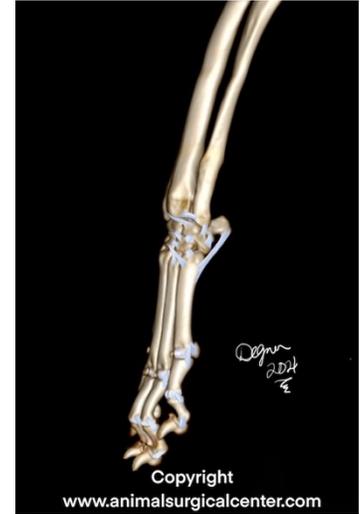


Carpal Hyperextension Injury

Anatomy

The carpus of the dog can be equated with the wrist in man. It is made of many small bones that form 3 major joints. Normally, the top joint is very flexible, whereas the remaining joints have limited range of motion. The backside of the carpus is supported by a very strong ligamentous structure called the palmar fibrocartilage, which prevents the joints from over extending (hyperextension).



Cause of carpal hyperextension injury

The cause of a hyperextension injury is due to tearing of the palmar fibrocartilage and palmar ligaments. This type of injury can be due to a single isolated traumatic event such as jumping off a roof or out of a window. In other cases, it is due to repeated injury to the palmar fibrocartilage due to jumping off elevated surfaces or out of vehicles. Once the palmar fibrocartilage tears, conservative measures such as splinting or casting the limb are consistently ineffective in nearly all cases.



Signs and diagnosis

Carpal hyperextension injury is most commonly seen in large active dogs; however, small breeds certainly can sustain a similar injury. Warning signs of this condition include lameness that worsens with exercise. Swelling and hyperextension of the carpus also are common clinical signs.

The diagnosis of a carpal hyperextension injury is based on physical examination findings and x-rays of the affected forelimb. Stress x-rays of the affected limb, with your pet under anesthesia may be required to further demonstrate the problem. This involves applying a stress to the carpus to see which joints have torn ligaments (see photo right – arrow points to the unstable joints). If only the lower two rows of joints are broken down, a partial fusion of the joint will be recommended. If all of the joints are broken down or the top joint is broken down, a fusion of all of the joints will be required.

The day of surgery

Our anesthesia and surgical team will prescribe a pain management program, both during and after surgery that will keep your companion comfortable. This may include a combination of general anesthesia, injectable analgesics, epidural analgesia, oral analgesics, and anti-inflammatory medication.

Surgery

In order to correct this problem, it is essential to perform an arthrodesis or fusion of the carpal joints. This involves removing the cartilage from the surfaces of the bones within the joints, packing the joints with a bone graft that is collected from the humerus bone (near the shoulder), and stabilizing the bones with a plate and screws. The surgeon will have made a determination prior to surgery if a partial arthrodesis (photos right) or a full arthrodesis (photos below) is necessary. The full arthrodesis will remove all movement within the carpus, whereas the partial arthrodesis retains about 50 to 75% of normal range of motion of the carpus. After surgery, a cast or splint is applied to the limb to support the repair for about four to six weeks.

Home care

After surgery, you can continue to give your pet a prescribed pain reliever to minimize discomfort. A splint or cast likely will be used to support the repair for four to six weeks. The splint or cast will need to be changed by your dog's surgeon at least every other week. It's also extremely important to limit your dog's activity and exercise level during the post-operative period. The surgeon will monitor the healing process with a series of follow-up exams. At eight weeks after the surgery, x-rays will be made to evaluate the healing of the bone. Subsequent x-rays will be made on a monthly basis until the bones have fused together.

Results

Surgical arthrodesis will relieve your companion's pain once the bones have fused together. A partial arthrodesis commonly will allow your pet to have normal function of the limb with good range of motion of the carpus. A full arthrodesis of the carpus typically results in good function of the limb; however, a gait abnormality is expected, as the carpus will not have any movement. Uncommon complications following surgery include infection, failure of the bones to fuse together, breakage of the implants (metal plate and screws) and cold sensitivity. In general, about 90 to 95% of the patients will respond well to the surgery.



Assessment and recommendations

Patient name: _____

Date: _____

Treatment

- Surgery is recommended
- Surgery is not recommended

The following has been prescribed

- No medication or special diet are necessary at this time
- Pain relieving medication: _____
- Nonsteroidal anti-inflammatory medication: _____
- Antibiotics: _____

External limb support

- No support is needed
- A splint or bandage has been applied. Twice daily, please check for:
 - Swelling of toes (if there is no swelling the middle two toe nails will touch each other)
 - Cold toes – this may indicate poor circulation
 - Foul odor
 - Discharge seeping through the bandage
 - Increased lameness
 - Excessive licking or chewing at the bandage
- The splint or bandage should be changed in _____ weeks; the limb will be supported by a splint or bandage for a total of _____ more weeks

Exercise

- Confine your pet to a crate and carry him/her outdoors for bowel movements and urination
- Confine your pet to the house other than very short leash walks necessary for bowel movements and urination

Preparation for surgery

- Start fasting your companion at midnight, before the surgery; water should not be withheld
- Pepcid AC 10 mg tablets: give _____ tablets with water (use a syringe if needed) at 6 AM on the day of surgery

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