Internal trauma may cause:
- Haemorrhage
- Joint cartilage damage
- Ascending infection from middle ear and elsewhere in the skull.

Common causes are:
- Incisor and molar tooth abnormalities resulting in the direct imbalance of the TMJs, due to changes in the occlusion of both tables
- The joint action may be strained by obstructions and resistances induced by abnormal arcades
- Conformational faults and misalignment of dental arcades are more common in cross-bred horses.

Unsteady head carriage due to:
- Inappropriate tack e.g. ill fitting saddle and girth
- Unsympathetic bitting
- Equitation faults i.e. lack of independent seat and consequent rider imbalance
- Low grade lameness.

Subtle riding problems are often the initial sign, however, whatever the cause, the ultimate result of pain in the TMJ may be exhibited as interference with locomotion, which may, and often does, present with lesions distant to the head. Such signs may manifest as:
- Head tilting, leaning on the bit or, over or under development of axial skeleton muscle
- Imbalanced loading of limbs, with related changes particularly in the hind limb suspensory apparatus, hock joints and consequent development of a unilateral imbalanced hoof capsule
- Uneven muscle development and, both fore and hind limb lameness leading to poor saddle fit.

**Diagnosis of TMJ pain**
The clinician should always include examination of the dental excursion and palpation of TMJs when working up non-specific axial skeleton pain, or hind limb lameness.

In the absence of a definitive diagnosis for these conditions, the horse should be assessed under saddle, then the TMJ(s) should be nerve blocked and the horse re-assessed under saddle. If the unwanted condition improves the TMJ may be imaged using thermography, which is sensitive to the increased overlying skin heat of the affected TMJ in comparison to the contralateral TMJ. Ultrasonography also, is a good diagnostic tool for TMJ injury and CT and MRI scans are both increasingly useful; radiography however, less diagnostic.

Three dimensional kinematic assessment of TMJs can be used to compare the range of motion in the normal horse and those with TMJ disease or with dental irregularities. (Bonin 2006)

**Treatment of TMJ pain**
Obtaining a correct diagnosis is essential; sepsis, fracture and neoplasia are treated as required and, on an individual basis.

The first line of treatment is examination and the correction of abnormalities of the dental arcade and oral cavity. Full recovery requires rest, fodder should be of a readily masticated form, and the horse should be encouraged to take all food from floor level. The tack, bit and method of going in relation to saddle fit, rider ability and the position of the horse’s head on his neck during ridden exercise should be scrutinised.

Osteopathy, a variety of intra articular therapy and, focused very carefully placed extra corporeal shock wave therapy, can all be beneficial.

In conclusion, pain associated with one or both TMJs may cause reluctance for the horse to take the bit properly, crookedness in the head and neck carriage, and secondary gait abnormalities.

**Reading sources**
Ross WR, and Dyson SJ, (2011) Lameness in the Horse 12: 155