

Atlantoaxial (AA) Luxation

Most commonly seen in young small or toy breed dogs, atlantoaxial (AA) luxation refers to a dislocation between the first two bones in the neck, causing neck pain and other neurological symptoms.

Signs

When these two neck bones fall out of alignment, the spinal cord of the neck may be compressed. The most common sign in AA luxation is neck pain.

Signs of neck pain may include:

- Holding the head low or tilted to the side
- Stiff neck or reluctant to move head
- Neck muscle spasms
- Crying when touched around the neck
- Spontaneous yelping
- Walking slowly or carefully
- Reluctant to eat or drink from the floor

In more severe cases, AA luxation causes neurological symptoms including:

- Weakness or wobbliness in all four legs
- Inability to stand or move the legs
- Difficulty breathing

Causes

While it is possible for this condition to be caused by trauma, in most cases AA luxation is related to a congenital malformation.

The atlas is the first vertebrae of the neck (C1), and the axis is the second vertebrae of the neck (C2). Typically, vertebrae are securely connected by intervertebral discs. However, in order to allow the head a greater range of motion, the atlas and the axis are only connected by a piece of bone called the dens and ligaments. In certain breeds, the dens or ligaments may be misshapen or absent altogether, leading to instability between the bones and eventual dislocation.

Although the condition can affect bigger dogs and occasionally cats, AA luxation is most commonly seen in small and toy breed dogs including:

- Chihuahuas
- Maltese
- Yorkies
- Toy Poodles
- Pomeranians

Most dogs are under a year when diagnosed, but some cases occur later in life.

Diagnosis

AA luxation can be suspected based on age, breed, symptoms, and examination. However, multiple tests are recommended, because often there is more than one diagnosis that must be considered prior to treatment. Many of the breeds prone to AA luxation may present with concurrent conditions that commonly affect small and toy breeds.

Radiographs (X-rays) can show misalignment and instability of the bones in the neck but provide limited information about resulting spinal cord and possible brain stem damage. MRI is the best way to show the full extent of damage to the spinal cord and brainstem, as well as rule out other common causes of neck pain and limb weakness in dogs. If MRI confirms AA luxation, a CT scan is also helpful in evaluating bones and planning for surgery.

Treatment

There are two ways to treat AA luxation in dogs.

For the best chance of long-term success, the preferred treatment is surgery to realign and stabilize the bones. Realigning the bones relieves pressure on the spinal cord. Stabilizing the bones prevents further injury to the spinal cord. There are different methods of accomplishing this, but at Southeast Veterinary Neurology, we use small orthopedic screws in the first two bones of the neck, remove the articular cartilage between the two bones, place a bone graft, and fuse the bones with bone cement. Following surgery, the recovery period consists of eight weeks of crate rest at home.

The other treatment option involves pain medication and placing a neck bandage to restrict movement of the atlantoaxial (AA) joint and crate rest for 12 weeks or longer to allow torn ligaments to heal.

Patients need to be monitored closely, and the bandage needs to be changed every couple of weeks. Besides the cumbersome bandage and prolonged confinement time, the biggest downside of this approach is that it cannot address a congenital malformation, so many dogs will have a recurrence once normal activity is resumed.

Prognosis

The prognosis for AA luxation is good for dogs that are treated with surgery. Surgery has about a 75-90% success rate for long term resolution of symptoms, and recurrence rates are low. Possible complications include anesthesia, infection, or breaking of the implants.

For dogs that are treated with a bandage, about 50% have a recurrence within the first year. Bandages carry the risk of recurrence, skin abrasions and infections, and restricted breathing.



Learn more about
Atlantoaxial (AA)
Luxation

