

DIAGNOSTIC IMAGING OF DISC PROTRUSION AND EXTRUSION.

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Protrusion and extrusion are preceded by disc degeneration. Extrusions are more common in chondrodystrophic types of dogs and mineralization of the nucleus pulposus is seen more commonly in extrusions than in protrusions. Protrusion refers to bulging of the Anulus fibrosus of the intervertebral disc while the term extrusion reflects disruption of the Anulus fibrosus with partial or full displacement of the Nucleus pulposus.

Protrusive and extrusive types of disc hernia can usually be differentiated based on imaging findings. Their differentiation is mainly based upon their morphology. A protrusion is connected with the disc, has a wide base to the disc and tapers down towards the vertebral canal. Central protrusions within the ventral epidural space are most common. However, lateralized and focal types of protrusion exist.

The definition of an extrusion either comprises extradural material which is wider towards the periphery than towards its base or material that has no connection with the intervertebral disc whatsoever. The latter is referred to as sequestered or migrated extrusion. Extrusions may be accompanied by hemorrhage from the vertebral venous plexus.

The degree of spinal cord compression is an important feature in the decision making process between conservative management versus decompressive surgery. However, the degree of spinal cord compression is not correlated with clinical signs. Traumatic extrusions (also referred to as high velocity low volume extrusions) for instance are usually minimally compressive based on their volume – yet they can traumatize the neural parenchyma severely by their high impact. Hence classic compressive extrusions do not only need to be differentiated from protrusions but also from traumatic extrusions and ischemic myelopathy – another non-compressive disc-associated myelopathy. Many extrusions are recognized readily in Computed Tomography (CT) based on the differential attenuation of extruded material and blood. However, the diagnosis and differentiation of protrusions and non-compressive types of disc-associated myelopathies largely rely on Magnetic Resonance Imaging (MRI) which allows for detailed assessment of pathologic features of the vertebrae, intervertebral discs, epidural space, meninges and most importantly the spinal cord. Myelographic techniques serve as an alternative to rule out significant spinal cord compression whenever MRI is not available or not an option for other reasons.