An overview of ongoing small-animal research

In association with

Dr Ronan Mullins, assistant professor of small animal surgery, University College Dublin, gives an overview of some of the interesting ongoing research that is taking place in the college's Small Animal Surgery Department

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MEDIUM-TO-LONG-TERM OUTCOMES OF DOGS THAT DEVELOP POST ATTENUATION NEUROLOGIC SIGNS FOLLOWING SURGICAL CORRECTION OF CONGENITAL PORTOSYSTEMIC SHUNTS

Development of post-attenuation neurologic signs (PANS) is a well-recognised idiopathic complication after surgical correction of congenital portosystemic shunts (cPSS) in dogs.[1-7] It is characterised by manifestation of postoperative neurologic signs unrelated to hyperammonaemia, hypoglycaemia, or electrolyte disturbances, typically within the first seven days postoperatively.[1-7] A variety of terms have been used to describe this complication in the literature during the past three decades, including postligation seizure syndrome, postligation neurologic syndrome, and postligation neurologic dysfunction. PANS encompasses a broad spectrum of postoperative neurologic dysfunction, ranging from status epilepticus to focal seizures (jaw clenching, tremors, and hypersalivation) to more subtle neurologic signs such as dullness and ataxia. The incidence of PANS was reported as high as 11.1% in a recent large retrospective study, with a short-term survival rate of 82.1%.[3] The incidence of post-attenuation seizures (PAS) specifically has been demonstrated to be as high as up to 8% in a recent large multi-institutional study led by Dr Mullins.[1] In a second study led by Dr Mullins,[2] the short-term survival rate (defined as survival to 30 days postoperatively) was found to be as low as 30%; however, there is a lack of information available in the veterinary literature describing the medium-to-long-term survival and neurologic outcomes of affected dogs that reach short-term survival. Objectives of this study led by Dr Mullins are to report medium-to-long-term survival and quality-of-life (QoL) of dogs that develop PANS within seven days following shunt correction and to investigate whether affected dogs experience recurrence or resolution of neurologic deficits/seizures that remained present/had resolved at hospital discharge or develop additional neurologic signs in the medium-to-long-term. This is a multi-institutional study involving eight referral hospitals. Long-term outcome will be assessed by an owner completed health-related quality-of-life questionnaire.

References available on request.

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COMPARISON OF COMPLICATIONS AND OUTCOMES OF CATS WITH HIP LUXATION TREATED WITH TOGGLE ROD TECHNIQUE USING EITHER ULTRAHIGH-MOLECULAR-WEIGHT-POLYETHYLENE OR NYLON: A MULTI-INSTITUTIONAL RETROSPECTIVE STUDY

Coxofemoral luxation is frequently encountered in feline orthopaedic practice and is the commonest luxation in this species. A variety of surgical techniques have been described, with re-luxation rates ranging from 10-33%.[1-4] Few studies have reported the use of toggle rod stabilisation for feline coxofemoral luxation.[2,5,6] Very-good-to-excellent long-term outcomes were reported for 11 of 14 cats and a re-luxation rate of 14% in a study using polydioxanone.[2] Excellent short-term outcomes were described for four cats using ultrahigh molecular weight polyethylene (UHMWPE).[5] There are no large studies reporting use of UHMWPE or nylon for toggle rod stabilisation of hip luxation in cats, or studies that compare complications and outcomes of cats managed with UHMWPE or nylon.

The objectives of the study led by Dr Mullins are to describe the rate and type of intraoperative and postoperative complications and

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PROXIMITY OF THE CRANIAL TIBIAL ARTERY TO THE TIBIAL BONE AT DIFFERENT ANGLES OF STIFLE EXTENSION IN THE DOG: AN EX VIVO COMPUTED TOMOGRAPHIC ANGIOGRAPHIC STUDY

Cranial cruciate ligament disease (CCLD) is the most common cause of pelvic limb lameness in the dog. Tibial plateau levelling osteotomy (TPLO) is one of the most commonly performed procedures to treat CCLD by neutralising cranial tibial thrust and providing dynamic stability to the stifle joint at a standing angle. Excessive haemorrhage during the TPLO procedure has been described as an infrequent but potentially severe intraoperative complication, with a reported incidence of up to 1.6%. Damage to the proximal tibial musculature, cranial tibial artery or its five-way vascular network, or the cranial tibial vein during muscle elevation or performance of the osteotomy has been implicated as the cause of this excessive haemorrhage.[1-6] In one study, the authors recommended performing the osteotomy with the stifle in flexion to allow the gastrocnemius muscle to relax and the cranial tibial artery to move caudally, potentially decreasing the risk of injury to the vessel during performance of the osteotomy. However, there have been no studies investigating the proximity of the cranial tibial artery to the tibial bone at different angles of stifle extension in dogs with intact or deficient cranial cruciate ligament. Therefore, the objectives of this study led by Dr Mullins are to: determine the shortest distance between the cranial tibial artery and the tibial bone at different angles of stifle extension in canine cadaveric stifles with an intact CCL and a completely transected CCL; and to investigate whether complete surgical transection of the CCL would result in a significant change in the distance between the cranial tibial artery and the tibial bone at any angle of stifle extension.

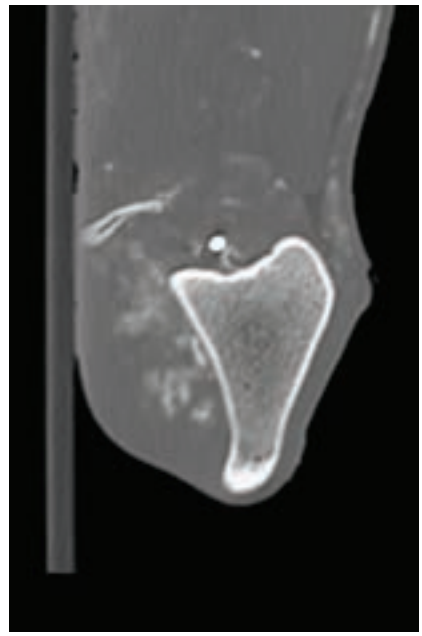

Figure 1: Transverse computed tomographic image demonstrating the relationship between the tibial bone and cranial tibial artery (small white circle).

References available on request.

Figure 1a & 1b: Ventrodorsal and lateral radiographs of the pelvis of a cat with left craniodorsal hip luxation.

outcomes of toggle rod technique in cats, to compare the rate of complications and outcomes of cats treated with UHMWPE or nylon, and to identify risk factors for development of complications and non-excellent outcome. This will be a multi-institutional study involving ten referral centers. Outcome will be assessed based on the results of a designated telephone owner questionnaire.

References available on request.