

## SELF ASSESSMENT

# What is your diagnosis?

A THREE-YEAR-OLD female neutered dobermann was presented with a history of a sudden-onset left hindlimb lameness commencing during a period of exercise 14 days previously. The lameness improved with rest but recurred and persisted when exercise was resumed.

Observation revealed the dog to be bright and alert with shifting of weight to the right hindlimb, and toe touching on the left hindlimb. Weightbearing on the left hindlimb was associated with several postural abnormalities (Figs 1 and 2). A 6/10 left hindlimb lameness was noted at the walk.

General physical examination and neurological assessment were normal. Palpation of the left hock joint revealed thickening of the common calcaneal tendon just proximal to the calcaneus. A smaller thickening was noted in the contralateral tendon. Pain was elicited on flexion of the left hock. With the stifle held in extension, partial flexion of the hock was possible. Mediolateral and plantarodorsal radiographs of both hocks were taken – the mediolateral view is shown (Fig 3).

● What postural abnormalities are present?

*Answers overleaf*

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- What abnormalities are present on the radiograph?
- What are the differential diagnoses?
- How would you manage this case?



FIG 1



FIG 2



FIG 3

# What was your diagnosis?

## ● What postural abnormalities are present?

A partial plantigrade stance with hyperflexion of the digits is evident on the left hindlimb.

## ● What abnormalities are present on the radiograph?

Increased soft tissue density is evident proximal to the calcaneus consistent with thickening of the common calcaneal tendon of insertion (specifically the gastrocnemius tendon of insertion). The margins of the calcaneus appear irregular due to periosteal reaction and osteophyte/enthesiophyte presence.

## ● What are the differential diagnoses?

The differential diagnoses include: lesions involving the common calcaneal tendon; avulsion of the origin of the gastrocnemius muscle; fracture of the calcaneus; and displacement of the tendon of the superficial digital flexor.

The abnormal posture and findings on physical and radiographic examination are consistent with a diagnosis of gastrocnemius enthesiopathy. This was suspected to be present bilaterally due to thickening of the common calcaneal tendon insertion in the right hindlimb. No lameness or pain were associated with the right hindlimb.

## ● How would you manage this case?

In cases with an acute onset, a conservative approach may be adopted involving rest, controlled lead exercise and treatment with non-steroidal anti-inflammatory drugs. In this case, due to the chronicity of radiographic changes and the presence of significant lameness, it was thought that surgical management was appropriate.

Following a plantarolateral approach to the calcaneus (Piermattei, 1993) the hock was immobilised in extension using a 4.5 mm cortical screw placed in a lag fashion through the calcaneus and into the distal tibia (Figs 4 and 5). A tunnel was then drilled lateral to medial through the calcaneus, just distal to the screw and two locking loop sutures of 5 metric monofilament polyamide (Ethilon; Ethicon) used to reattach the tendon of insertion. Postoperatively the hock was supported in a Robert Jones dressing for two weeks.

## Discussion

The common calcaneal tendon (CCT) or Achilles tendon consists of: tendon of the gastrocnemius muscle; tendon of the superficial digital flexor (SDF) muscle; crural fascia from the semitendinosus, gracilis and biceps femoris muscles. The gastrocnemius tendon and crural fascia insert directly on the tuber calcanei, whereas the SDF passes over the tuber calcanei and inserts on digits 2 to 5. (Evans and deLahunta 1988).

Lesions to the CCT are usually traumatic in nature due to overloading, or to a sharp or blunt trauma. Classification of the lesions seen in the CCT is based on anatomical location and gross pathological features. Meutsstege (1993) divided lesions into three types: 1) complete CCT rupture; 2) lengthened CCT system with a) musculotendinous rupture, b) CCT rupture with intact paratenon or c) gastrocnemius tendon avulsion with intact SDF; and 3) tendinosis and/or peritendinitis.

Gastrocnemius enthesiopathy is a combination of types 2c and 3; characterised

by chronic inflammation and avulsion of the tendon of insertion of the gastrocnemius muscle. Middle-aged, large-breed dogs are particularly susceptible, especially the dobermann (Dyce 1994, Butterworth 1995). Rather than presenting with a history of an acute injury, the owners usually report no obvious trauma but gradual onset lameness. In this case no trauma was seen to precede the development of lameness.

The aetiology of this condition is unknown. However, Butterworth (1995) suggests it could be a result of recurrent low grade trauma caused by conformation-related biomechanical problems, an underlying collagen abnormality or a combination of these.

Diagnosis is achieved following a thorough clinical and radiographic examination. Rupture of the gastrocnemius tendon with an intact SDF produces characteristic postural abnormalities (Bonneau and others 1982, Piermattei and Flo 1997). A partially plantigrade stance due to loss of support from the gastrocnemius tendon and hyperflexion of the digits due to the



FIG 4

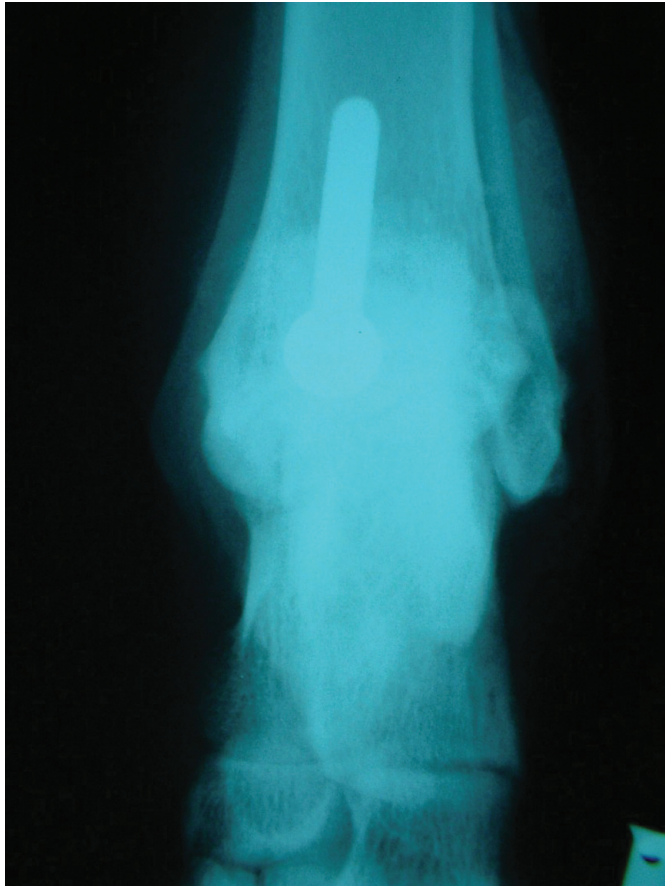


FIG 5

pull of the intact SDF is exacerbated by weightbearing. Palpation of the tendon reveals marked thickening at the point of insertion. This is in contrast to complete CCT rupture in which a complete plantigrade stance is noted along with a small skin lesion and a gap between the tendon ends. Displacement of the SDF is characterised by slipping of the tendon from the calcaneus on palpation.

The decision to treat surgically in this case was based on the presence of lameness and marked postural abnormalities. The aim of surgery is to protect the injured ten-

don from the normal disruptive forces of weightbearing with reinforcement of its insertion on the calcaneus.

Reinforcement can be performed using Locking loop or Bunnell sutures inserted through a single transverse or medial and lateral bone tunnels (Welch 2003).

Protection of the reinforcement using a bone screw placed in a lag fashion with the hock in extension may allow the tendon to heal. Alternatively a transarticular external fixator may be used (Piermattei and Flo 1997). The angle of screw placement should be between perpendicular to the

axis of the calcaneus and perpendicular to the tibia (Butterworth 1995). In retrospect, the screw was placed too proximally in the calcaneus in this case, which may have predisposed to loosening. Screw breakage may also occur and it is advisable to use a screw slightly longer than required such that removal of both fragments can be achieved should this be required.

Postoperatively a Robert Jones dressing should be applied for two weeks with restricted exercise enforced for a further six to eight weeks. Prognosis is good in unilateral cases but is more guarded in those with bilateral involvement.

### References

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