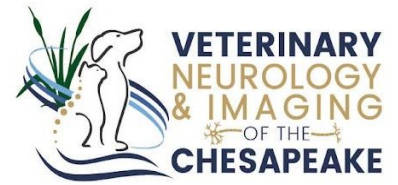


# NEUROLOGY

## Atlantoaxial (AA) Instability

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Atlantoaxial (AA) instability (or luxation/subluxation) is a condition in dogs (and cats) in which there is abnormal movement or instability in the cervical spine (neck), between the atlas and axis (the first two cervical vertebrae). This instability allows an abnormal angle between the two bones, which causes pressure on or compression of the spinal cord. The severity of injury to the spinal cord depends both on the amount of pressure and the chronicity of the condition.

The AA joint is normally stabilized by a projection off the cranial aspect of the axis (C2 vertebra) called the dens, which fits into the atlas (C1 vertebra). There are also several ligaments between the atlas and axis that hold the bones in place. Hereditary factors can result in an abnormally-shaped dens that can contribute to instability of the joint, as well as potential failure of the ligaments. Trauma to the neck can cause damage to the joint and/or stabilizing ligaments, leading to AA instability.

Clinically we can see neurological deficits that can range from pain to complete paralysis in all four limbs. Some dogs may only show signs of weakness in their pelvic (rear) limbs. The diagnosis can rarely be made with radiographs alone, and magnetic resonance imaging is generally required to fully evaluate the damage to the spinal cord, as well as any other possible traumatic or congenital defects in the area.

Treatment for the condition can be medical or surgical. Medical treatment (neck brace and anti-inflammatories/pain medications) is

typically used for pets that are minimally affected or are extremely young (less than 6 months old). Patients that respond to medical treatment usually show good improvement in the first week, although it can take up to two months for full healing to occur. The brace/bandage needs to stay on for roughly six to eight weeks and needs to be changed regularly. It is important to note respiration needs to be monitored closely when the bandage or splint is placed as there is a concern for respiratory compromise.

Pets that are severely affected or do not respond to medical treatment are candidates for surgery. The aim of surgery is to fuse the AA joint by a combination of removing the articular cartilage and using screws and bone cement to fuse the joint in place.

Surgery is generally very successful using this approach. Most patients, even severely affected ones, will drastically improve over the first two weeks, although complete healing will take six to eight weeks. Perioperative complications may include aspiration pneumonia due to pharyngeal or laryngeal dysfunction/paralysis, respiratory failure, permanent paralysis and death.