

# Liberty Wildlife Medical Services

Medical Services  
Training Program

• Section Seven •

Wing Bandaging

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# **Introduction to Bandaging**

You have already learned about the Avian Skeletal System. Injuries to this system and to the tendons, ligaments, and muscles it supports, often require restriction of movement and stabilization in order to heal properly. Bandaging is often a crucial component of these treatments.

Bandages are used for many purposes. They may be used to reduce or stop bleeding. They may protect an open area on the body from contamination. They may hold a medication, dressing, padding, or splint in place. They may be used to protect an area from injury. Bandages are also used to immobilize injuries.

In this section we will review common bandage techniques, discuss products and supplies, and practice, practice, practice!

## **Avian Skeletal Review**

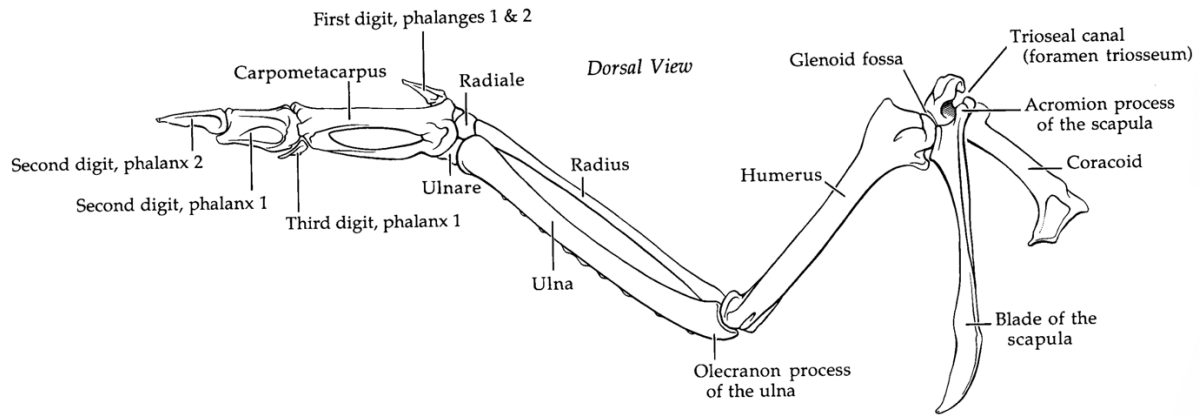
Earlier in this program we divided the avian skeletal system into four sections for the purpose of study: the thoracic limbs (wings), the pelvic limbs (legs), the head, and the torso (thorax, pelvis, and tail). To study bandaging, it is important to be thoroughly familiar with the avian skeletal system and its system of bones and joints. This review will focus on the thoracic limbs.

### **The Thoracic Limbs**

The thoracic limbs are the wings of a bird. They attach to the body at the shoulder and contain the humerus, elbow, radius, ulna, wrist, and the manus (carpus and metacarpus).

- **Shoulder**: The shoulder is the *point of articulation* between the wing and the body where the proximal humerus articulates with the glenoid fossa, a cavity formed by the scapula and coracoid.
- **Humerus**: The humerus is the bone of the wing located between the shoulder and the elbow. Although the humerus is a bone, it is also part of the respiratory system in birds. When this *pneumatized* bone has open or compound fractures there is a danger that liquid entering the bone through the fracture site could actually cause the animal to drown. Pneumatized bones should never be flushed because of their respiratory connection.
- **Elbow**: The elbow is the *point of articulation* between the distal end of the humerus and the proximal ends of the radius and ulna.
- **Radius and Ulna**: The radius and ulna are the bones of the wing located between the elbow and the wrist. The ulna is the larger of the two bones. The secondary wing feathers attach directly to the ulna. The radius is the smaller bone and is located closest to the patagium.
- **Wrist joint**: The wrist joint is the *point of articulation* between the distal ends of the radius and ulna and the carpal, metacarpals.

- Carpus, metacarpus: The carpal, metacarpus bones are in the distal wing. The carpus consists of the radial carpal bone and the ulnar carpal bone. The minor and major metacarpals fuse, both distally and proximally, to form an opening called the intermetacarpal space. These bones support the alular digit or thumb (digit one). The remaining two digits are the proximal and distal bones of the second phalanx (digit two) and the small phalanx minor digit (digit three). Most of these bones are extensively fused and modified to support flight.



## **Vocabulary**

The following terms help to describe avian anatomy by function or position. Also included are the common bones and joints of the limbs.

Caudal	Toward the tail
Cephalic	Toward the head
Distal	Away from the point of attachment
Dorsal	The top side or back
Lateral	Farther away from the midline
Medial	Closer to the midline
Proximal	Closer to the point of attachment
Ventral	Bottom, toward the abdominal side

Can you identify?

- Shoulder
- Humerus
- Elbow
- Ulna
- Radius
- Wrist
- Carpal
- Metacarpals

## Equipment and Supplies

- Bandage scissors: Scissors that have one blade flattened at the end to slip under bandages. They are designed for cutting tight bandages without cutting the patient.
- Vet Wrap: Vet wrap is an elastic product that adheres to itself. It is available in many widths and can be cut into very small sections for tiny wraps.
  - The advantage of vet wrap in avian treatments is that it does not stick to feathers. Vet wrap is ideal for many situations; however, caution must be used because if it is applied too tightly, constriction or swelling can result that can irreparably damage tissue or a limb.
- Rolled cotton: Rolled cotton is an excellent material to use for padding areas that require extra protection. It can be used in small amounts to provide a softer wrap or be used in large thick wraps for support such as in the Robert Jones wrap.
- Gauze: Gauze can also be used for padding. It is particularly helpful when bandaging feet.
- Tape: Tape fixes to a surface. *Paper tape* adheres lightly and can be removed with minimal damage to feathers. *Masking tape* is very useful for splinting or for shoes on small birds. *White adhesive tape* sticks firmly in place and does not stretch, but does damage feathers. *Elasticon* is an adhesive tape that stretches. However, caution must be taken when using *Elasticon*. If applied too tight, *Elasticon* can cause swelling that can irreparably damage a limb or the patagium. *Steri-strips* are thin strips of threaded tape. They are very sturdy and can attach to the skin sometimes in place of sutures.
- Splints: Splints are commonly used to secure fractures. Simple splints may be made from tongue depressors, wire, swab stems, tape, or custom splinting products such as SAM splint.

## **Stabilization**

Stabilizing your bandage is a necessary step to ensuring its success. Stabilizing can be accomplished in several ways:

- **Bone against bone**: The bones in the legs or wings adjoining the fracture or trauma site, will act as a splint.
- **Bone against body**: The body itself will act as a splint, providing additional support.
- **Splints**: Sometimes external materials are needed to add stiffness to stabilize a site. There are many materials available that can be used as splints.
- **Nesting donut**: Support for the animal when it is not standing can provide additional stabilization. A towel wrapped in the shape of a ring can provide a nesting structure that will keep the animals head elevated and limit its attempts at movement.
- **Substrate**: Substrate is a particular surface below the animal aids in the healing process by providing a stable surface. For example, an animal that has one leg wrapped might find newspaper too slick for one-legged mobility. Softer, firmer, easier to grip, rougher, or smoother are all options for substrate modifications. The one you choose will depend on the condition being treated. Most often the caging is the correct substrate.
- **Cage rest**: Just do nothing! Sometimes an animal will hold a limb in the correct position and a wrap can actually un-stabilize the site by tension or even by its weight. This is often the case with very small birds. Not using a wrap but providing complete cage rest may be the best treatment. Some common non-bandaging conditions are fractures of the keel, pelvis, or the pectoral girdle.

## **Bandaging Techniques**

There are many bandaging techniques. Some are standards used for specific situations, but many will be techniques you develop for animals with special needs. Common bandaging techniques of the wing are listed here.

- **Figure 8:** The figure eight bandage is commonly used for injuries to the wing. The folded wing is wrapped in place and secured using vet wrap. If the alignment in the wrap was correct, this wrap is very effective. The critical technique for the success of this wrap is to secure the joints above and below the injury site. This limits any movement in the site. This wrap is most effective when dealing with injuries with the radius / ulna and the manus.
- **Figure 8 w/body wrap:** When the figure eight bandage is used to secure the humerus, the joint below the injury site is secured. However, the joint above the site, the shoulder, is impossible to secure within the wrap and therefore additional stabilization is needed. After wrapping the wing, continue the wrap around the body. This will secure the shoulder by preventing movement of the wing.
- **Figure 8 w/splint:** When a fracture to the wing is compound, there may be poor support within the wing itself. If additional support is needed, a splint should be considered. A splint can be made of wood, cardboard, or various medical products such as SAMM splint. The splint is usually incorporated into the wrap. Some splints are surgically applied as they attach directly to or through the bone.

## **Bandaging Considerations**

There are many points to consider when deciding whether or not to bandage, what bandage to use, and how to apply it.

Here are some points to remember:

### **Swelling**

Significant swelling can sometimes be found at a fracture site. In this circumstance, it is often preferable to wait and bandage the limb after the swelling has begun to subside, particularly if the animal can hold the limb in a natural position. If the injury is such that waiting is not an option, the bandage should be as loose as possible.

### **Blood flow**

When securing a bandage do not make it too tight. If you have secured a limb, but cut-off the blood supply, the tissue will be damaged or even die. Make your bandages as loose as they can be and yet still be effective.

### **Mobility**

You will have to consider the mobility of the animal. If wrapping both legs seems to be indicated, how will the animal get around? Will it be able to obtain food and water? If an animal has two injured wings should you plan on wrapping both?

### Stress

Will the animal be under less stress if it is not restrained by a wrap? This is a real possibility as some birds can experience such a tremendous degree of stress that they may not be able to stand, eat, etc. Remember, severe stress can result in death, so be prepared if your initial treatment plan must change.

### Stiffness and Fusion

Another factor to consider is the unplanned result of immobility from a wrap. If an animal has a limb wrapped for an extended period of time, the joints in that area may become stiff or even fused into position. It is important to remove wraps as soon as they have done their job. If movement still needs to be restricted, an animal can be placed in a small enclosure until healing is completed.

### Babies

Young animals have special bandaging guidelines. Their growing bones can quickly make a correct bandage into one that is too tight. Bandages on young animals need to be removed and re-applied every three days to ensure that their growth is not compromised.

### Secure Bandage

Sometimes we are overly cautious about the wrap being too tight and we tend to make them too loose. This can cause more trauma than the original injury due to damage the animal can cause to itself by thrashing or simply moving around. A simple break can become a compound break overnight.

### Efficiency

Be aware of how much wrap is being applied. You don't want your bandage to out-weigh the bird!



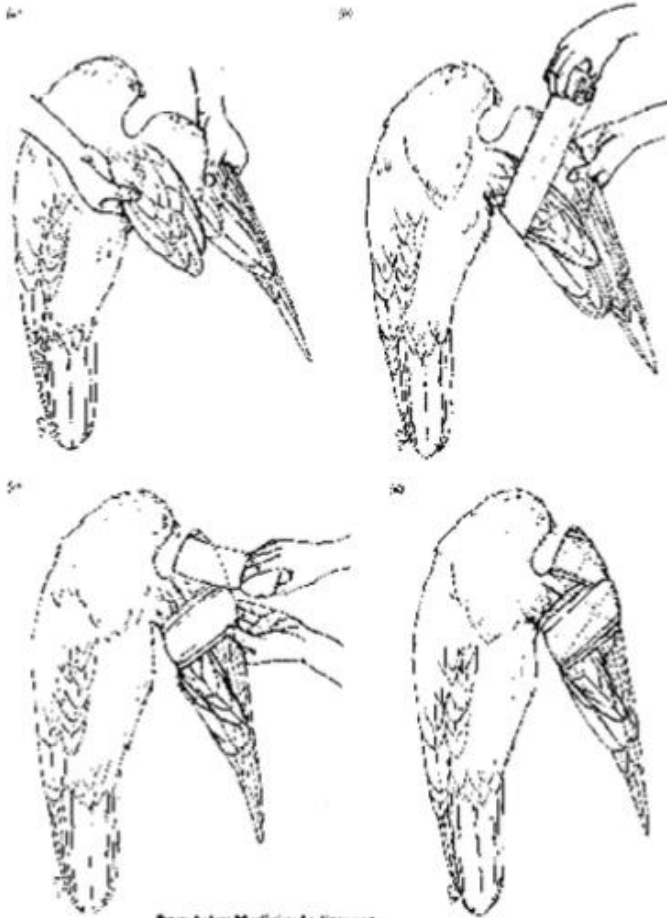
# **Management**

The final component to bandaging is to plan for the continued care of your patient and should include every step of the process, especially when follow-up action may be required.

Some areas to be included are:

- Check Wraps
  - Babies
  - Adults
- Redoing wraps (especially orphans since they grow so fast)
- Monitoring of weight and eating
- Monitoring of general condition
- Monitoring condition of cage
- Noting mental condition
- Noting physical condition
- Noting appropriate social behaviors
- Schedules for physical therapy or other treatment
- Compensate for bandage-caused immobility
- Additional cage rest after wrap is removed
- Medical charting
- After the wrap
  - Wellness checks (ongoing care)
  - Release readiness

Diagram  
1



From *Avian Medicine by Stangor*

# Figure of Eight Bandage

- For ALL wing fractures, shoulder injuries, and wounds above and including the wrist.

## Figure of Eight Bandage – Technique

1. Clean and debride any wounds first and then apply sterile dressing (such as furazone and telfa) if needed
2. Holding the wing in the natural position apply vet wrap as high in the axilla as possible to prevent the bandage from slipping below the elbow.
3. Continue in figure of eight fashion up around the carpus and then down around the wing again.
4. Be careful not to tighten too much around the patagium.
5. Make sure any dressing is fully covered to keep the bird from picking

## Figure of Eight Bandage Tips

- Make sure to include the tertiary (scapular) feathers in the bandage.
- The bandage should not extend below the elbow joint unless the elbow is dislocated or involved in the fracture.
- Shouldn't be too bulky or heavy as to cause balance problems for the bird.
- The bandaged carpus of the injured wing should be at the same level as the unbandaged carpus.
- Don't apply too tight (will see criss crossed secondaries and primaries.)
- If compound splints can be used but will provide added bulk

## Figure of Eight Bandage



## Figure of Eight Body Wrap

- For fractures or luxations of the humerus, coracoid, shoulder, scapula or any unexplainable wing droop
- Minimizes movement of the shoulder.



### Figure of Eight Body Wrap Technique

1. The affected wing should be folded in a normal flexed position close to the body.
2. Clean and debride any wounds first and then apply sterile dressing (such as furazone and telfa) if needed
3. First apply figure of eight wrap using Vet Wrap
4. Begin wrapping away from the injured wing, around the body, **underneath** the unaffected wing.
5. Continue around the back – one full turn around the body.
6. Then wrap **over** the affected wing (from back to front.)
7. May need to go around twice for large birds.
8. Check for tightness - should be able to insert two fingers underneath the bandage
9. Should be tight enough to prevent wing motion, but not tight enough to compromise respiration.
10. Make sure crop is not covered and bird has full range of motion in legs.



Bandage too tight



Bandage too bulky, heavy and low

# **Medical Services Workshop**

## **MS8 Bandaging Lab**

- Wing wraps
  - Wrist
  - Radius/Ulna
- Wing wraps with body wraps
  - Elbow
  - Humerus
  - Shoulder
- Adding splints

## **Medical Services Practice Worksheet**

### Section Seven: Wing Bandaging

1. Name five conditions which might require wing bandaging.
  - a.
  - b.
  - c.
  - d.
  - e.
2. How would you bandage a closed fracture of the distal ulna?
3. How would you bandage a closed fracture of the proximal radius?
4. How would you bandage a closed fracture of the proximal humerus?
5. How would you bandage a closed fracture of the distal metacarpus?
6. How would you bandage a closed fracture of the wrist?
7. When should you use a splint?
8. What purpose does rolled cotton serve?
9. Name two concerns you should have when using vet wrap.
  - a.
  - b.
10. Why do you check wraps on a young bird? How often should you check?
11. Why is it important to check wraps?
12. How do you stabilize your wrap?
13. Explain six bandaging considerations and how you would avoid problems in each area.  
(Use the back of this sheet.)
14. You have now completed Section Seven on bandaging. What was the most interesting part of this section for you?

