PRINCIPLES OF WOUND CARE AND BANDAGING

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PATIENT ASSESSMENT

Don’t forget the patient that the wound is attached to

Make note of the wound, then assess the rest of the patient

Stabilize the patient prior to wound management

Once patient is stable, address wound

Delayed wound management can increase risk of infection and sepsis

Inflammation and debridement

- Day 1-4
- Hemostasis
- White blood cells enter and remove bacteria and debris

Proliferation

- day 4-14
- granulation tissue starts to appear
- fibroblasts infiltrate and make collagen
- myofibroblasts contract wound
- epithelial cells proliferate

Remodeling and maturation

- Day 14 to 1 to 2 years
- Remolding and strengthening of collagen

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







Types of wounds

Abrasion

- Partial thickness, minimal bleeding heals fast

Punctures

- Small full thickness opening with deeper tissue contamination and damage

Laceration

- sharply incised wound

Degloving

- extensive loss of skin and underlying tissue

Wildlife Patients have these most often

Contaminated

- a wound caused by trauma

Dirty/infected

- physical debris

HOW CAN WE TREAT WOUNDS?

Primary closure ☐ for clean wounds

Delayed primary closure ☐ closed 3-5 days after injury (for contaminated wounds)

Heal by contraction ☐ manage wound open, heals with time and epithelization

- This is for wounds that are dirty and contaminated and thus cannot and should not be closed primarily!

HOW TO DECIDE WHAT TO DO?

- Classify wound
  - If ”clean” prioritize primary closure
  - Contaminated ☐ can consider closure after debridement/lavage
  - Dirty/infected ☐ resist the urge to close these wounds on an urgent basis

- **When in doubt, leave the wound open!**
  - **Allow the wound to declare itself**

Remove contaminants

Clip or pluck the area	Lavage	Debride	Consider antibiotics

Prevent future contamination

Bandages

SOLUTION TO POLLUTION IS….

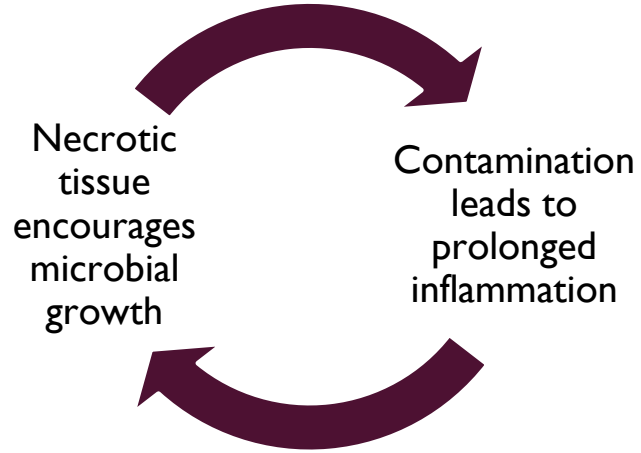
- Lavage = flush
- Use saline (or something else…)to flush wound
- Pressure and tools you use matters!
- 35 cc syringe with an 18 G needle or catheter creates 7-8 PSI
  - 5-8 PSI is ideal
- Correct irrigation pressure will remove contaminants and bacteria without damaging tissue

WHAT TO USE FOR LAVAGE?

- Saline
- LRS
- Dilute iodine
- Dilute chlorhexidine

DEBRIDEMENT

- Decontaminates and removes dead and necrotic tissue



TYPES OF DEBRIDEMENT

Surgical

Non-surgical

- Wet to dry bandages
- Honey bandage
- Enzymatic debridement
- Autolytic debridement *

WET TO DRY BANDAGE

- Moist gauze in contact with wound
- Dry gauze on top of the wet gauze
- Moist contact layer dries and sticks to the wound
- When you remove the bandage, mechanically debrides as top layer comes off with it
  - This can also be a downside as this is non-selective and can remove some of the granulation tissue you want to promote

HONEY BANDAGE

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

ENZYMATIC DEBRIDEMENT

- Topical enzymatic agents that dissolve collagenous tissue
- These are non-selective so can dissolve good tissue too
- Slow acting
- Expensive

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!

CHRONIC WOUNDS

- Can consider low intensity laser therapy
  - Stimulates fibroblasts, promotes circulation, stimulates epithelialization
- Debridement is key here
- Vacuum assisted closure
  - Improves perfusion by pulling vessels in
  - Reduces edema
  - Removes exudate
  - Stimulates granulation tissue

WHEN DO YOU NEED TO USE A BANDAGE?

- To stabilize a fracture in the short term
- To stabilize a fracture in the long term
- To treat and protect a wound
- And many many many others...

Prevent	Prevent further self-inflicted trauma,
Hold	Hold dressings in place,
Pressure	Provide localized pressure to avert hemorrhage and swelling
Maintain	Maintain an intravenous or intraosseous catheter-
Immobilize	Immobilize the affected area (prevents movement) and therefore minimize pain and provide comfort.
Protect	Protect wounds following surgery (avoid contamination and keeps site clean).
Prevent	Prevent tissue desiccation (drying out).

OTHERS…

HOW TO BANDAGE

Layers of a bandage

Primary layer

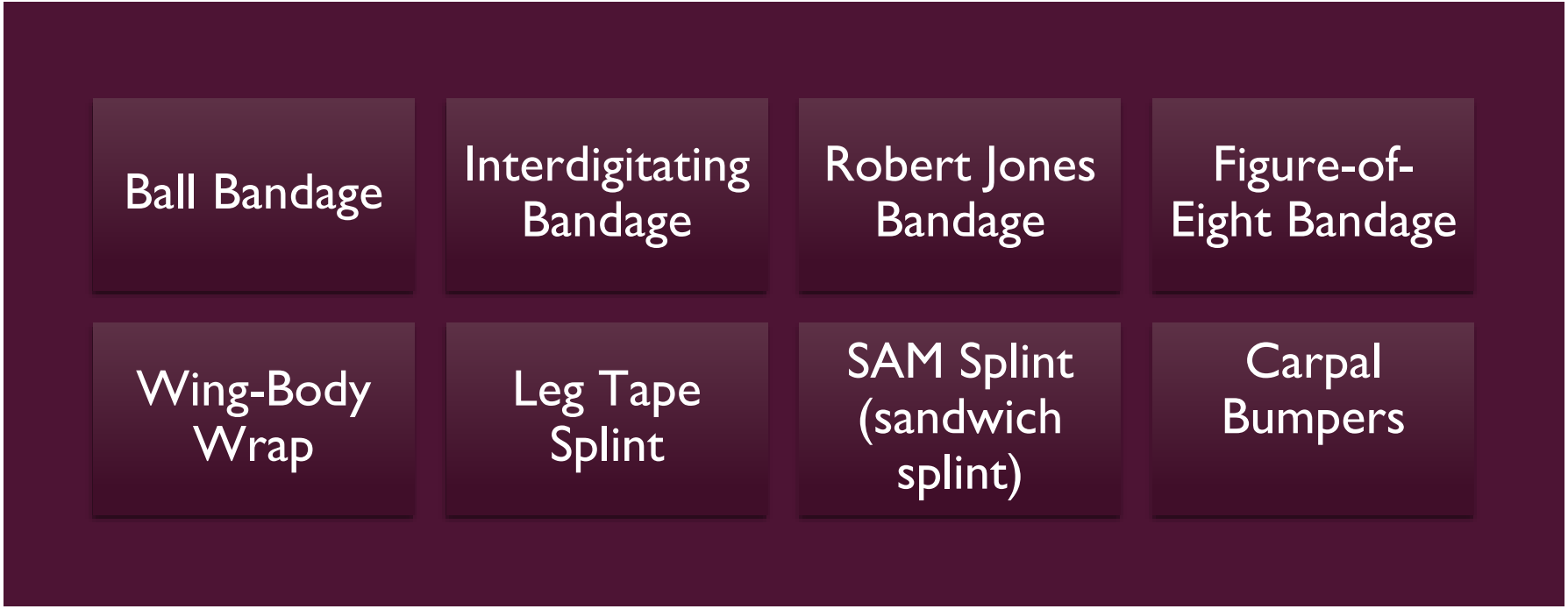
- dressing that is in contact with the wound - provides a moist environment, assists with debridement, encourages granulation and re-epithelialization

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



COMMON BANDAGES PLACED IN WILD BIRDS

BALL BANDAGE

- Used to protect the foot while plantar lesions are healing.
- Moderate to severe bumblefoot, toe fractures, other soft tissue injuries.

BALL BANDAGE - TIPS

- Toes should be in a comfortable grasping position.
- Don’t make the ball part too large.
- Apply sufficient support around the distal tarsometatarsus (ankle) so that the bird can stand upright.
- Test the tightness by grasping the ankle and try to move the ball with the other hand – it should be secure, not loose or sloppy and not too tight.
- Remember the bird can’t perch.
- Must provide food in a manner so that the bird can eat.

INTERDIGITATING FOOT BANDAGE - INDICATIONS

- Use when a wound needs to be protected on the bottom of the foot.
- Yet is desirable for the bird to perch (bandage leaves the toes exposed).

WING TO BODY WRAP

- Indicated for fractures of the humerus, coracoid, clavicle or scapula or for any unexplainable wing droop
- Also valuable for distal wing injuries
- Less complications than a figure 8
- Minimizes movement of the shoulder.

CARPAL BUMPERS

- to prevent carpal injuries/abrasions
- to treat existing carpal injuries or abrasions

ROBERT JONES

- Limited to simple fractures of the distal 1/3 of the tibiotarsus and tarsometatarsus, injuries of the hock joint, soft tissue wounds of this area.
- **Not** for fractures of the femur, proximal 2/3 of tibiotarsus or in very large birds.
- Can be reinforced when necessary with wooden splints (tongue depressors), aluminum splints or orthopedic products.

FIGURE-OF-EIGHT BANDAGE - INDICATIONS

- For wing fractures distal to the elbow, or carpal joint and soft tissue wounds of these areas.
- NOT for humeral fractures unless combined with a wing-body wrap.

Feathers crossed = too tight

Bandage too bulky, heavy and low

TINY MAMMAL LEG SPLINTS

- Many ways to creatively stabilize small mammal legs
- Focus on creating something that stabilizes a joint above and a joint below
- Can use many house hold objects – a paper clip works great!

TURTLE LEG BANDAGES

- Use vet wrap and gauze to keep a leg in
- Use vet wrap and gauze to keep a leg out
- Combine all the techniques!

THANK YOU FOR COMING!

THANK YOU FOR CARING ABOUT WILDIFE!

QUESTIONS?