

Advanced Bandaging: Spica, Velpeau, Ehmer, and More!

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This presentation will cover all aspects of bandaging, including an overview of commonly used primary dressings for wounds and incisions as well as rules and tips for bandage placement and use of specialized splints and non-weight bearing bandages. The primary layer of the bandage is in contact with the wound or incision and provides absorptive or antimicrobial capabilities, while the secondary layer creates compression and absorbs exudate and the tertiary layer helps protect the inner bandage layers. The primary layer should be placed in sterile fashion and intact skin should be protected from moist bandages. An appropriate change interval is crucial with infected, early stage wounds requiring frequent changes and uninfected, late stage wound requiring less frequent bandage changes. Primary layers are selected based on stage of wound healing and goals: wet-to-dry bandages are for early stages of grossly contaminated wounds, honey is for early stages and provides antimicrobial capabilities, calcium alginate is best for effusive but not highly contaminated wounds, and hydrogels/hydrocolloids are best for maintaining a moist wound environment.

Secondary bandage layers can be maintained by clipping the limb (only if surgery is not an option), decreasing the pet's activity, applying adhesive spray or adhesive friction bandages (Hypafix), or tape stirrups. Cast padding is the first step of the secondary layer and it will tear prior to being placed too tightly. Kling is used to gently provide some compression to the cast padding and it is important to differentiate from roll gauze, which is in appropriate for small animal bandages. Bandaging material should be placed with 50% overlap so that there are 6-8 layers of cast padding. A modified Robert-Jones bandage provides incision protection and wound coverage for injuries distal to the elbow or stifle but does not provide significant support, which can be added with a premade or custom caudal or lateral splint. Vet-lite is a re-moldable option that is very lightweight for small or juvenile pets; three layers at least should be use to provide adequate stiffness. Bivalve casts can provide even more support for non-surgical management of fractures or following arthrodesis. For injuries proximal to the elbow, a Spica splint can provide stability, however, splints for fractures of the femur or pelvis are unlikely to provide adequate stability and are likely to add to the morbidity of these injuries. As such, hindlimb Spica splints are not recommended.

Carpal flexion bandages limit weight bearing on the forelimb and are typically used for tenuous repairs of humeral fractures, due to the ability to still perform physical rehabilitation on the elbow joint while in the bandage. Ehmer slings are used exclusively following craniodorsal coxofemoral luxation reduction to stabilize the joint in flexion and internal rotation while allowing scar tissue to form. Velpeau slings fully eliminate weight bearing on the forelimb and are used for non-articular scapular fractures, medial glenohumeral luxation, and scapular luxation.

Bandage complications include tourniquet effect if the bandage is too tight, skin irritation, and pressure sores. Many of these complications can be limited with frequent rechecking and bandage changes. Skin irritation and pressure sores should be dealt with expeditiously with

limiting bandage contact in these locations. This can include altering the splint shape or using a bandage donut to limit points of contact.

Following this presentation, the practitioner should be comfortable with all steps of bandage placement, including primary dressing selection, and appropriate choice of coaptation, such as asplint or bivalve cast. The practitioner will also be able to select cases for placement of non-weightbearing bandages such as carpal flexion bandages and Ehmer and Velpeau slings. The practitioner should also be able to manage common bandage complications.

Johnston, Spencer A., and Karen M. Tobias. *Veterinary Surgery : Small Animal* . Second edition. St. Louis, Missouri: Elsevier, 2018. Print.

Weinstein J, Ralphs SC. External coaptation. *Clin Tech Small Anim Pract*. 2004 Aug;19(3):98-104. doi: 10.1053/j.ctsap.2004.09.001. PMID: 15712455.