as the animal grows, as occurred in case 5. The migration does not seem to impair the function of the stifles (Goldsmith and Johnson 1991). On the other hand, premature or asymmetric closure of the proximal tibial physis could have serious consequences, such as the development of an angular limb deformity or a deformity of the articular surface (Manley and others 1990).

The cases described by Schmokel and others (1995) were treated by a variety of methods of fixation, most of them with implants positioned across the proximal tibial physis, and sometimes with the addition of Kirschner wires placed across the tuberosity's physis as part of the tension band fixation. The short follow-up period made it impossible to determine the results of implants spanning one or both of the physes.

Two Kirschner wires and a tension band were used as the sole means of fixation in five of the present cases. This method of repair is simple and avoids implants crossing the proximal tibial physis. The tension band maintained the fragments in alignment and generated compression across the physis of the tuberosity. The loads incurred by weight bearing and muscle contraction were expected to provide dynamic compression across the proximal tibial physis. The fibula was intact in all but one of the dogs, whereas it was usually fractured in the cases described by Schmokel and others (1995), and the intact fibula provided adequate stability against rotational forces. Crossed Kirschner wires were used in case 6 because the fibula was fractured.

The implants were removed as soon as signs of healing had been observed on radiographs, to minimise the risk of premature closure of the growth plate. The proximal tibial physis was open in all the cases which were radiographed when the implants were removed. However, the physis of the tibial tuberosity was closed in three cases. In one case radiographed 14 months after surgery, the tibial tuberosity was observed to have migrated distally, without causing lameness or any abnormality of gait.

It has been suggested that if the avulsion of the tibial tuberosity has a displacement of less than 3 mm, it can be treated conservatively (Withrow and others 1976). However, it is recommended that all avulsions of the tuberosity combined with a proximal tibial phseal separation should be reduced to prevent any change in the tibial plateau inclination angle. In the present cases the preoperative plateau inclination angle was always less than the normal contralateral angle. A reduced plateau inclination angle may have consequences for the stability of the cranial cruciate ligament. A deformity of the proximal tibia, resulting in a caudally sloping tibial plateau, has been found to predispose dogs to rupture of their cranial cruciate ligament (Read and Robins 1982). In the present cases, the postoperative plateau inclination angles were greater than the preoperative angles and only slightly less than the angle of the normal limb, eliminating the caudal slope.

Medial patellar luxation is also a potential complication of an avulsion of the tibial tuberosity combined with a separation of the proximal tibial physis. None of the present cases had patellar luxation, but it occurred in a dog treated with a tension band alone by Schmokel and others (1995). The luxation was attributed to malalignment of the tibial tuberosity. Accurate reduction of the fracture is required.

Small terrier breeds between four and seven months of age appear to be predisposed to a combination of avulsion of the tibial tuberosity apophysis and Salter-Harris type II physeal separation. Providing the fibula is intact, and the tuberosity and epiphysis remain as one unit, this injury can be successfully managed with a tension band repair as the sole means of fixation. The tuberosity may migrate distally, but as the implants are not positioned across the proximal tibial physis, the risk of more serious complications is minimised.

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References


Notices and divisional events

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Correction

Epidemiology of equine grass sickness: a literature review (1909-1999) by H. E. McCarthy, C. J. Proudman, N. F. French (VR, September 8, pp 293-300). The authors regret omission of the acknowledgements. They thank The Home of Rest for Horses for funding for H. M.