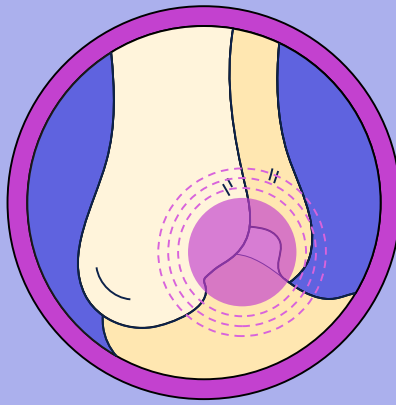


ASEC SYMPOSIUM 2024



- Ian Sroufe , DVM
- ASEC first year surgery resident
- Surgery internship (ASEC) 2023
- Rotating internship (VCA Sacramento Veterinary Referral Center) 2022
- DVM Washington State University and Utah State University 2022





Bandaging Techniques for Orthopedics

Ian Sroufe, DVM, Small Animal Surgery Resident

ASEC SYMPOSIUM
2024

TABLE OF CONTENTS

01

Principles of Bandaging

- Why we bandage
- Common materials
- Bandage application

02

Primary Layers

- Basic contact layer materials

03

Complications

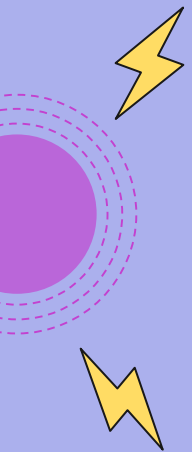
- How to avoid them

04

Lab intro

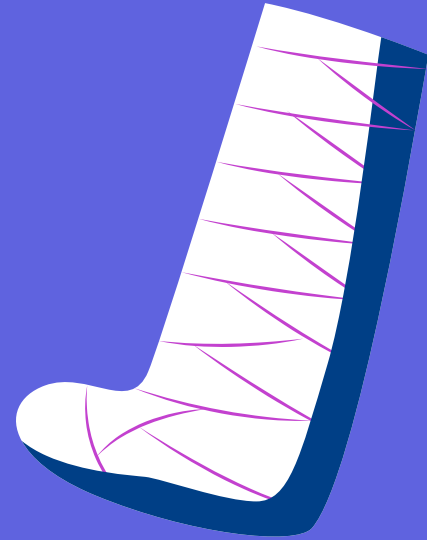
- Applications





01

Principles of Bandaging

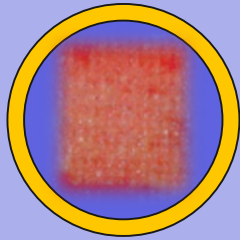


RATIONALE FOR BANDAGING AND COAPTATION

- Joint immobilization (partial)
 - Soft tissue immobilization
 - Decreases pain
 - Reduces forces acting on repairs
 - In specific joint “orientations”
 - ex. Hobbles, Ehmer sling
- Minimize self-mutilation
- Decrease swelling (minimal)
- Minimize dead space
- Fracture healing and stabilization
- Soft tissue healing



BASIC MATERIALS



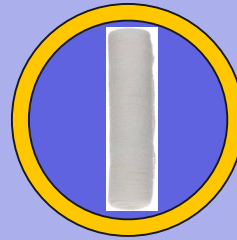
Contact
layer

Many



Secondary

Cast padding



Secondary

Kling Gauze



Tertiary

Vet Wrap
Elastikon


$$(N \times T) / (R \times W)$$

Pressure applied!

N = bandage layers

T = bandage tension

R = radius of curvature of body part

W = width of bandage material under tension

Laplace's Law

PRINCIPLES OF APPLICATION

- Primary layer should have appropriate properties
- Secondary layer (cast padding)
 - No wound contact
 - Distal to proximal
 - Digits 3 and 4 tips exposed
 - Even tension (can't go too tight with padding)
 - Overlap 50%
 - No wrinkles
 - Roll end? Start where left off
 - Usually 3 -5 layers
 - Kling layer - establishes pressure
- Tertiary layer
 - Caution: Also establishes sub -bandage pressure
 - Stop 0.5" from proximal end (abrasive)
 - Protects underlying layers
 - Porous materials best
 - Can add important info



PRINCIPLES OF APPLICATION

- Primary layer should have appropriate properties
- Secondary layer (cast padding)
 - No wound contact
 - Distal to proximal
 - Digits 3 and 4 tips exposed
 - Even tension (can't go too tight with padding)
 - Overlap 50%

Must incorporate a joint above and below lesion!

- Tertiary layer
 - Caution: Also establishes sub-bandage pressure
 - Stop 0.5" from proximal end (abrasive)
 - Protects underlying layers
 - Porous materials best
 - Can add important info



todaysveterinarynurse.com



BANDAGING EXAMPLE



APPLICATION OF A MODIFIED
ROBERT-JONES DRESSING



02

Primary layers

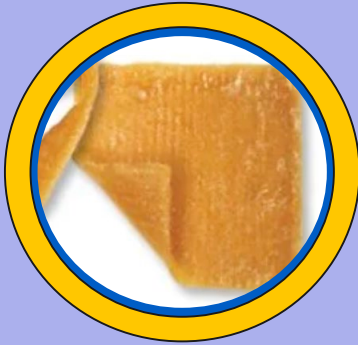


Primary layers

Topical Wound Dressings for Open Wound Management: Stage of Wound Healing for Application, Indications, and Products Available

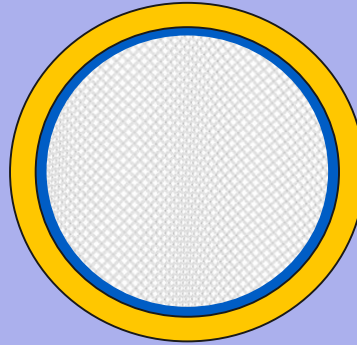
WOUND DRESSINGS	STAGE OF WOUND HEALING		INDICATIONS	PRODUCTS
Adherent	None	No longer indicated in wound care	Dry gauze (dry-to-dry); wet gauze (wet-to-dry)	
Hyperosmotic Agents				
Hypertonic saline dressing	Inflammatory, early repair, infected wound in any stage	20% saline; hypertonicity is antimicrobial, facilitates autolytic debridement	Commercial hypertonic saline-impregnated gauze dressing (Curasalt; Kendall Wound Care, Mansfield, MA)	
Honey	Inflammatory, early repair	Antibacterial because of hydrogen peroxide content, hyperosmotic effect, low pH, and inhibin content; enhances autolytic debridement, reduces edema and inflammation, enhances granulation tissue and epithelialization	Commercial preparations (Medihoney; Derma Sciences, Princeton, NJ)	
Sugar	Inflammatory, early repair	Hyperosmotic effect; may provide nutrient source for wound	Self-formulated dressing	
Debridement				
Enzymatic agents	Inflammatory, debridement, early repair	Enzymatic debridement, adjunct to surgical debridement, superficial debridement of poor granulation tissue in chronic wounds	Trypsin (Granulex V; Pfizer Animal Health Exton, PA), collagenase (Collagenase Santyl; Smith and Nephew, St. Petersburg, FL), papain/urea (Accuzyme; Healthpoint Ltd, Fort Worth, TX)	
Maggots	Inflammatory, debridement, early repair	Maggots secrete digestive enzymes to dissolve necrotic tissue; may be useful when surgical debridement is prohibitive	Medicinal maggots (<i>Lucilia sericata</i> ; Monarch Labs, LLP, Irvine, CA)	
Antimicrobial				
Topical antibiotic ointment	Inflammatory	Reduces surface microbial burden	Triple antibiotic ointment (Neosporin; Johnson & Johnson, New Brunswick, NJ)	
Silver	Inflammatory, early repair, infected wound in any stage	Infected wounds	Slow-release nanoparticle (Acticoat with Silcryst nanoparticles; Smith and Nephew, St. Petersburg, FL), silver ion	

Primary Layers



Honey- Alginate

Phase: Inflammatory,
early repair
-Absorptive
-Antibacterial



Adaptic

Phase: Late repair
(with other),
Maturation
-Semi occlusive
-Non -adherent

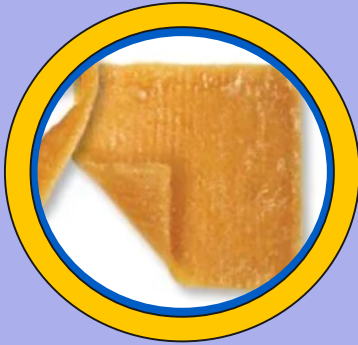


Telfa

-Do not use directly
on wounds
-Only over incisions



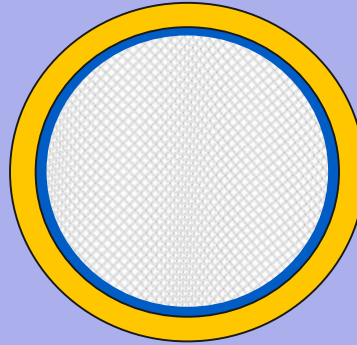
Primary Layers



Honey- Alginate

Before granulation tissue

- early repair
- Absorptive
- Antibacterial



Adaptic

- Phase: Late repair
(with other),
Maturation
- Semi occlusive
 - Non -adherent



Telfa

- Do not use directly on wounds
- Only over incisions



03

Complications



Complications - Avoidance

- Pre-mature bandage slippage (stirrups, prox. tape)
- Long term loss of joint motion, skin redness, chaffing, maceration, ischemic injuries
 - General complication rate: Overall 60%
 - 60% mild, 20% moderate, 20% severe
- Follow sound bandaging principles
- When in doubt, pad it out
- Should be able to fit a finger
- Use sedation
- Have a helper



Complications



Pressure over
prominence



Tourniquet
effect





Pressure Relief

- Mainly doughnuts
 - Stockingette rolled up
 - Cut out center of padding, etc
 - DO NOT simply add bulk
- Olecranon (elbow)
- Tarsus
- Carpal pad

04

Lab intro





Laboratory docket

- 
- 2 people per dog, alternating

1. Modified Robert Jones bandage (soft, padded bandage) —
apply to thoracic limb
2. Caudal spoon splint - apply to thoracic limb
3. Bi-valve cast on a pelvic limb
4. Hobbles

⚡ Laboratory docket

⚡ 1. Modified Robert Jones bandage
(soft, padded bandage) – apply to
thoracic limb

- Go to for various lesions
- Good for compression
- Minimize dead space, patient comfort
- Cover wounds from curious patients





Laboratory docket



2. MRJ with caudal spoon
splint- apply to thoracic limb

- Stabilize joints and reduce
motion at fracture site
- Mainly used for RU
fractures

Bandage extends proxim al
to the elbow



Laboratory docket

3. Bi-valve cast on a pelvic limb

- Stabilize joints and reduce motion at fracture site
- Useful in cases of ligament trauma
- Bivalves are used for max stability
- Ability to dynamize

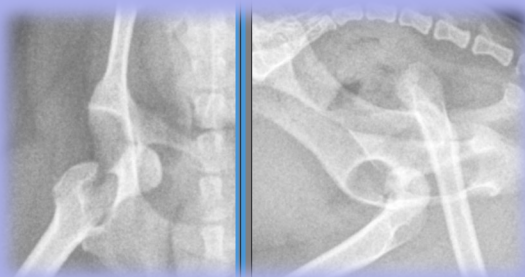


Today's vet practice

Laboratory docket

4. Hobbles

- Main indication: Caudoventral hip luxation!
- Limit abduction of limb
- Placed proximal to tarsi
- Cast padding (use plenty)
- Elastikon
- Patient should be able to take short stride



Ehmer slings

Analysis of outcomes following treatment of craniodorsal hip luxation with closed reduction and Ehmer sling application in dogs

Ariel N. Schlag DVM, Galina M. Hayes PhD, A. Q. Taylor DVM, MS, Sharon C. Ker...

View More +

DOI: <https://doi.org/10.2460/javma.254.12.1436>

Volume/Issue: [Volume 254: Issue 12](#)

- Used for craniodorsal hip luxation
- *Don't do these (my opinion not ASEC's)*

Why:

- Closed reduction relux rate is 50% (Basher 1986)
- Relux rate with Ehmer 43.5% (Schlag 2019)
- 50% of dogs had soft tissue injury
1 amputation!







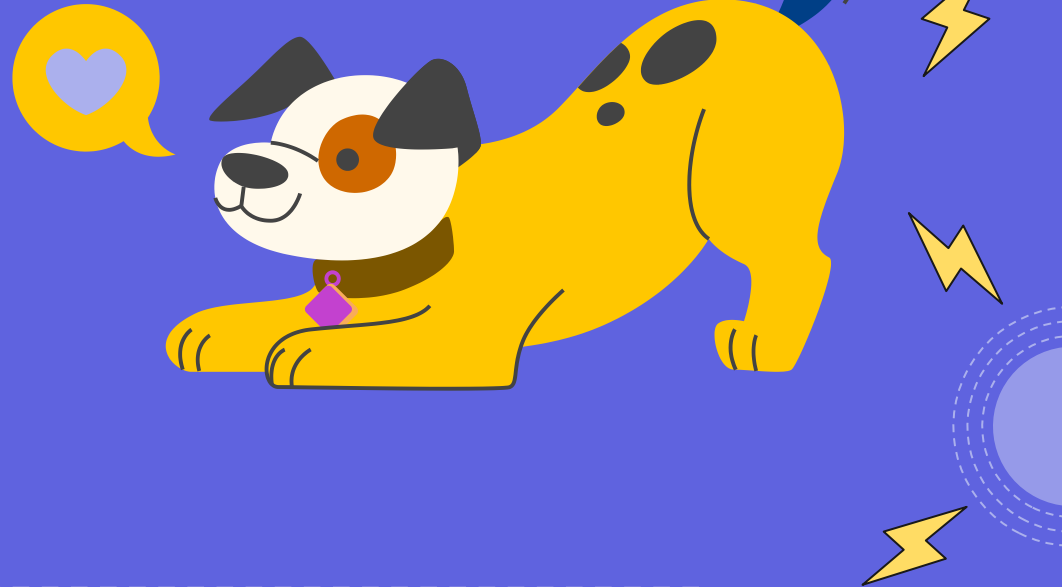
THANKS!

Do you have any questions?

ian.sroufe@vca.com

CREDITS: This presentation template was created by **Slidesgo**, including icons by **Flaticon** and infographics & images by **Freepik**

Please keep this slide for attribution



ASECSYNPOSIUM
2024