WOUND MANAGEMENT IN REPTILES

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PATIENT ASSESSMENT

- Don't forget the patient the wound is attached to
- Make note of the wound and assess the rest of the patient
- Stabilize the patient prior to wound management
- Once patient is stable, address the wound
  - Delayed wound management can increase risk of infection and sepsis

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PRINCIPALS OF WOUND HEALING

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Anatomy

- Reptile skin is
  - Dry
  - Scaly
  - Generally has no glands

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Same principals apply except…slow

Same stages of wound healing however external factors such as temperature play a much larger role than in avian and mammalian patients

In mammals, all the cells required for healing (epithelial cells and fibroblasts) migrate from the wound bed

In reptiles, cells required for healing migrate from the edges of the wound meaning that large defects can take longer to heal

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Why do we care?

Wounds will heal… but appropriate wound management can speed healing, which can speed return to the wild!

Goals:

Minimize inflammatory phase	Shorten debridement phase	Speed granulation tissue formation

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Reptile differences

- Granulation tissue may have a grey/brown/tan color in reptiles
- Bruising may be green in reptiles
- Careful not to confuse either of these with dead tissue or infection

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Types of wounds




Abrasion
- Partial thickness, minimal blood loss

Puncture
- Small full thickness opening with deeper tissue contamination and involvement

Laceration
- Sharply incised wound

Degloving
- Extensive loss of skin and underlying tissue

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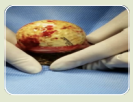
Classification of wounds

Clean
- one that is made surgically

Clean contaminated
- One that is made surgically into a viscus organ

Contaminated
- A would cause by trauma

Dirty or infected
- A wound with physical debris

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TREATING THE REPTILE PATIENT

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Consider hydration

- If the wound is affecting a large surface area electrolytes and fluids can be lost
- If the wound or bandage is affecting the patient's ability to soak may become dehydrated
- *Consider fluid therapy*

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Consider Husbandry

Reptiles are ectotherm and the healing process is dependent on environmental temperature

Healing occurs more rapidly in snakes held at higher temperatures

Non optional temperature may also diminish immune system which can complicate and delay healing

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Analgesia

- If it would be painful to you, assume painful to the reptile
- Morphine
- Tramadol
- Meloxicam
  - Less evidence for analgesia effects but can be useful for treating inflammation

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How can we treat wounds ?

Primary closure

- Surgical closure that is only for clean wounds
- An everting pattern should be used
  - remove stiches after 4-6 weeks

Delayed primary closure

- Close 3-5 days after injury
- For contaminated wounds

Heal by contraction

- Manage wounds open
- For contaminated and infected wounds

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Lavage

- Lavage = flush
- Use saline (or something else…)to flush wound
- Pressure and tools you use matters!
- 35 cc syringe with an 18 G needle or catheter creates 7-8 PSI
  - 5-8 PSI is ideal
- Correct irrigation pressure will remove contaminants and bacteria without damaging tissue

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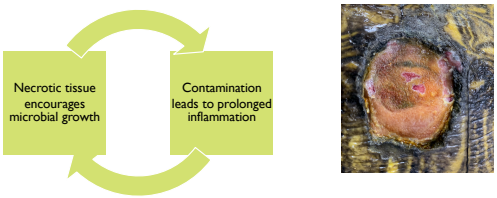
Debridement

- Decontaminates and removes dead and necrotic tissue



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Types of debridement

- Surgical
- Non-surgical
  - Wet to dry bandages
  - Honey bandage
  - Enzymatic debridement
  - Autolytic debridement

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Wet to dry bandage

- Wet to dry bandages are great when debridement is needed
  - simple technique
- Generally wounds are contaminated so often start with a wet to dry bandage
- Gauze soaked in saline and placed on the wound site, cover with dry gauze and something over top
- *Change 1-2 days*

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How does a wet to dry bandage work?

As the wet gauze dries, it sticks to the top layer of the wound, and when you remove this you can remove any foreign material and exudate as well as dead

Usually used for 24-96 hours

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HONEY BANDAGE

- Honey is hyperosmotic
- Dehydrates bacteria and inhibits growth
- Draws our exudate and debris
- Decreases edema
- Honey is antimicrobial

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AUTOLYTIC DEBRIDEMENT

An amorphous hydrogel

Rehydrates necrotic tissue

Loosens and absorbs exudate and sloughed tissue

Maintains a moist wound environment

Non-adherent

Standard of care!

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Layers of a bandage

Primary layer

- dressing that is in contact with the wound - provides a moist environment, assists with debridement, encourages granulation and re-epithelialization

Secondary layer

- padding for the wound, absorbs exudates, supports and immobilizes the area.

Tertiary Layer

- holds the other layers in place, provides pressure to control bleeding and edema, provides a barrier to the environment

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Caution!

While topical therapies and bandages can be helpful additions to managing wounds, they are not replacements for basic wound care, such as lavage and debridement.

Excessive ointment application can lead to lack of oxygen at the site, which can starve the damaged tissue which can worsen necrosis, leading to increased dead tissue.

Always fully remove any topical medication or ointment to evaluate and flush the wound routinely.

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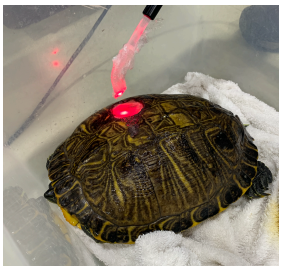
Laser Therapy

- Low Level Laser Therapy (LLT) can improve wound healing
- Increases available ATP making more energy available for healing
- This may lead to increased angiogenesis, fibroblast proliferation, collagen synthesis and speed the anti-inflammatory process



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Negative pressure wound therapy

- Vacuum-assisted wound closure can speed healing of shell wounds
- Increases blood flow, removes exudate and stimulates granulation tissue formation

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