

Tarsal Hyperextension Injury

Anatomy

The hind paw of the dog is similar to the foot in man. The tarsus is made of seven small bones that form multiple joints. The top joint (ankle) is very flexible, whereas the remaining joints have limited range of motion. The backside (plantar side) of the tarsus is supported by a very strong ligaments, which prevent the joints from over extending (hyperextension).

Cause of tarsal hyperextension injury

The cause of a hyperextension injury is due to tearing of the plantar ligaments. This type of injury can be due to a single isolated traumatic event. In other cases, it is due to repeated injury to the ligaments. Once the plantar ligaments tear, conservative measures such as splinting or casting the limb are ineffective.

Signs

Tarsal hyperextension injury is seen large and small breed dogs. Some breeds, like Shetland sheep dogs, are prone to degeneration of the ligaments that hold the joints together and develop hyperextension of the tarsi and carpi. Warning signs of this condition include lameness and an abnormal shape of the paw (as seen right). The toes may curl (hyperflex) and the hock may sink down with weight-bearing. In the acute injury, the area may be swollen and painful on palpation.



Diagnosis

The diagnosis of a tarsal hyperextension injury is based on physical examination findings and x-rays of the affected forelimb. The surgeon likely will take stress x-rays of the affected limb, with your pet under anesthesia. This involves applying a stress to the tarsus to see which joints have torn ligaments. Take note of the stressed radiograph (far right as compared to the non stressed radiograph).



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The day of surgery

The anesthesia and surgical team will prescribe a pain management program, both during and after surgery that will keep your companion comfortable. This will include a combination of general anesthesia, injectable analgesics, local anesthesia (Nocita), oral analgesics and anti-inflammatory medication. The surgeon will call you following surgery with a progress report.

Treatment

In order to address a tarsal hyperextension injury, it is essential to perform an arthrodesis or fusion of the affected tarsal joint(s). This involves removing the cartilage from the surfaces of the bones within the affected joint(s), packing the joints with a bone graft (typically from the bone bank or collected from the patient) and stabilizing the bones with a plate and screws. The surgeon will have made a determination prior to surgery if a partial arthrodesis (photo right) or a full arthrodesis is necessary. The full arthrodesis will remove all movement within the tarsus, whereas the partial arthrodesis retains range of motion of the ankle.



Aftercare

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After surgery, you can continue to give your pet a prescribed pain reliever to minimize discomfort. A splint or cast will be used to support the repair for six to eight 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 about six to eight weeks after the surgery, x-rays will be made to evaluate the healing of the arthrodesis site. Subsequent x-rays may be required on a monthly basis until the arthrodesis site has completely healed.



Results

Surgical arthrodesis will relieve your companion's pain once the bones have fused together. Partial arthrodesis commonly will allow your pet to have normal function of the limb with good range of motion of the ankle (hock). A full arthrodesis of the tarsus typically results in good function of the limb; however, a gait abnormality is expected, as the ankle 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: _____ Date: _____

Treatment

- Surgery is recommended
- No surgery is recommended

The following has been prescribed

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

Exercise

- Confine your pet to the house other than very short leash walks necessary for bowel movements and urination
- Restrict exercise to leash walks 10 minutes twice daily
- A cast/splint/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
 - Please note that a new bandage/cast will feel strange to your pet initially, but he/she will typically get used to it within 12 hours. If your pet continues to be uncomfortable or more lame after the bandage has been changed, please call us.

Preparation for surgery

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

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