THE UNIVERSITY of EDINBURGH
The Royal (Dick) School of Veterinary Studies

Equine Hospital

RCVS ACCREDITED PRACTICE EQUINE HOSPITAL

autumn newsletter

What's in this edition of the newsletter:

Welcome to the Dick Vet Equine autumn newsletter, it has been an exciting year for us so far with some new faces, new facilities and record numbers of horses.

At the beginning of last year we made the move into our new diagnostic and surgical facility. Equipped with imaging areas for ultrasound, radiography and CT, and a state of the art surgical suit with orthopaedic, soft tissue and standing surgery operating rooms, a prep area and three induction and recovery stalls with capability for rope assisted recovery and an overhead viewing gallery, the set up is among the most advanced in Europe. Adjacent to the new facility is a re-designed and updated intensive care unit. In May, we were delighted to welcome HRH Princess Anne, Chancellor of the University of Edinburgh, and many other clients, and friends of the Dick Vet Equine Hospital, to the official opening. Our guests enjoyed a behind the scenes tour and could watch an arthroscopic procedure being performed from the overhead viewing room.

Since then we have had a busy time, with record numbers of cases passing through our doors. Perhaps due to the hot weather and hard ground last summer, we have had more horses with fractures presented, and this has given us a great opportunity to test the new facilities to their limits. In the coming months we are excited to report that the first robotic radiography system in an equine hospital in the UK will become operational here at the Dick Vet and next year we hope to begin offering high filed MRI, including the stifle joint, in the Large Animal Imaging and Research Facility Building.

We welcome referrals of any and all types from across Scotland and beyond and we are delighted to provide advice to veterinary surgeons by telephone and e mail 24 hours a day 365 days per year.

Contact

The Dick Vet Equine Hospital

The Royal (Dick) School of Veterinary Studies

The University of Edinburgh

Easter Bush Campus

Midlothian

EH25 9RG

Scotland

tel:	0131 650 6253
web:	www.DickVetEquine.com
email:	EQH@ed.ac.uk
facebook:	facebook.com/DickVetEquine
twitter:	Twitter.com/DickVetEquine

A little help from our friends

One of the features of success in the treatment of horses is team work, however, there are a number of professionals that equine vets take for granted, these include physiotherapists and farriers.

With this in mind, and in order to continue to improve treatment outcomes, we have made a number of associations here at Dick Vet Equine.

Farriery Clinic

We are lucky to continue to have a weekly visit from Alasdair Duff AWCF providing on site support for our orthopaedic team. Alasdair has been part of Dick Vet Equine for many years and will be known to many of our clients.

Alasdair Duff

In addition we are delighted to announce that well known farrier Jim Ferrie FWCF will provide regular farriery clinics here at Dick Vet Equine, working in close association with the orthopaedic veterinary team.

Jim is an award-winning farrier, and along with his brother Allan, is a member of the International Horseshoeing Hall of Fame. He has lectured nationally and internationally and holds a Fellowship from the Worshipful company of farriers and is a judge and examiner for farriers worldwide. Jim provides a consultancy service to vets and farriers and shoes patients here at Dick Vet Equine on a regular basis.

Jim Ferrie

Physiotherapy and Rehabilitation

October saw the launch of the Dick Vet Equine Sports and Rehabilitation clinic, set up by Dr Padraig Kelly and Dr Jill Murdoch, but with help from the whole team, the clinic will provide rehabilitation services for horses returning from injury. The clinic will provide physical therapy, acupuncture and regenerative therapy amongst other techniques for horses following treatment in the hospital or practice.

We are pleased to announce that Maeve Sheridon ACPAT chartered physiotherapist will work closely with our team and provide regular clinics as part of the Sports and rehabilitation group. Maeve is a highly specialised and experienced physiotherapist with a BSc honours degree in Physiotherapy from Robert Gordon University in Aberdeen and a post graduate diploma in Veterinary Physiotherapy from the Royal Veterinary College in London. Maeve runs Animal Physio Plus and treats horses and riders throughout central Scotland.

If you are interested in accessing any of these services, please do not hesitate to get in contact with us here at Dick Vet Equine

Maeve Sheridan

Transvenous Electroconversion: Fixing the fibrillators!

For the past 4 years, Dr's John Keen and Prof Karen Blissitt have been providing a transvenous electroconversion service for horses with atrial fibrillation. Along with Lesley Young, a cardiologist from Newmarket (and honorary Professor at The Dick Vet) they treat cases at Edinburgh as well as throughout the UK and beyond; travelling to equine hospitals in Gloucestershire, Suffolk, Kent, Cheshire and Yorkshire.

Atrial fibrillation is a significant cause of impaired performance in horses, especially those doing competitive sports.

TVEC electrodes (covered with a special sheath to keep sterile) and inserted through special introducer catheters in the right jugular vein.

Unlike the situation in humans and dogs, most horses have no obvious cardiac disease and so are good candidates for conversion to normal sinus rhythm. The traditional method of converting atrial fibrillation using quinidine sulphate (QS) by stomach tube is fraught with potential complications, including on rare occasions sudden unexpected death. The newer electroconversion technique is proving more successful (98% success rate versus 85% with QS) as well as safer for the horse. The team have now successfully treated a total of 46 cases using this technique.

Final adjustments to electrode placement in theatre prior to shock delivery

Introducer catheters are placed in the jugular vein through which special electrodes are passed into the right side of the heart and pulmonary artery using careful ultrasound guidance; this takes approximately 70 minutes (Figure 1). The horses are then anaesthetised and, following some final adjustments to electrode placement, energy is delivered to the heart using a human defibrillator unit (Figure 2).

The average number of shocks delivered is 2, with a mean 350 J of energy. Unfortunately recurrence is always a possibility with AF, and the recurrence rate is no different with either QS or electroconversion. The good news however is that those that have been converted and stay in sinus rhythm can successfully return to their normal level of work and compete successfully again, something often impossible without conversion.

Please do not hesitate to contact us if you have a case that you think could benefit from this technique, no matter where you are in Europe.

Can you come to the Rescue?

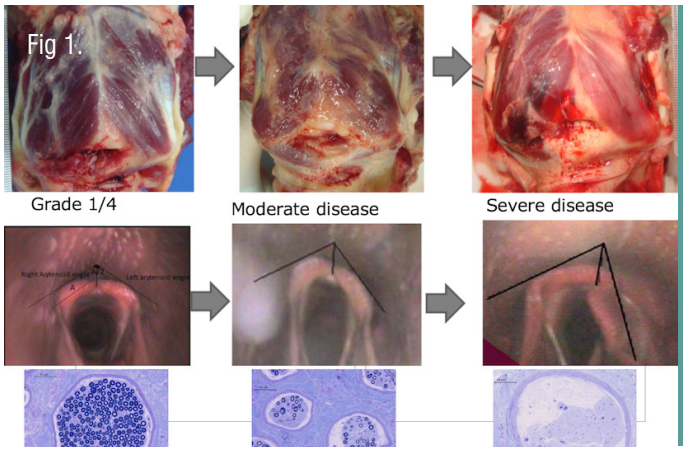
Can you come to the Rescue?

Incidents involving animals –A Scottish approach to animal entrapment

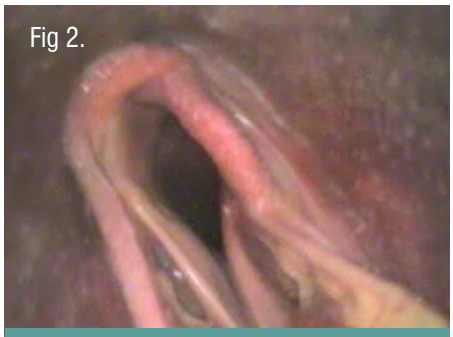
Veterinary surgeons, the emergency services and members of the public are sometimes called upon to get involved in the rescue of horses and other large animals from entrapment situations and road traffic collisions. In the wider UK, the British Animal Rescue Training Association (BARTA) have worked hard to develop protocols for dealing with these incidents and to provide training to those working in these types of situations. This has helped reduce injures to personnel and improved the welfare of the animals involved in this unfortunate but all too common incidents. Here in Scotland there are some unique challenges based on geographical factors and the relatively small number of veterinary and fire and rescue assets covering a very large area. With the recent formation of the Scottish Fire and Rescue Service, and with their help, both the Dick Vet and Glasgow vet schools have been working to train all veterinary undergraduates in rescue techniques, incident management and to work with the emergency services. Here at the R(D)SVS, we have formed a close association with the Scottish Fire and Rescue Service and developing protocols for training crews and vets from across Scotland in the most up to date techniques.

Staff from the Dick Vet Equine Hospital and Practice recently took part in a BARTA run refresher course in Edinburgh and we have invested in some further rescue equipment. In the next few months, in collaboration with The Scottish Fire and Rescue Service we hope to begin offering training to interested veterinary surgeons in order to develop a joined-up network covering the whole of Scotland such that trained fire and rescue crews can be teamed up with trained vets that can be quickly and easily contacted through the Scottish Government register of assets that are available to the emergency services. It is hoped that this unique initiative bringing together the veterinary schools, veterinary profession and the emergency services in Scotland will lead to improved animal welfare and reduce the risk of injury to both vets and emergency teams.
Keep an eye out for announcements regarding this exciting, fun and practical training coming soon.

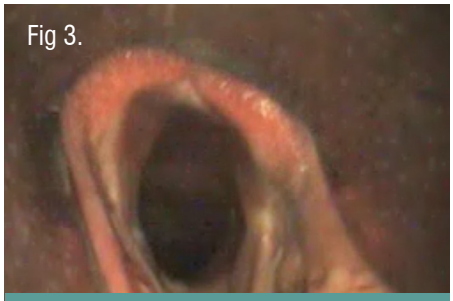
Re-innervating the larynx – The end of the road for the tieback?



These figures from left to right show the progression in the amount of muscle and nerve and the effect on the larynx itself of this disease. Laryngeal paralysis leads to loss of the muscle on the top of the larynx (top row of pictures), which leads to one side of the larynx collapsing into the airway (middle row). The disease occurs as the nerve gradually looses fibres (bottom row of pictures).



An overground endoscopy picture before nerve grafting showing collapse of one side of the larynx



An overground endoscopy picture 6 months after nerve grafting. The left side of the larynx is now held well out of the airway.

Since the Roman physician and scientist Galen of Pergamon, first described the course of the recurrent laryngeal nerve, we have known that dysfunction of this nerve leads to reduced airflow to the lungs during exercise and poor performance in horses. In ancient Greece, horses that were heard to roar during exercise were considered to be poor choices as cavalry horses and to this day the presence of an inspiratory noise during exercise is considered to be an unsoundness.

Dysfunction of the recurrent nerve leads to progressive paralysis of the cricoarytenoid dorsalis muscle (CAD muscle), which is manifested as the horse being progressively unable to abduct the left side of the larynx. For many years we believed that the course of the nerve around the great vessels of the heart, and its long length, which meant that it was subjected to continuous stretching as the horse moved, was the cause of this disease, however, we now know that this is a genetic disease that affects all horses to some degree. This is an important finding as it means that it is very unlikely that selective breeding can be used to "breed out" this problem and that for now, this disease is here to stay.

Studies have shown that the disease process is very complicated with failure and regeneration of the nerve going on simultaneously in all horses. Although all horses are affected, a large proportion of the nerve has to be gone before the horse is actually affected by clinical signs of the disease.

To date, a number of different treatment options have been used, some more effective than others, but none able to restore the function of the larynx to normal. Combinations of the ventriculectomy (hobday) procedure with removal of one or both vocal cords (cordectomy) with a prosthetic laryngoplasty or tieback surgery are still the most common options. Although these treatments can be highly effective, complications incuding chronic coughing, failure to restore function and infection do occur.

For some years, researchers in the UK, USA and France have been working on the possibility of providing a new nerve supply to the paralysed part of the larynx. The idea was simple, take one or two branches of the first cervical nerve or the spinal accessory nerve, where they enter the strap muscles, and implant these nerve fibers into the paralysed CAD muscle. Although the surgery is complicated, and requires some specialist equipment to identify the nerve, it turned out to be remarkably effective with horses showing signs of recovery from laryngeal paralysis within 3 months, and many becoming fully fit for work within 6 to 9 months.

Recently the group working on this technique discovered that the cells in the partially paralysed CAD muscle, are actually actively looking for a new nerve supply and so horses with higher grades of paralysis are actually more likely recover, and perhaps to recover faster after surgery.

So which horses are candidates for this new surgery and what are the drawbacks?

The laryngeal re-innervation surgery is done through a very similar approach to the traditional tie-back. The procedure itself can be done with the horse under general anaesthesia and in some cases with the horse standing and sedated and takes about an hour. The great advantage of this procedure is that it cannot make the horse worse and if the nerve graft fails, the horse can still be subjected to a tieback without any increased risk. Following the nerve graft a laser ventriculocordectomy is performed.

Typically after surgery the horse is allowed two weeks box rest, before returning to walking exercise for a further 2-4 weeks and then re-entering training. Interestingly training increases the chance of a successful graft and so there is no need and no benefit to a long period of rest.

The one drawback of this procedure is the time taken for the nerve to successfully implant which can be 3 to 9 months and for that reason the surgery is most suitable for horses early in their careers. Horses identified as yearlings or 2 year olds with evidence of laryngeal paralysis are undoubtedly the best candidates. However, the procedure is equally effective in older horses, if owners are trainers are willing to wait, and perhaps older horses that have been heard to make a noise and have endoscopic signs of laryngeal paralysis that would traditionally have been treated with a hobday and vocal cordectomy should now have a nerve graft procedure performed at the same time.

Conclusion

Although early days in the use of this new procedure, a significant number of performance and racehorses have now been treated in this way with some very promising results and some recent winners. The procedure is entirely legal and allowed under the rules of racing and by the FEI. It is likely that the procedure will be further developed in the years ahead, however, there is no doubt that this is the future for treatment of laryngeal paralysis and hopefully will reduce the number of promising horses lost from the racing industry due to the potentially devastating disease. If you have a case that you think might be a candidate for nerve grafting, do not hesitate to get in contact with us as we are currently one of the few clinics in the UK offering the procedure.

Two new research studies at the Dick Vet Equine Hospital show a 97% accuracy of computed tomography (CT) imaging in the detection of equine teeth apical infections

Cheek teeth apical (root) infections in horses are a major problem due to the usual extension of these infections to the supporting bones and/or adjacent paranasal sinuses and their non-response to antibiotic treatment. Although radiography still remains the most commonly used imaging technique for the diagnosis of such cases, conventional radiography has a reported sensitivity of only 50%-69% and digital radiography of between 76% - 80%, especially in early cases. These poor results are due to the inevitable superimposition of numerous head structures and also due to the subtle pathological changes usually present in affected teeth and alveoli, particularly in the early stages of infection.

Clinically imaging of apical infections by CT has been found to be more accurate than radiography. However no studies have ever compared CT with radiographic and gross and histological findings in the extracted tooth to scientifically verify its accuracy, until two studies (one on clinical cases and one on cadavers) from the Dick Vet School published in January 2018:

Liuti, T., Smith, S. and Dixon, P. M (2017) Radiographic, computed tomographic, gross pathological and histological findings with suspected apical infection in 32 equine maxillary cheek teeth (2012-2015) Equine Veterinary Journal .

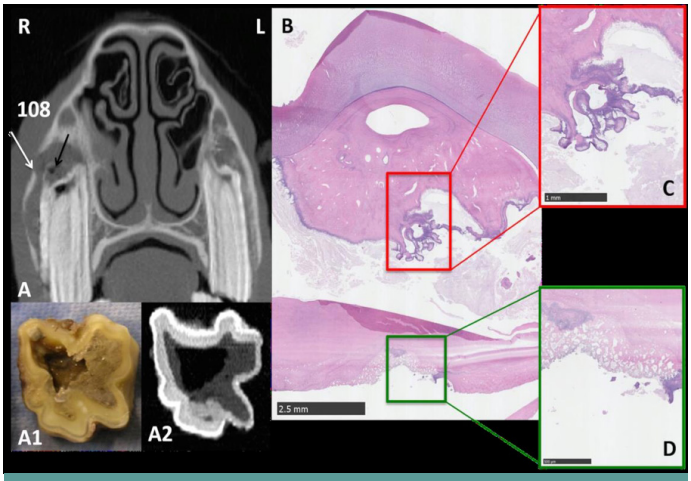
This study of referred clinical cases with maxillary cheek teeth infection, found pulpar and apical changes highly indicative of maxillary cheek teeth apical infection were present in all 32 teeth on CT, but in just 17/32 teeth (53%) radiographically. Gross pulpar/apical abnormalities and histological pulpar/periapical changes were present in 31/32 (97%) extracted teeth.

Liuti, T. Smith, S. and Dixon, P.M. (2018) A comparison of computed tomographic, radiographic, gross and histological dental and alveolar findings in 30 abnormal cheek teeth from cadavers Frontiers in Veterinary Science (online Journal)

This study on equine cadaver heads showed a 96.4% correlation between a CT diagnosis and confirmative pathological findings in 28 apically infected teeth, but only a 50% correlation with radiography, again confirming the accuracy of CT imaging in diagnosing early equine pulpar/apical infections. There was also excellent correlation between CT and histological alveolar bone findings.

These two studies confirm the accuracy of CT in diagnosing equine maxillary cheek teeth apical infections at an early stage. The Dick Vet Equine Hospital now has two standing CTs: a conventional 64 slice CT we share with the Small Animal Hospital and a dedicated Pegaso CT, with a larger bore that can image up to the fifth cervical vertebra in the standing horse.

The Pegaso machine is now installed in our new equine hospital where it is capable of imaging almost the complete body of horses under general anaesthesia.



Composite Image showing transverse head CT image, gross and CT images of cross-section of affected tooth and histology showing apical infection.

Head imaging with Pegaso

Horse under general anaesthesia undergoing computed tomographic imaging

New Direction for the Hospital

Clockwise from top left: Surgery at the Equine Surgical and Critical Care Unit; Dr John Keen with a patient; Patrick Pollock (insert); the Unit's exterior.

In August Dr John Keen stood down after 8 very successful years as Director of the Equine Hospital and Practice. During this time the hospital has expanded in both case numbers, and service and John masterminded the development of the new diagnostic, surgical and intensive care facilities. John will continue here as Reader in Equine Medicine and intends to spend more time on clinical work (see cardiology article) and research. We are enormously grateful to John for the time and dedication that he put into developing Dick Vet Equine into the place that it is today and we're delighted that he remains a key part of the medicine team.

Patrick Pollock takes over as Director of the Hospital and Practice and we wish him well.

Welcome to Padraig Kelly

In April last year we welcomed Padraig Kelly to the equine surgical group. A graduate of University College Dublin, Padraig spent time working in the UK, New Zealand and the home of the racehorse, Coolmore in County Tipperary before undertaking a residency and becoming a diplomate of the European college of veterinary surgeons and specialist in equine surgery. Joining us from the University of Liverpool, Padraig brings a wealth of experience in both orthopaedic and soft tissue surgery.

Congratulations to Richard Reardon

Richard Reardon of the Dick Vet Equine group successfully passed the qualifying examination for the European College of Veterinary Dentistry in October further strengthening our already world leading equine dentistry service. Well done Richard.

EVDC
EUROPEAN VETERINARY DENTAL COLLEGE

Dental cases can be booked as usual through the Dick Vet Equine Hospital Reception.