

CASE 1**QUESTION 1 (FIVE MINUTES)**

An 11-year-old, male neutered, Miniature Schnauzer is presented with a 3-month history of right hind limb lameness of sudden onset. During gait and at stance a marked lowering of the right hock is noted while the foot is in contact with the ground.

1. List the THREE most likely differential diagnoses for this presentation.

1. *Partial Achilles tendon rupture/failure*
2. *Tibial nerve injury*
(No points for sciatic nerve injury?)
3. *Calcaneus fracture*
4. *Fracture/Luxation of the hock*

No points for Complete Achilles tendon rupture, as this would result in a plantigrade stance

*Achilles tendon = Common calcaneal tendon
TAJ 1023,*

- 2. On clinical examination, thickening of the right Achilles tendon is noted. With the stifle held in extension, it is possible to hyperflex the hock. This then also results in marked hyperflexion of the digits. In consideration of this clinical assessment, please state your clinical diagnosis. Be specific.**

*Achilles Tendon mechanism injury type 2c (Meutstege classification)
I.E. Disruption of the Common Calcaneal tendon with intact superficial digital flexor tendon
Brinker p720*

QUESTION 2 (SIX MINUTES)

The dog is diagnosed with disruption of the common calcaneal tendon with intact superficial digital flexor tendon (type 2C Achilles tendon injury).

The dog is sedated and the radiographs in the image are obtained.

1. List FOUR radiographic abnormalities on these radiographs.

1. *Thickening of the Achilles Tendon*
2. *Mineralisation in the Achilles tendon*
3. *Periosteal roughening at the site of insertion of the Achilles tendon on the calcaneus*
(Enthesophyte / Enthesiophyte)
4. *Calcaneal bursitis / SDF tendonitis / Soft Tissue swelling*

2. Outline your surgical treatment for this patient, whilst preserving the limb.

Tendon repair with temporary immobilisation of the hock joint using ESF OR tibio-calcaneal screw and cast

OR

Pantarsal arthrodesis with medial plate fixation or with cranial plate fixation (OR ESF)

3. What alternative surgical treatment would also be appropriate?

Tendon repair with temporary immobilisation of the hock joint using ESF, tibio-calcaneal screw, cast

OR

Pantarsal arthrodesis with medial plate fixation or with cranial plate fixation (OR ESF)

QUESTION 3 (SIX MINUTES)

In view of the chronicity of the tendon lesion and at the owners' request, surgical treatment using a pantarsal arthrodesis is planned.

You have two types of pantarsal arthrodesis plates (Implant A and B) available.

1. List FOUR COMMON design features in these implants.

1. Hybrid plate (larger holes on tibia and smaller holes on MT bone(s))
2. Dynamic Compression holes
3. Tapering of the implant to facilitate ST closure and improve plate/bone stress/strain distribution
4. Plate is reinforced / thickened over the angle

CASE 2**QUESTION 1 (EIGHT MINUTES)**

A one-and-a half-year-old, 2.5 kg, female miniature crossbreed Terrier is hit on the head by a football during play. The dog has lost consciousness for several minutes and is presented in stupor. On presentation, the dog has a heart rate of 160 bpm, a respiratory rate of 28 bpm, pale mucous membranes, a capillary refill time of 2 seconds and a temperature of 37.4⁰ Celsius. Neurologic examination shows depression, tetraplegia, general proprioceptive deficits, loss of postural reactions, normal spinal reflexes, and a resting nystagmus. Additional cranial nerve assessment is unremarkable.

The images show the dog and football for size reference.

1. List TWO neurolocalizations to explain these clinical findings.

1. *Mid to caudal brainstem with involvement CN VIII*
2. *C1-C5*

2. List FOUR appropriate emergency treatments apart from analgesia.

1. *Hypertonic saline or hetastarch (dextran-70 less effective)*
2. *O₂*
3. *Elevated head position*
4. *Mannitol*

The dog responds well to initial treatment and shows normal mentation after 30 minutes with decreasing signs of nystagmus.

3. What are your THREE most likely differential diagnoses at this stage?

1. *Brain injury*
2. *Cervical fracture-luxation C1-C5*
3. *Atlanto-axial instability / subluxation*

4. Which diagnostic imaging modality is most appropriate for this patient?

CT imaging

QUESTION 2 (EIGHT MINUTES)

A CT of the skull and cervical spine is conducted. The skull imaging shows no abnormalities. Transverse and sagittal CT images of the cervical spine are shown.

1. Describe FOUR abnormalities shown on the CT images. Be specific.

Transverse view

1. Bony structure on the left side dorsolateral of the dens,
2. Narrowing spinal canal with dens in the normal position.
3. Right and dorsal subluxation C2.

Sagittal view

4. Fracture between dens and vertebral body of C2
5. Dorsocranial subluxation of vertebral body C2.

QUESTION 3 (EIGHT MINUTES)

The CT imaging diagnosis is an oblique fracture of the dens from left cranial to right caudal with a subluxation of the C2 vertebral body to the right and substantial narrowing of the spinal canal. In view of the overall finding surgical reduction and stabilisation is indicated.

1. Which surgical approach should you use for this C2 fracture?

Ventral parasagittal approach.

4. Describe the crucial steps in stabilizing this C2 fracture.

- PMMA screw and pin fixation.
- Reduce vertebral body C2 and stabilize the atlantoaxial joint on the right with a K-wire (screw). Do the same on the left.
- Position 2 cortical screws in the most caudal aspect of C2 limited to the vertebral body. (There is no bone in the remaining part of the vertebral body, no crossing like in lumbar spine due to size pedicle and risk damaging cord, nerve roots, transverse foramen and vertebral artery and vein).
- Position 2 cortical screws in the base of the caudal articular surface of C1.
- Embed the screw heads and bend K-wires in PMMA.
- Accommodate shape PMMA for oesophagus and trachea.

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