



Hemi-Vertebrae ('Butterfly spine')

Hemi-vertebrae (otherwise known as 'Butterfly spine') is a congenital condition that affects the spinal column of dog breeds with screw tails, such as French Bulldogs, Pugs and English Bulldogs, which results in the vertebrae (bones) of the spine to be abnormal in shape.

In a healthy dog the spinal cord runs down the middle of the spine and is surrounded and protected by the vertebrae. The vertebrae are normally rectangular shaped bones which stack together each with a spongy intervertebral disc between them. There is then a hole that runs through each vertebrae allowing the spinal cord to pass through. In a healthy dog, these vertebrae slot together neatly like stacking blocks and the spinal cord passes through them without any compression or impingement.

For a dog born with hemi-vertebrae, the vertebrae can be fused or wedge shaped. This means that the bones are no longer neatly organised in a straight line; imagine adding a wedge shape into your tower of stacking blocks. These vertebrae then sit awkwardly next to one another, causing unusual bends or twists in the spinal column, which can then cause a tight or awkward tunnel through which the spinal cord passes through. Ultimately this can result in pressure on the spinal cord leading to potential pain or neurological problems for the dog.

Thankfully, this condition does not always cause issues for affected animals, and in many cases these changes are found incidentally when x-raying the animal for other issues. It often depends on which part of the spinal column is affected and how severely. One study found that approximately 60% of French Bulldogs and English Bulldogs have some hemi-vertebrae. The changes to the vertebrae can lead to instability and ultimately pain, weakness, wobbliness, urinary or faecal incontinence or the inability to walk. An X-ray cannot determine whether the deformity will cause neurological issues, it can just show that the condition is present. Advanced imaging such as CT or MRI is required to determine if there is any compression of the spinal cord and therefore if there is potential to cause neurological signs. However, most dogs with significant hemi-vertebrae show their first neurological changes before the age of one, and symptoms tend to worsen as they grow.

For those dogs that do show clinical signs, rest and anti-inflammatories can be used in milder cases. However, if a dog shows severe neurological signs, then neurosurgery is the only realistic and potentially resolute treatment.

It is likely that hemi-vertebrae are caused by a complex genetic change, and at present there is no genetic test to check for the risk of inheriting the condition. As it is thought to be a hereditary congenital deformity, the advice is that animals with this condition are not used for breeding.