



WRNBC PRESENTS:

Herd Online Webinar Series

Wound Care for Wild Patients – Birds, Mammals and Reptiles

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Supplemental Presentation Notes

Wildlife Centre of Virginia – teaching hospital, helping wildlife rehabilitators from all over North America and beyond to improve their knowledge and skills

Patient Assessment

Tempting to start treating large wounds or fractures right away; eye-catching injuries, but important to keep the perspective of the whole patient. Identify every problem or potential problems, other injuries that may preclude further treatment.

Stabilization is first priority in treating the patient. Take time to stabilize – stress, dehydration, and starvation can cause death more quickly than a wound itself. However, important to treat wound as soon as possible to avoid further infection.

Wound Healing

Three stages –

(1) Inflammation and debridement

- Body is trying to stop bleeding, white blood cells removing debris and bacteria

(2) Proliferation

- Granulation tissue starts to appear, fibroblasts start to make collagen (important in wound healing), wound edges start to pull in, skin around edges starts to build up and move toward centre

(3) Remodeling and maturation

Appropriate wound management can speed healing and speed return to the wild.

Goals:

- Minimize inflammatory phase
- Shorten debridement phase
- Speed granulation phase

Four Types of Wounds

Abrasion – Partial thickness, minimal bleeding

Punctures – small full thickness wound with deeper layers of tissue involved

Laceration – Sharply incised wound

Degloving – Extensive loss of skin and underlying tissue

Classification of Wounds

Clean – made surgically and sterile

Clean contaminated – made surgically but enters viscous organ

Contaminated – wound caused by trauma

Dirty/Infected – physical debris

*Wild patients most often have contaminated or dirty/infected wounds; caused by trauma and physical debris.

Treating Wounds

Primary closure (suturing immediately) – only for clean wounds

Delayed primary closure (closed 3-5 days after injury) – for contaminated wounds; more confidence that you are not closing a wound with contamination still inside

Heal by contraction (second intention) – manage wound open, rather than suturing, heals with time and epithelisation; better for wounds that are dirty/contaminated

If in doubt, leave the wound open! “Allow the wound to declare itself” – give time to see what tissue will live/die, what will start to become infected, etc.

Higher risk of sealing in infection or necrotic tissue when wounds are closed to quickly.

Removing Contaminants

Clip or pluck the area (depending on species) – minimize contamination of wound area

*Sterile lubricant can be used to cover a wound before starting to clip fur/feathers, this material will adhere to the lubricant and can then be flushed away

Lavage – flushing to remove contaminants

Materials matter – correct pressure is 5-8 PSI – 35 cc syringe with 18 gauge needle will create the correct pressure to remove contaminants and bacteria without causing inappropriate damage to the tissue. Can use saline, LRS, dilute iodine, dilute chlorhexidine to flush wounds – even sterile water can be used if there is no ready access to more balanced fluids.

Debridement – removal of dead/necrotic tissue

Breaks cycle of necrotic tissue encouraging microbial growth/contamination, which leads to prolonged inflammation. Letting this cycle persist delays wound healing. Removing the tissue helps the wound heal.

Surgical debridement: should be done by veterinarians

Non-surgical debridement:

(1) Wet to dry bandages – controversial or not current standard of care in veterinary medicine. Moist gauze in contact with wound then dry gauze on top. Liquid wicks up into dry layer, gauze sticks to wound, wound is debrided mechanically when the gauze is removed 24/48/96 hours later. Risk of removing granulated tissue because the process is not selective, but good option if there is not access to surgical debridement. Works well in contaminated wounds; should not be used once granulated tissue begins to appear.

(2) Honey bandages – honey is hyperosmotic (dries out bacteria – dehydrates it and inhibits growth); also good to draw out debris, decrease edema, and has antimicrobial properties. Pure honey can be too desiccating in birds, Medihoney gel is better for this purpose.

(3) Enzymatic debridement – topical enzymatic agents that dissolve tissue. Also non-selective, slow-acting, and can be expensive. Can be useful for debriding significant necrotic wounds.

(4) Autolytic debridement – use amorphous hydrogel (like Intrasite) – rehydrates necrotic tissue, loosens and absorbs exudate and sloughed tissue, maintains a moist wound environment (nurtures granulation tissue), and is non-adherent (less risk of damaging healthy tissue). This is the ‘gold standard’ of topical debridement care.

Consider antibiotics – remove bacterial contaminants
Prevent future contamination – bandages, good husbandry

Chronic Wounds

Can consider low intensity laser therapy (stimulates fibroblasts, promotes circulation, stimulates epithelialisation). Increases available ATP, more energy available for healing and speed the anti-inflammatory process.

Debridement is key in these cases of chronic wounds – most important part, often requires surgical debridement

Vacuum assisted closure (improves perfusion by pulling vessels in, reduces edema, removes exudates, stimulates granulation tissue). Negative pressure increases blood flow. Does require specialized equipment.

Hydration

If wound affects a large surface area, electrolytes and fluids can be lost.

For reptiles, if wound or bandage is affecting patient’s ability to soak, they can become dehydrated. Consider fluid therapy depending on the wound.

Analgesia

If a wound would be painful for you, assume it is painful to the patient; pain control is a critical consideration for wound treatment. NSAIDs (non-steroidal anti-inflammatory drugs) can also speed healing.

Other Topicals

Many topical therapies are available; none are replacements for basic wound management (lavage, debridement). They will not be adequate treatment in themselves. Excessive ointment can also reduce available oxygen at the wound site and starve the site of needed elements for healing. Always fully remove any topical medication or ointment to evaluate and flush the wound routinely.

Bandaging Basics - When to use?

Stabilize a fracture – short term or long term
Prevent self-inflicted or care-inflicted trauma
Hold other bandages in place
Provide pressure and stop hemorrhage/pressure
Maintain a catheter
Immobilize an area (prevent movement, minimize pain and provide comfort)
Protect wounds following surgery, keep clean from contamination
Prevent tissue desiccation (drying out)

Bandaging Basics – How to use?

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 (fluffy cast padding, roll gauze)

Tertiary Layer – holds the other layers in place, provides pressure to control bleeding and edema, provides a barrier to the environment (keeps everything underneath clean). Vet wrap is a good example.

Common Bandages

Tie Over Bandage – great for difficult bandage locations, versatile and inexpensive

Place long loops of loose simple interrupted suture around the perimeter of the wound; dress the wound with appropriate topical and primary secondary bandage layer; use umbilical tape to lace through your suture loops, zig sagging across the wound to secure all bandage material in place.

Ball Bandage – used to protect the foot while plantar lesions are healing; moderate to severe bumblefoot, toe fractures, other soft tissue injuries.

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 and other husbandry elements in a manner that the animal can access.

Interdigitating Foot Bandage – used when wound needs to be protected on the bottom of the foot, but that it is desirable for the bird to perch (bandage leaves toes exposed).

Only one pass-through of the bandage between digits 2-3 and 3-4, otherwise can cause injury.

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 bandage. Minimizes movement of the shoulder.

Carpal Bumpers – to prevent carpal injuries/abrasions; to treat existing carpal injuries or abrasions; can help prevent injuries in large raptors like eagles (flying into walls of enclosures, etc).

Foam over carpus, then sticky material over that to secure.

Robert Jones – limited to simple fractures of distal 1/3 of the tibiotarsus and tarsometatarsus, injuries of hock, soft tissue wounds. NOT for fracture of the femur, proximal 2/3 of tibiotarsus, or in very large birds (doesn't stabilize site well enough). Can be reinforced when necessary with wooden splints (tongue depressors), aluminum splints, or orthopedic products.

Figure 8 Bandage – for wing fractures distal to elbow, or carpal joint and soft tissue wounds of those areas. NOT for humeral fractures unless combined with wing-body wrap (not stabilizing otherwise). Potential for complications when placed incorrectly – life-ending patagial injuries.

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 the fracture; can use many household items – paperclips often work great!

Turtle Leg Bandages – use vet wrap and gauze to keep a leg in or out, and combine all the above techniques.

Thank you all for your interest and passion for wildlife welfare!