Emergency Stabilization of the Trauma Patient

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Overall Goals

- Primary survey
- Secondary survey
- Avoid missing a lesion
- Protocol-driven resuscitation efforts

Primary Survey

- Evaluate stability of the major body systems

- Heart
- Brain
- Lungs

Secondary survey

- Good assessment of all injuries/conditions
- Look later for slowly emerging conditions
  - Uroabdomen
  - Devitalized bowel
  - Unappreciated injuries
    - Body wall hernia

Trying not to miss something category…

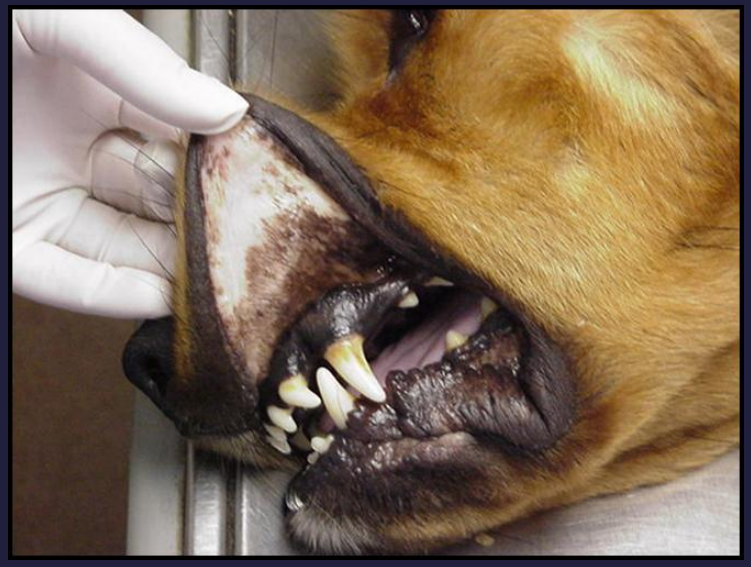
- We ALL do from time to time
- Limit the likelihood by complete evaluations and not skipping steps
- Don’t make assumptions
- Be cognizant of owner’s wishes and financial constraints

Major things that can be missed

- Severe hemorrhage
- Back fractures
- Thoracic disease

Look at the total solids

- Inexpensive readily available test
- Early indicator of moderate to severe blood loss
- Splenic contraction



If total solids < 6 mg/dl [60 gm/L]

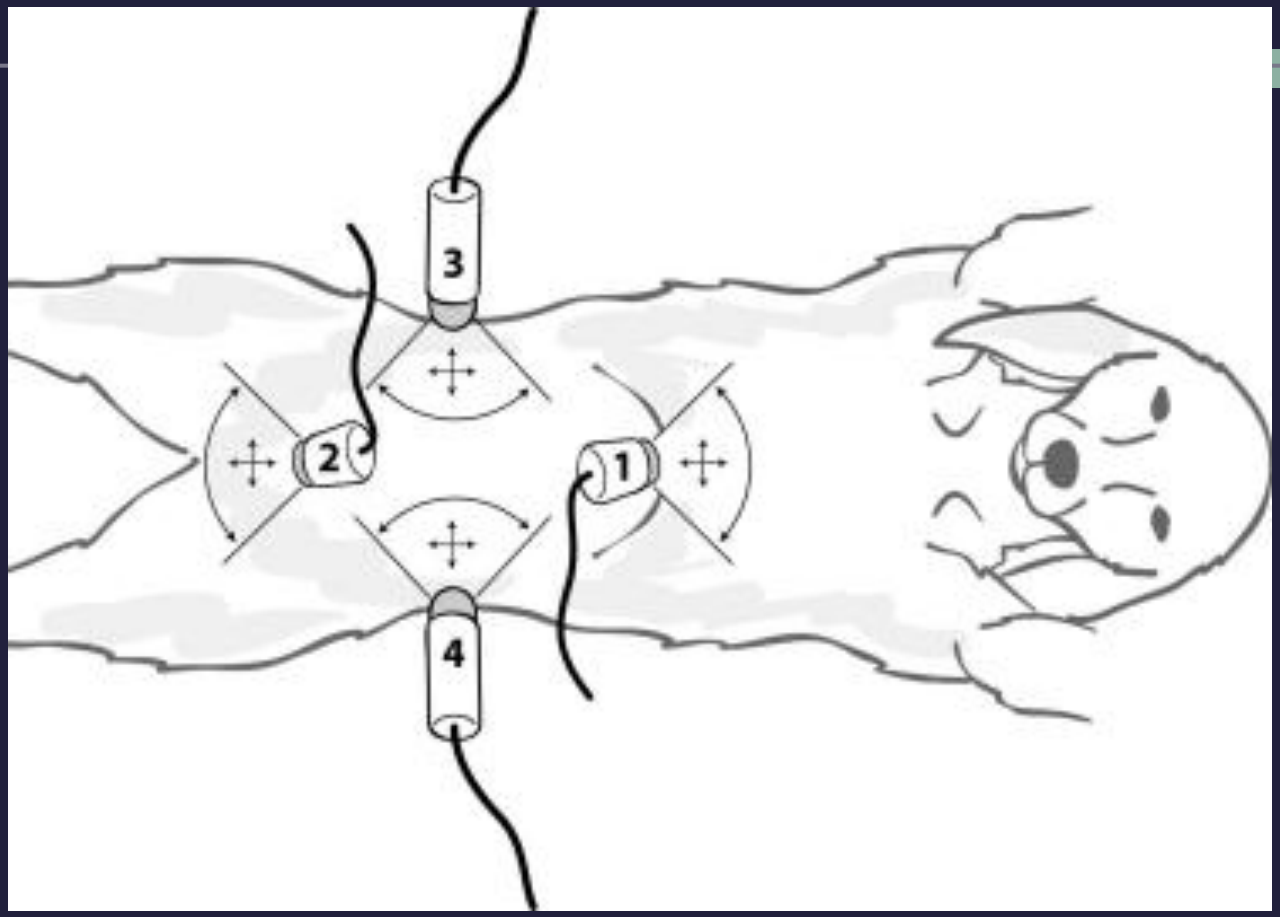
- Pre-existing disease?
- Re-evaluate the patient for signs of hemorrhage
  - Abdomen
  - Fracture sites
  - Monitor closely

FAST and t-FAST

- Focused abdominal sonography in Trauma
- Concept- brief, point of care testing to look for hemorrhage or free air
- Brief training advised

FAST main question

- Is there fluid or not?
- Avoid being distracted from looking at patient by ultrasound!
- Record findings, recheck as needed



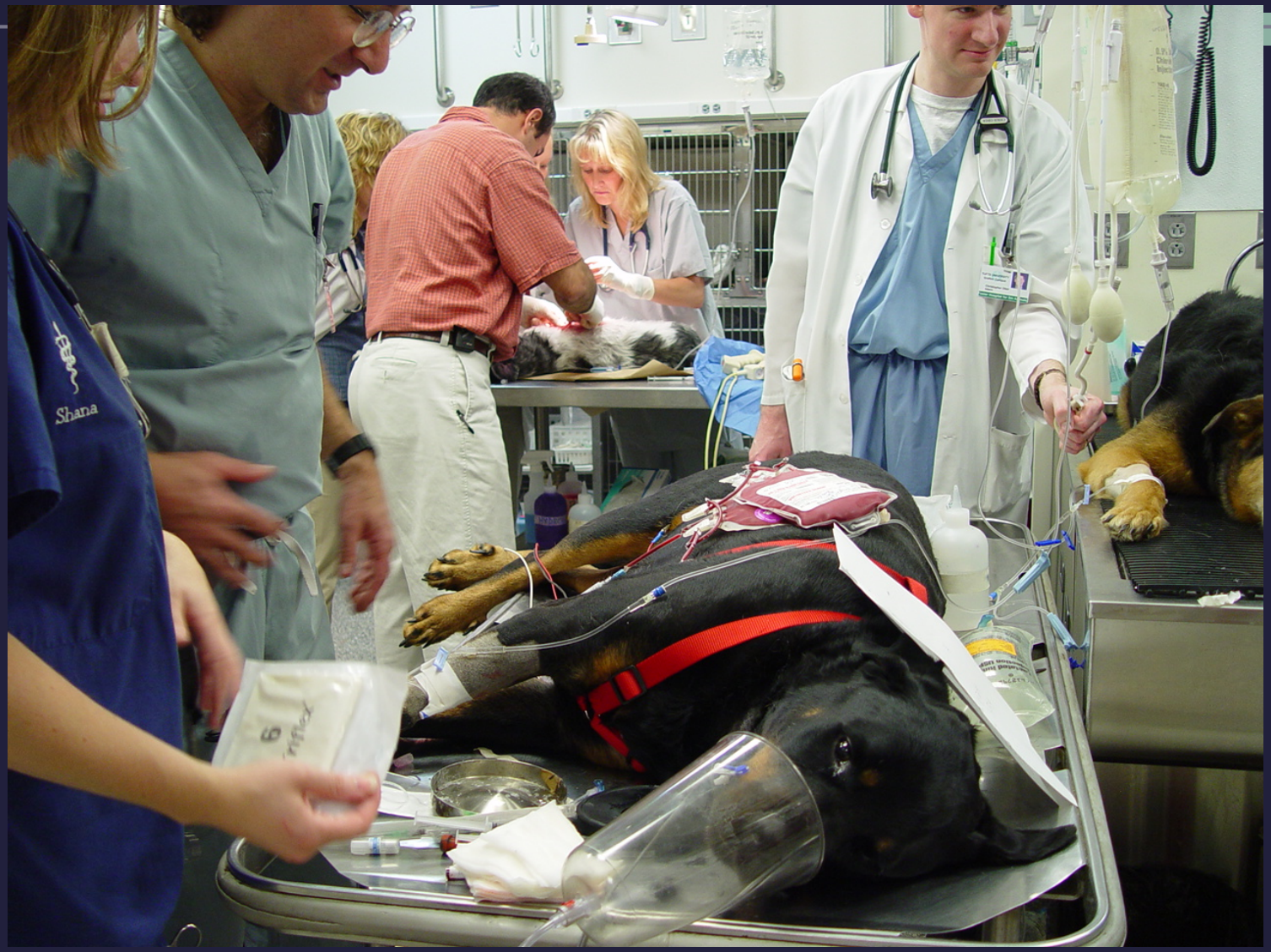
Boysen et al. JAVMA, Oct 2004, Vol. 225, No. 8, Pages 1198-1204:

Lactate and lactate clearance

- Lactate elevation (> 4 mmol/L)
- Significant hypoperfusion

- Exclude type B
  - Prednisone at higher doses for a few days

Situations where lactate is helpful



Lactate uses

- Chaos
- Junior technicians, clinicians
- Harder to assess patients

Utility

- FAST, low TS and Lactate rarely tell you anything you might not figure out on examination

- Help save time
- Catch emerging problems

Chest films in trauma

What are we looking for; why?

- Diaphragmatic hernia*
  - Chronic DH have worse prognosis
- Contusions
- Rib fractures
- Pneumothorax
- Hemorrhage

Routine abdominal films in trauma

Rarely helpful; only if looking for a specific Lesion !!

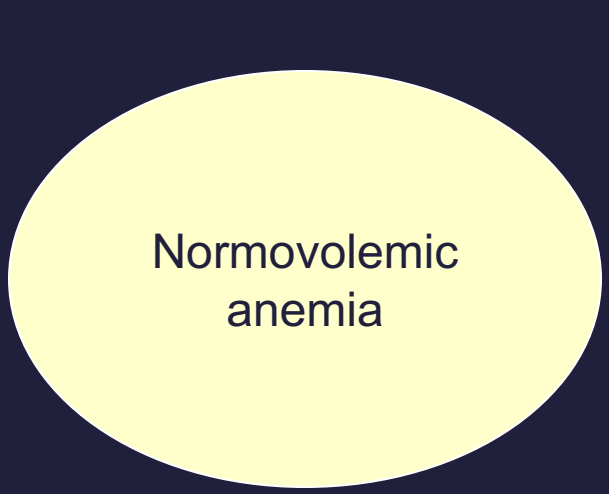
Remember to see if the legs work

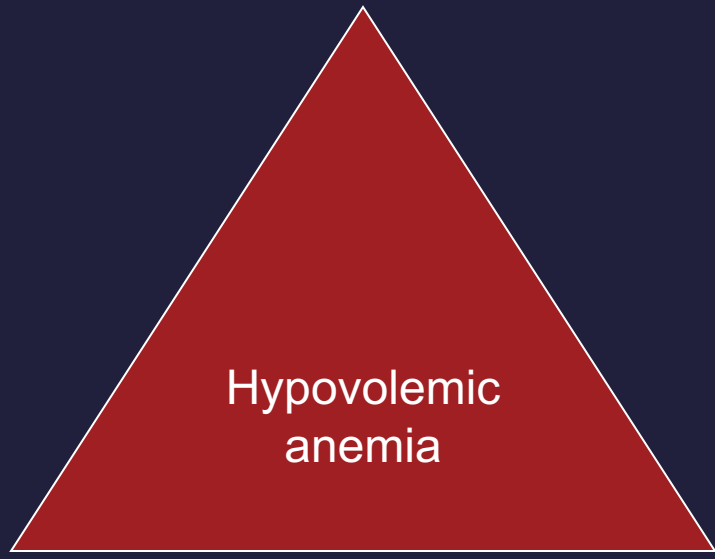
- All of them
- Don’t have to work perfect
- Did they walk after the accident?

Schiff Sherrington posture

M Kent, UGA

Transfuse early/Transfuse often





Example- Buddy

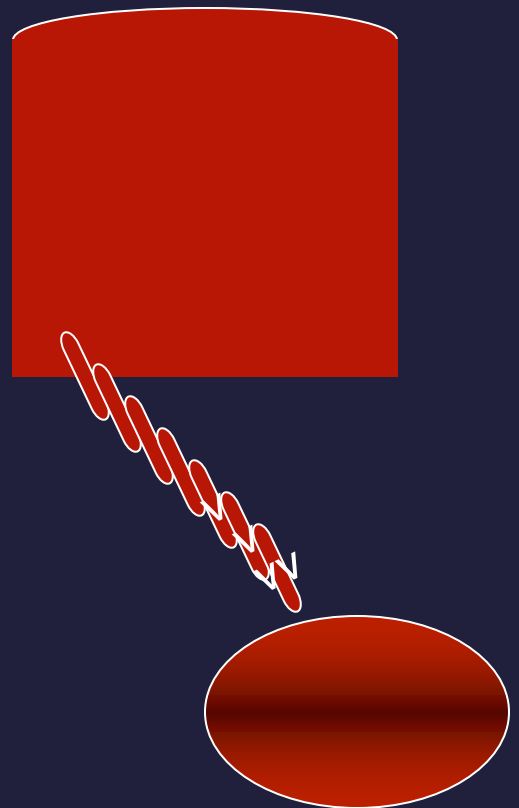
- 30 kg Labrador X
- Hit by car
- Presents 30 minutes after injury

Buddy

- HR = 180
- PCV 29 %
- TS 4.2 gm/dl
- Lactate 9.7 mmol/dl
- FAST positive
  - This dog is in trouble!

Transfusion “rules” assume stable volume

- Give enough to make better!
- It might be a massive amount (> 50 ml/kg in 3 hrs)
- Consider operative management if not improving



The number one rule-out for oliguria?

Oliguria

- Urine production should be at least 2 ml/kg/hr
- Often higher, if volume loaded….
- If lower- consider urinary catheter, FAST abdomen, fluid challenge

Protocols are not bad words

Protocol driven resuscitation has been shown to improve outcome in every situation evaluated!

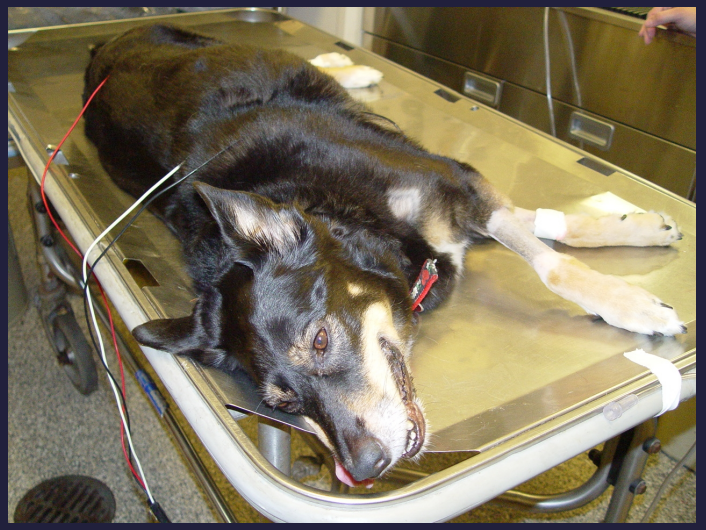
Example

- Alert senior tech/clinician to arrival and ETA
- Prepare ready area

Facebook

Primary survey

- Within 30 seconds of arrival
  - Heart
  - Brain
  - Lungs
  - Obvious “big” problems



Is Heart rate > 150 bpm, pale mm, weak pulses?

Initial fluid bolus- 20 ml/kg crystalloid; re-assess for response, in no improvement

Look for hemorrhage/FAST

Increased respiratory rate and effort?

Flow-by oxygen,
Chest radiographs or T-FAST ASAP
Consider thoracocentesis

Is total solids < 6.0 gm/dl?

Perform FAST-
Re-evaluation required

Provide limited areas for “poor” judgment will improve outcome!

Not all trauma needs a huge work-up…

Specific injuries

Slow rollovers

Slow roll-overs

- Ruptured bladders
- Diaphragmatic hernias

Suspicion of ruptured urinary tract

- Abdominal pain
- Raised BUN/Creatinine/K+
- Gradient between abdominal fluid and serum
- Inadequate urine production/ bloody urine in small volumes

Confirmation of ruptured bladder

- Bubble study
- Contrast study

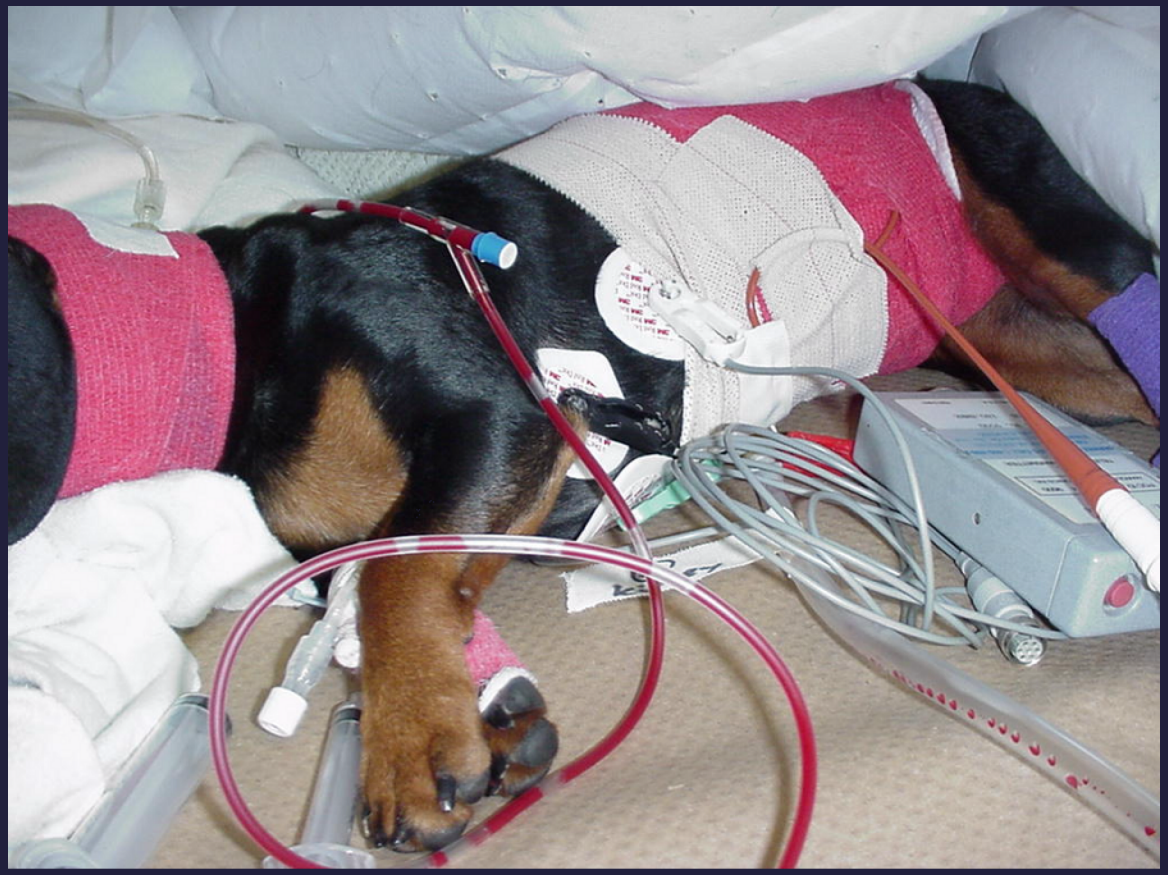
Rupture elsewhere in urine system?

- IVP
- Urethrogram
- Commonly, bladder, but ideally know what you are dealing with prior to surgery!

Surgical timing

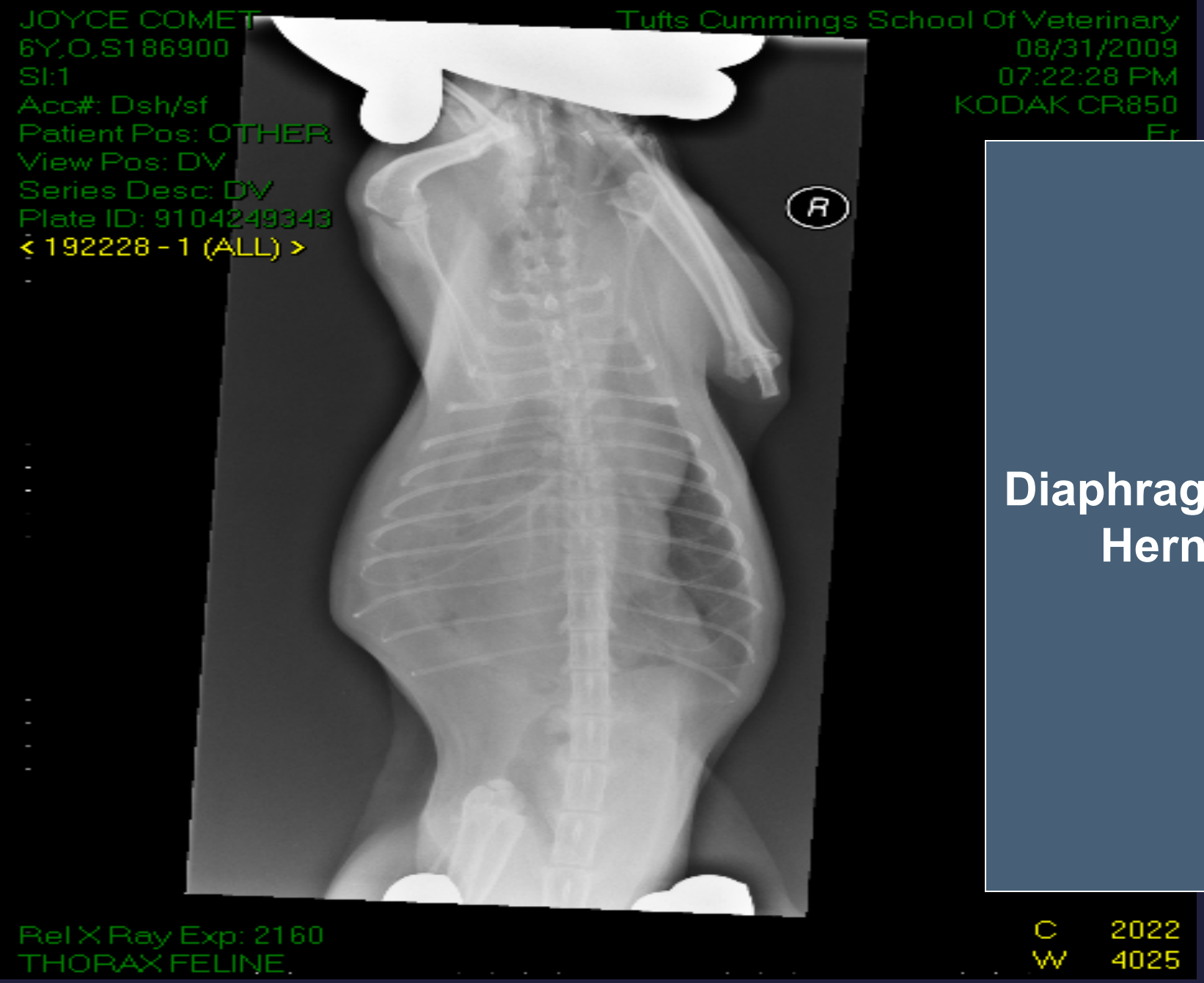
- When patient stable
- When staffing optimal/ adequate

Temporary drainage



Temporary drainage

- Official peritoneal dialysis catheter
- Long (eg. Pericardiocentesis catheter)
- Exchanges not needed
- Connect to a closed system, let drain



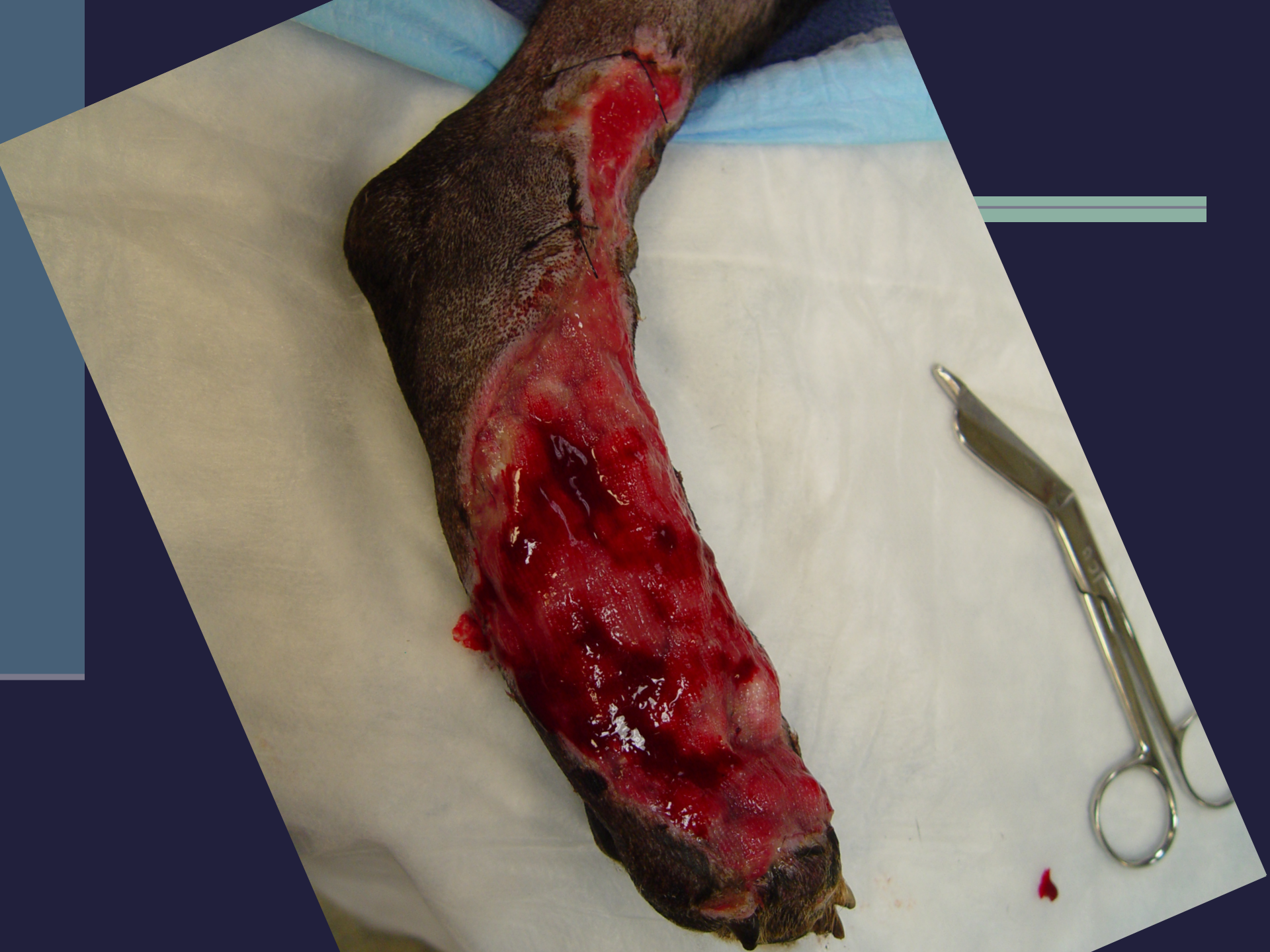
Diaphragmatic Hernia

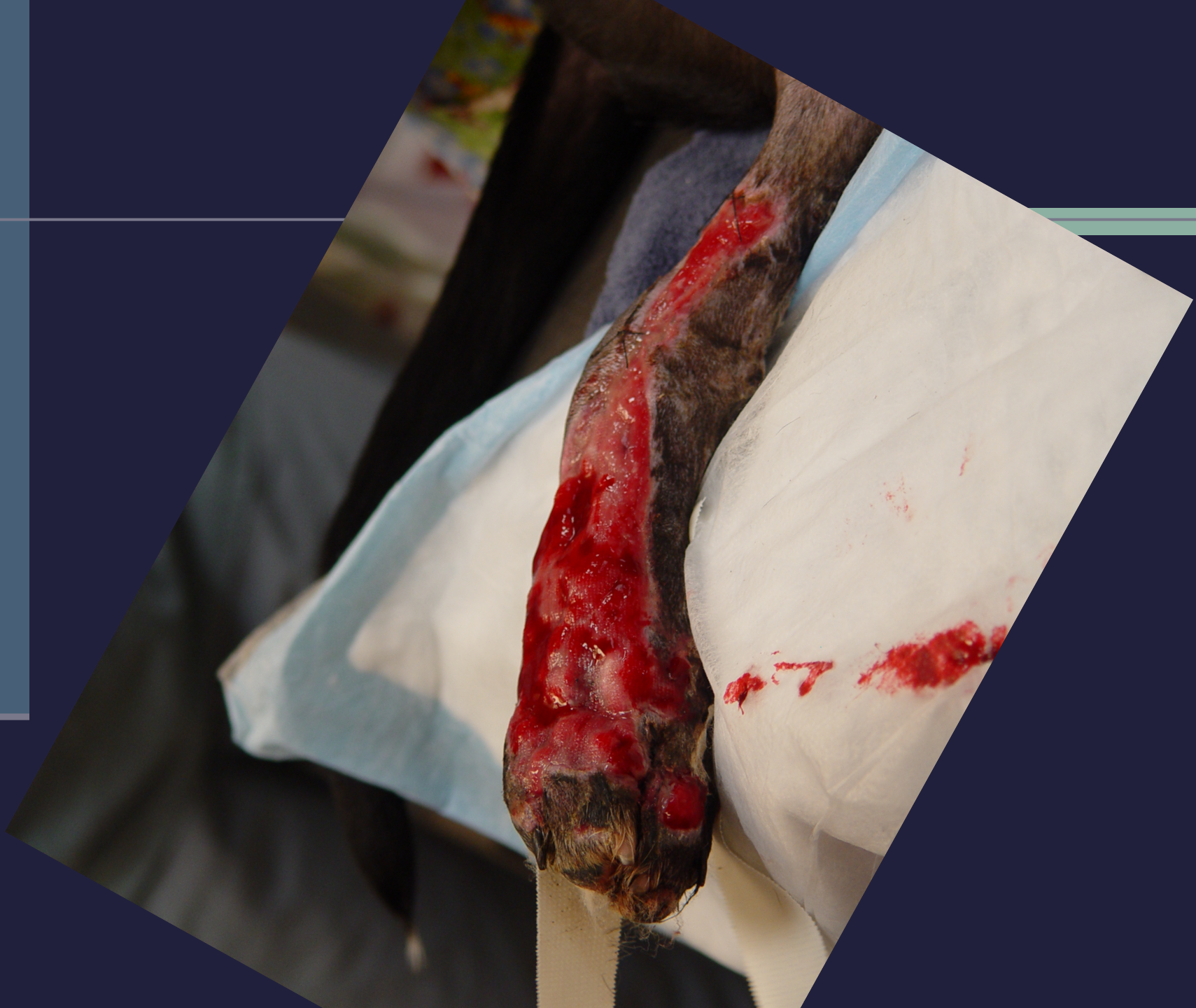
DH

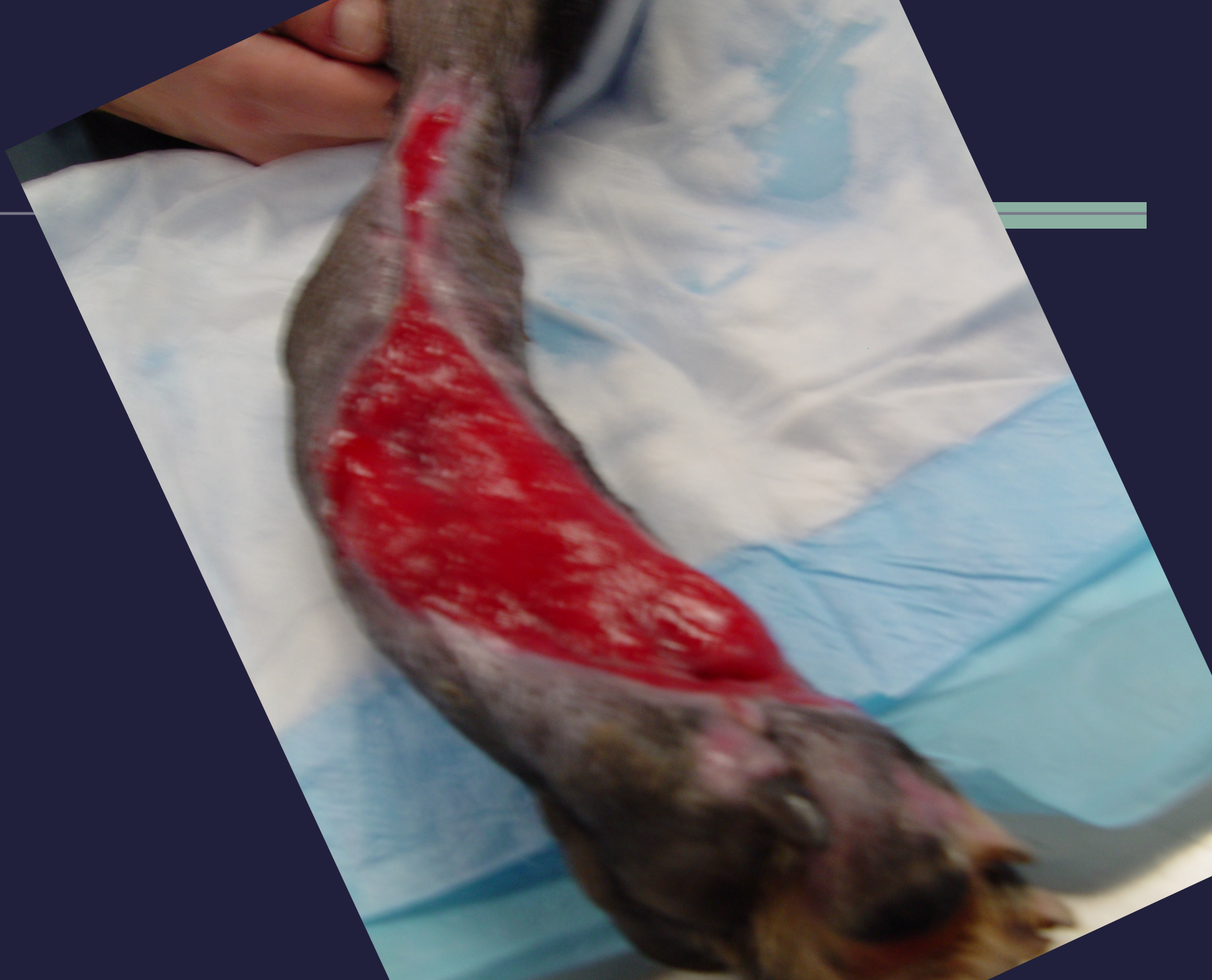
- Surgical repair promptly
- Urgently if stomach in chest
- ** Don’t wait based on older literature

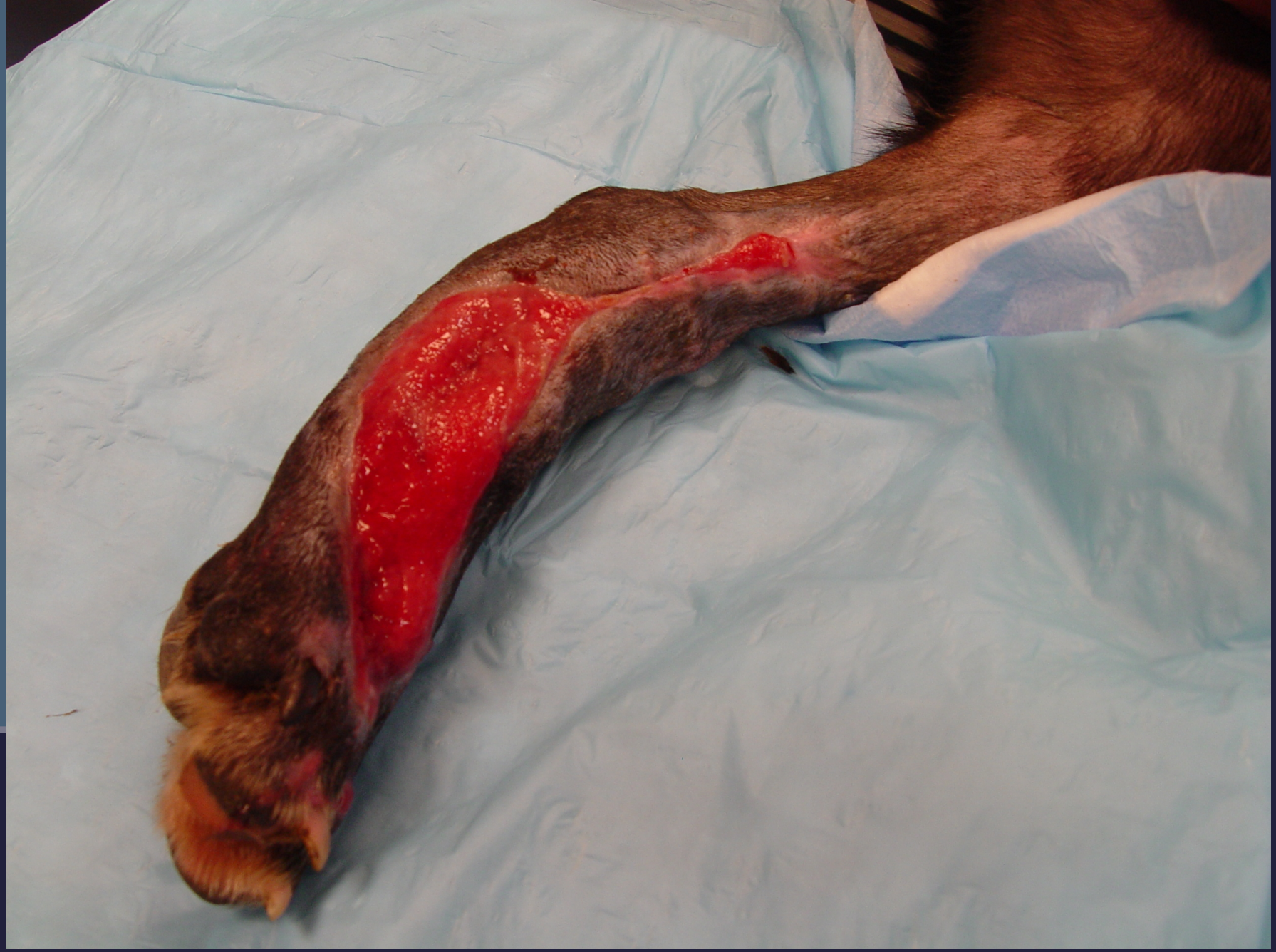
Degloving wounds

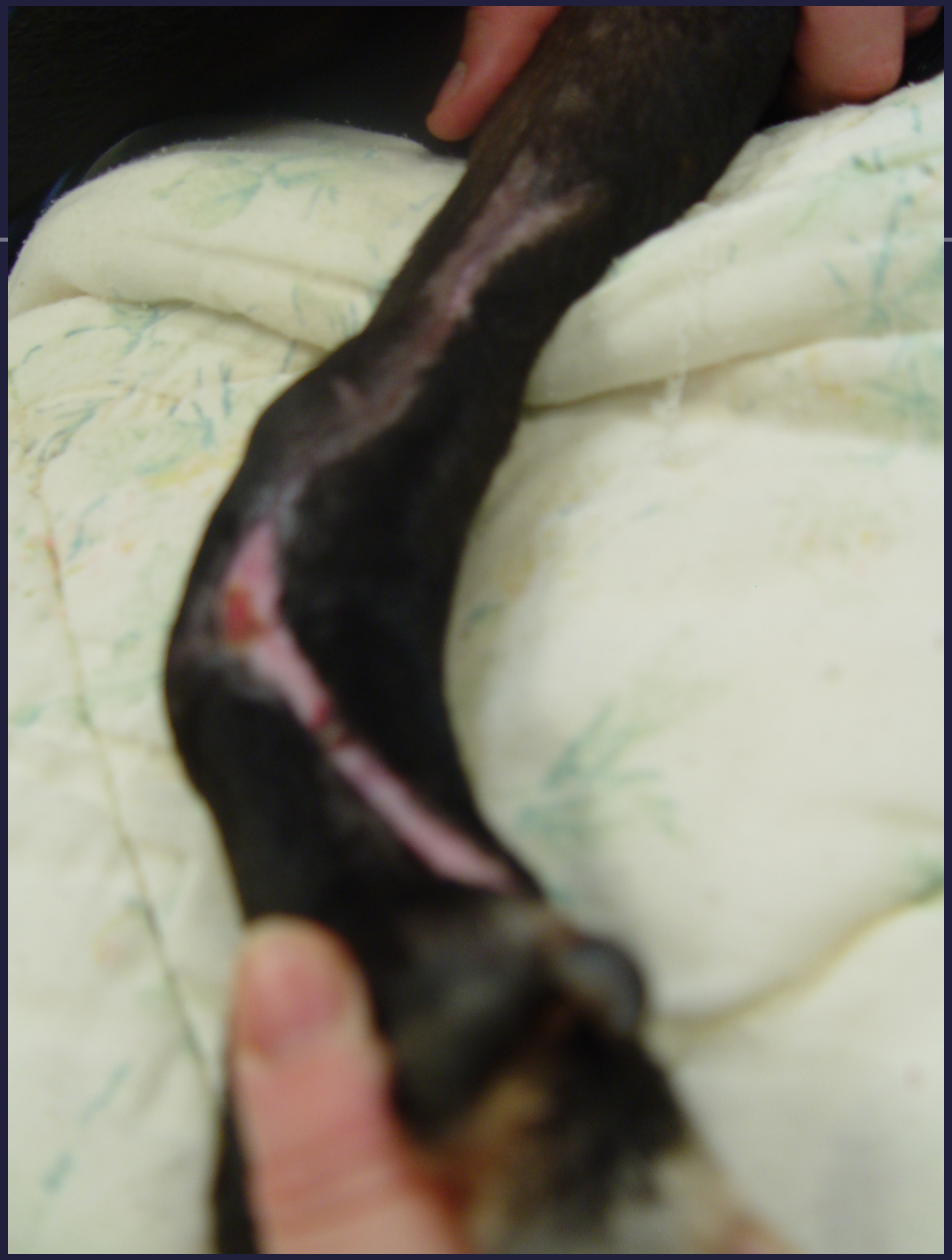
“look bad, heal good!”











Total elapsed time
38 days


I am glad my foot is fine now!
Lyle, Lyle, Crocodile
by BERNARD WABER