazole | Resistant | Disc diffusion |
| 1 | Klebsiella spp | Cotrimoxazole | Susceptible | Disc diffusion |
| 1 | Listeria monocytogenes | Cotrimoxazole | Susceptible | Disc diffusion |
| 1 | Pseudomonas spp | Cotrimoxazole | Resistant | Disc diffusion |
| 1 | Staphylococcus aureus | Cotrimoxazole | Resistant | Disc diffusion |
| 1 | proteus vulgaris | Cotrimoxazole | Resistant | Disc diffusion |
| 1 | Bacillus subtilis | Streptomycin | Susceptible | Disc diffusion |
| 1 | Escherichia coli | Streptomycin | Susceptible | Disc diffusion |
| 1 | Klebsiella spp | Streptomycin | Susceptible | Disc diffusion |
| 1 | Listeria monocytogenes | Streptomycin | Susceptible | Disc diffusion |
| 1 | Pseudomonas spp | Streptomycin | Susceptible | Disc diffusion |
| 1 | Staphylococcus aureus | Streptomycin | Susceptible | Disc diffusion |
| 1 | proteus vulgaris | Streptomycin | Resistant | Disc diffusion |
| 1 | Bacillus subtilis | Kanamycin | Resistant | Disc diffusion |
| 1 | Escherichia coli | Kanamycin | Resistant | Disc diffusion |
| 1 | Klebsiella spp | Kanamycin | Resistant | Disc diffusion |
| 1 | Listeria monocytogenes | Kanamycin | Susceptible | Disc diffusion |

# ANAESTHESIA

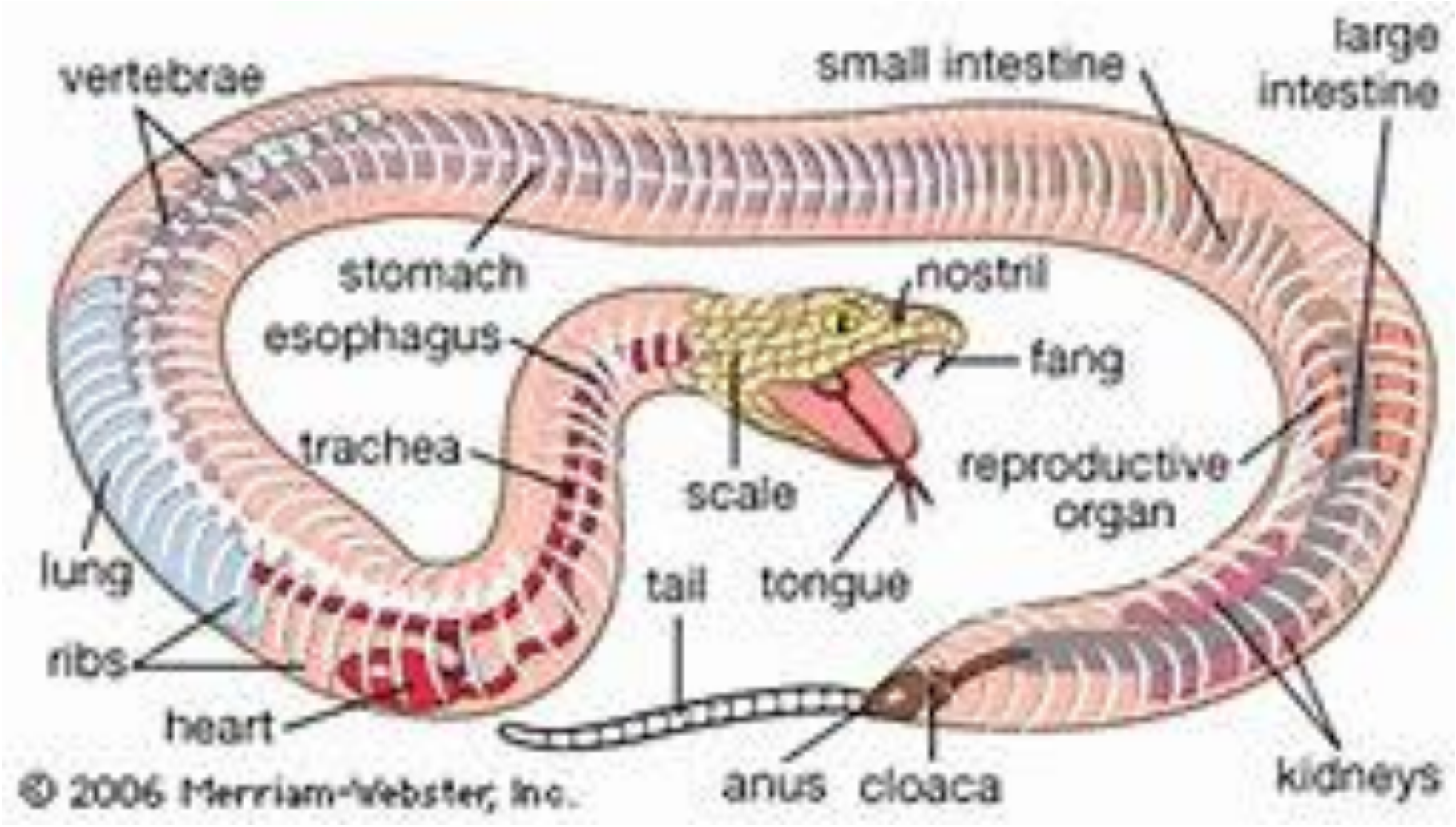
- **SEDATION**
- Phenothiazines, benzodiazepines
- **INJECTABLES**
- Dissociative (Ketamine 60-80mg/kg) Propofol
- **INHALANT**
- Isoflurane 4-5% (5% induction)
- Sevoflurane 6-7% (8%)
- **ADMINISTRATION**
- Ziplocks
- Intubation (IV catheter*, ET tube)

(Ankush,2016)

# Analgesia

- Meloxicam (at 0.4 mg/kg IM) q24 hrs
- Butorphanol (at 1.5, 4.0 and 8.0 mg/kg IM) q12hrs
- Morphine (at 1 mg/kg IM) q 12hrs
- Ibuprofen (at 2 -4 mg/kg IM) q12 hrs
- Dexamethasone sodium phosphate

# ANATOMY


vertebrae
small intestine
large intestine
stomach
nostril
esophagus
fang
trachea
scale
reproductive organ
lung
tongue
tail
ribs
heart
anus
cloaca
kidneys
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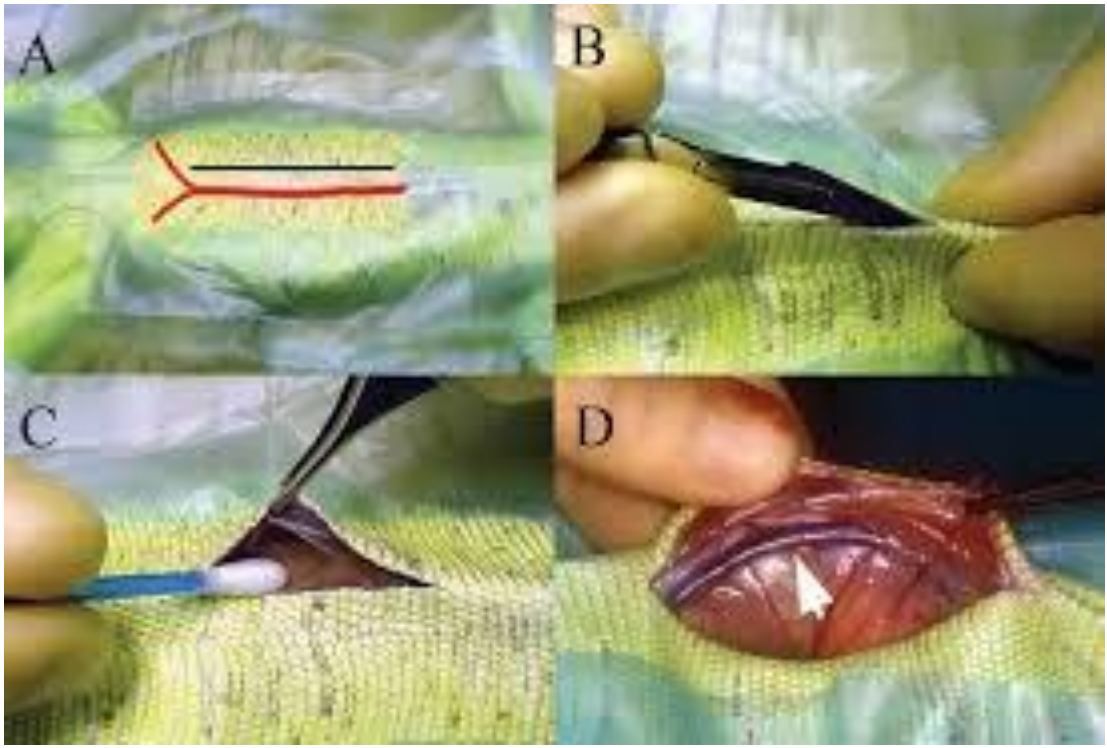
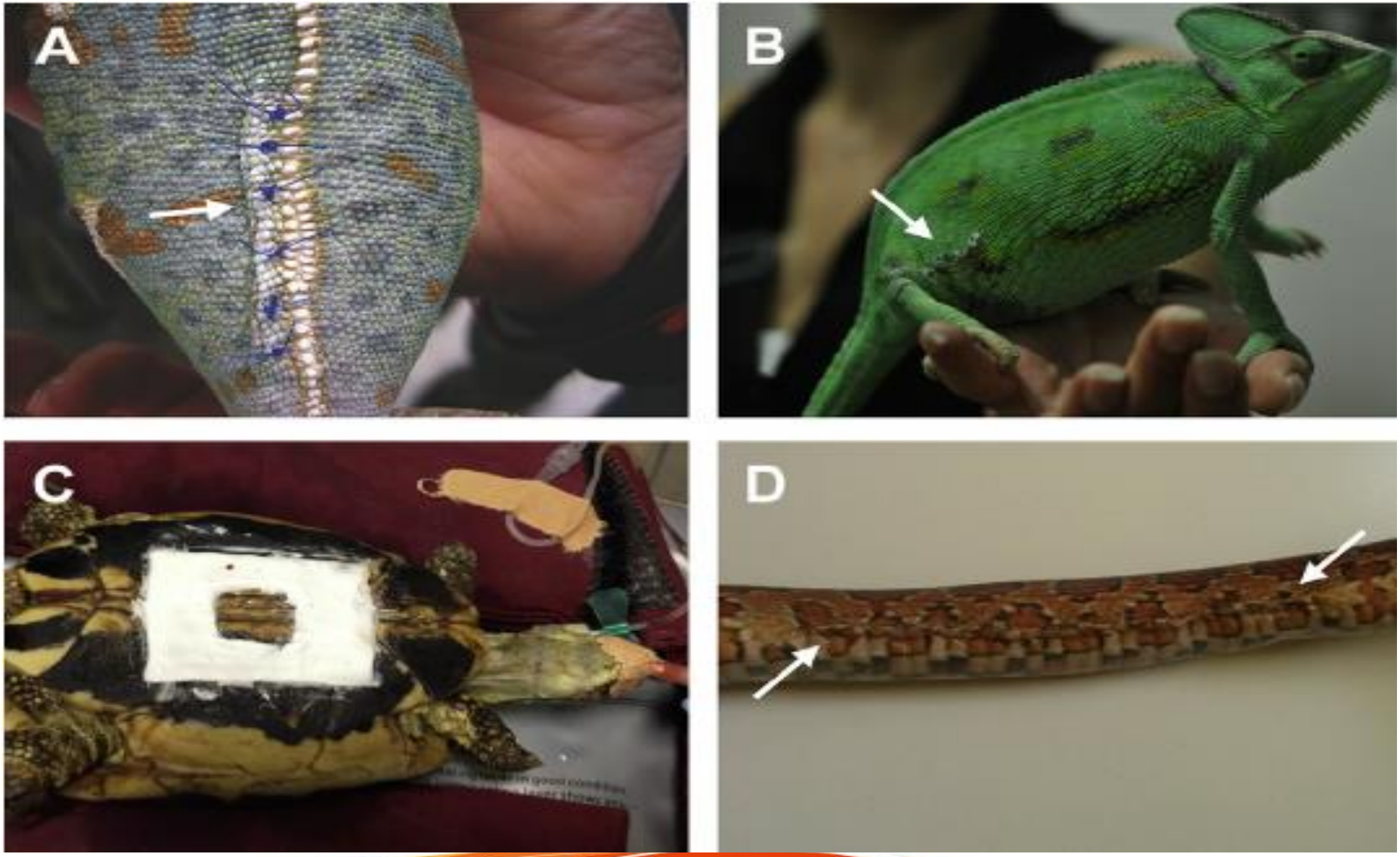
# COELIOTOMY



# Wound closure



# Dystocia

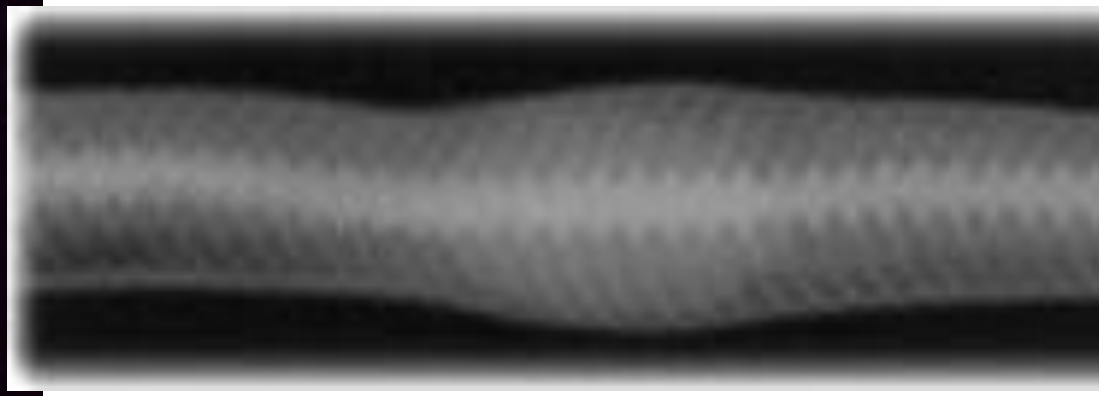
- **SNAKES-** Obstructive (foetal or maternal)
- or Non-obstructive

- **Lizards-** Pre-ovulatory or Post-ovulatory

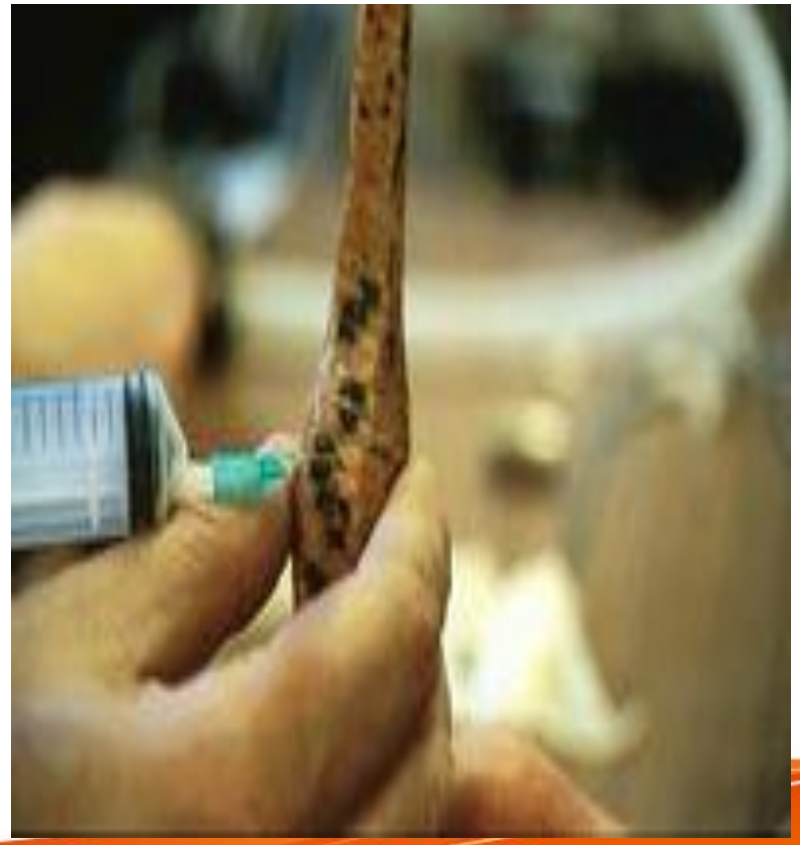
- **Diagnosis-** Hx, Cs, Radiography

# Egg bound

# Radiography



## Management



- Medical management- oxytocin, calcium gluconate (vasotocin better)
- Manipulation- risk of egg rupture, oviduct rupture, prolapse and death
- Percutaneous ovocentesis- G18 needle ventral approach

# Salpingotomy

# NEOPLASIA

- Causes by oncogenic viruses*or external parasites, UV?
- Different types and can be single type or mixed tumors
- Diagnosis mainly by  CS* of swellings/growths (DDx abscesses, feeding, eggs, granulomas).
- Confirmatory (coelotomy or PM* biopsy taking histopath)
- Rx- euthanasia vs excision*
    - ( Cooper, 2000; Garner *et al.,* 2004; Gumber *et  al.,* 2012)

Note the SC swelling

# Abscesses (Pseudotumors)

- Internal or subcutaneous
- Cause- septicemia + stress
- Caseous rather than liquid pus in snakes
- **DX**
- Hx and CS
- Blood tests, Radiography though not common
- Aspiration

- (Lock & Wellehan, 2014)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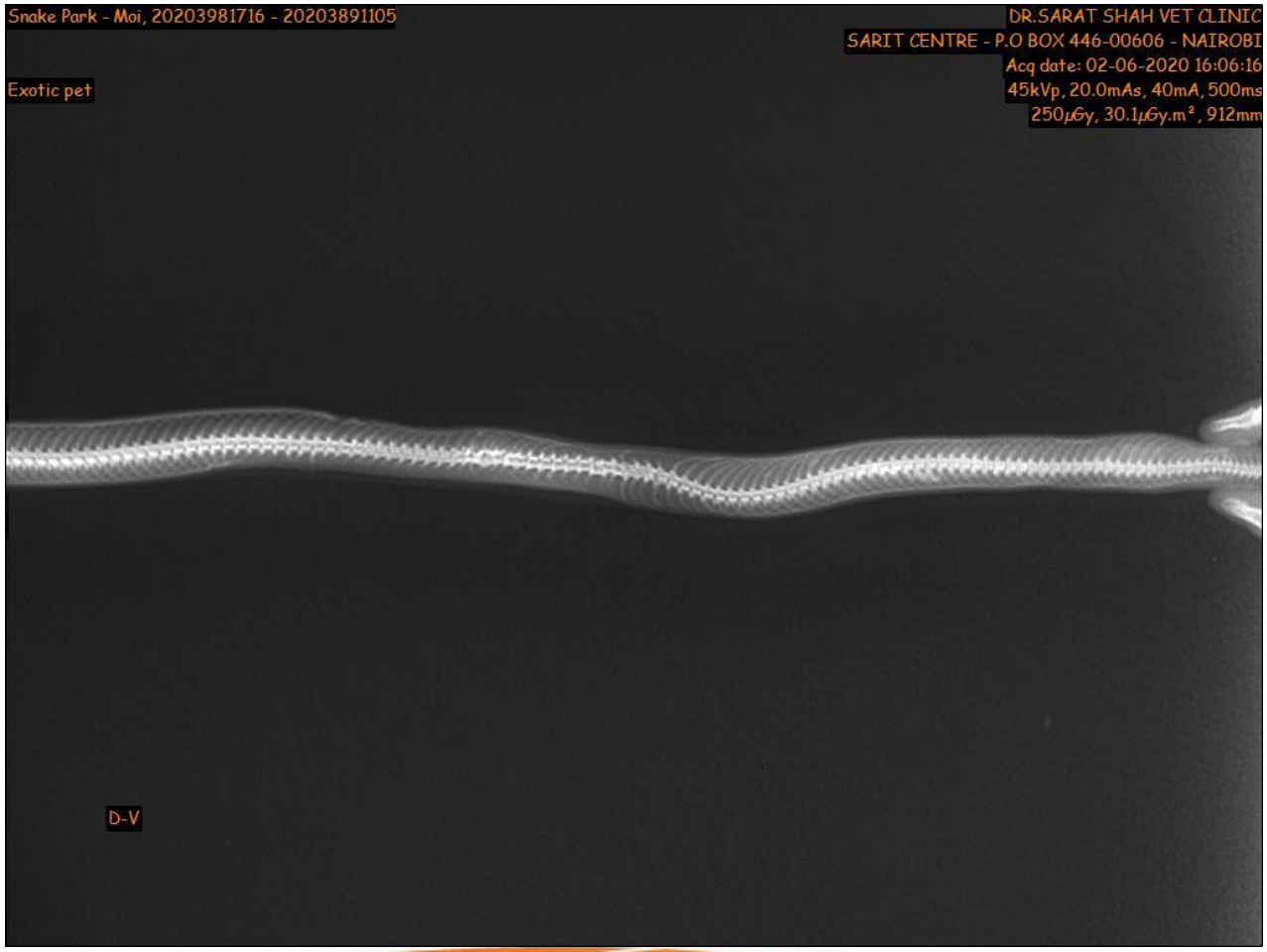
# WOUNDS

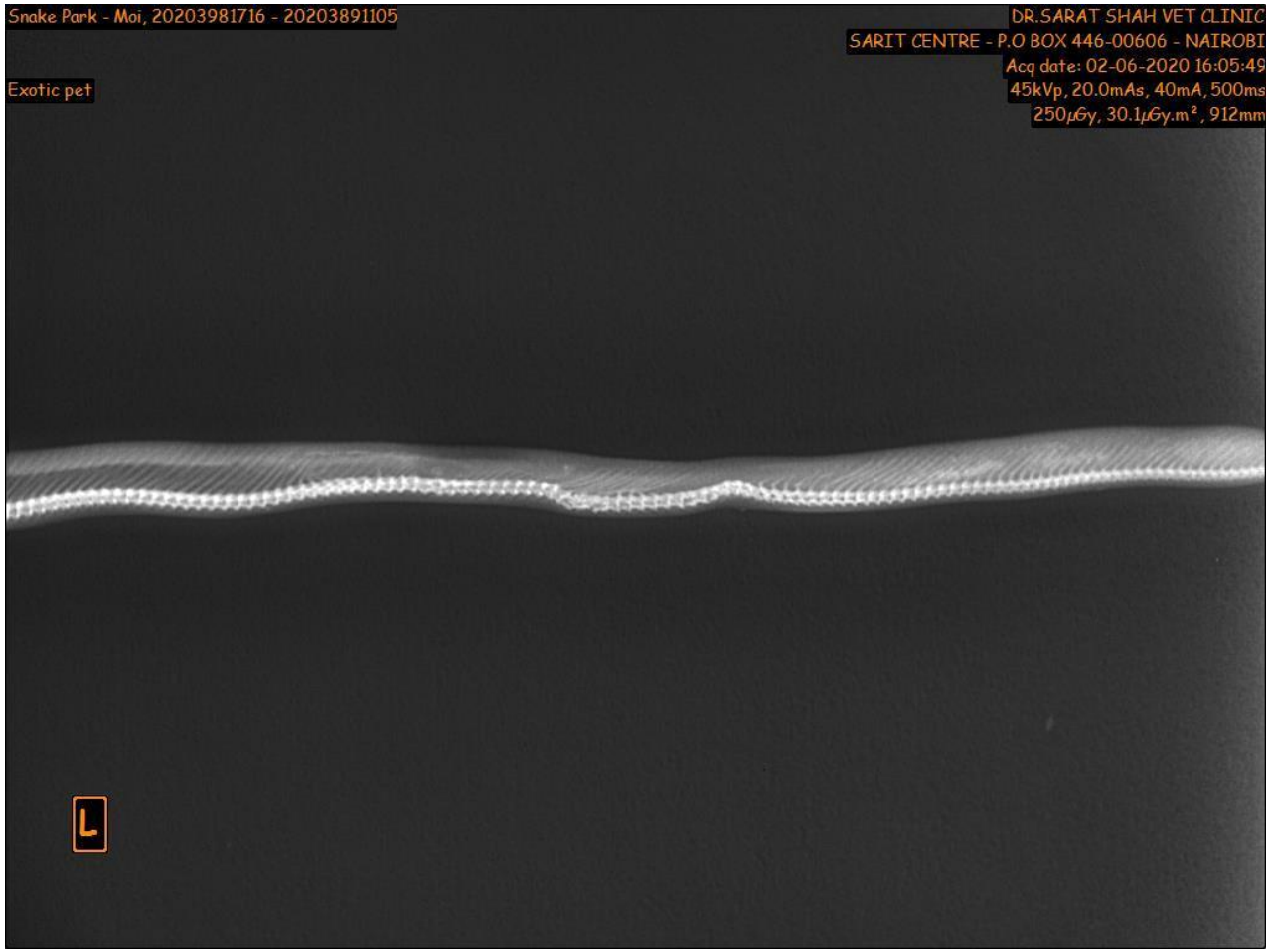
- Wounds take longer to heal in snakes and other reptiles
- Majority via secondary intention
- Aggressive wound management to prevent septicemia and abscess

# Fracture in a sand boa

- Mid aged female sand boa presenting with two points of external spinal deformities cranial to the cloaca. Circumference of 7.5cm with a diameter of 2.4cm
- **CS-** Dehydration, immobility and depression following pain.Righting reflex slow, but the tail pinch, cloacal tone positive.

# Diagnosis


Snake Park - Moi, 20203981716 - 20203891105
DR.SARAT SHAH VET CLINIC
SARIT CENTRE - P.O BOX 446-00606 - NAIROBI
Acq date: 02-06-2020 16:06:16
Exotic pet
45kVp, 20.0mAs, 40mA, 500ms
250µGy, 30.1µGy.m², 912mm
D-V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Acq date: 02-06-2020 16:05:49
Exotic pet
45kVp, 20.0mAs, 40mA, 500ms
250µGy, 30.1µGy.m², 912mm
L

# RX (Medical)

- Dexamethasone IM
- Water bath/ SQ fluid (RL)
- Antibiotic

**SURGICAL**

Fracture reduction (under sedation)

**POST-OP**

Dark cage with POTZ, water adlib, analgesia

# Fracture reduction and immobilisation

- Size and type of fracture
- Fracture reduction is mainly via external coaption using splints, casts, bandages *.
- Small snakes use tubular splint made from large gauge syringe (35cc syringe case).
- Padding can be using stockinette, zinc oxide, splint, then overlay with gauze bandage and lastly zinc oxide.

Post op radiography to check for realignment. Follow up X-rays done 6weeks post-injury

*Callus vs fibrous healing

*malunion

*non-union

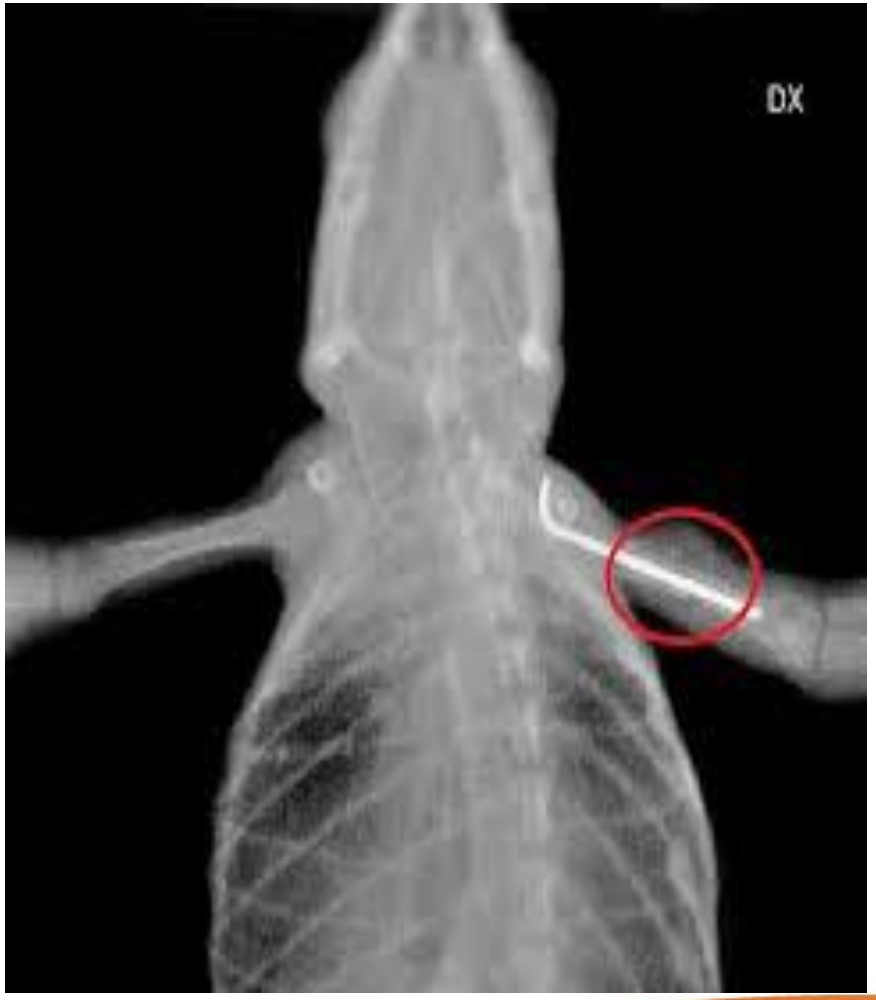
**Slight malunions do not adversely affect captive reptiles**

(Dillberger, 1979)

# Internal fixation



(Giuseppe *et al.*, 2013)




(Giuseppe *et al.*, 2013)

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