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REFLECTIONS ON THE MOST PERFORMED EQUINE SURGERY

Elective surgery is a crucial component of equine veterinary care. Castration is by far the most common procedure performed and probably the oldest surgical procedure in veterinary practice. In spite of this, castration has the highest rate of complications of any elective surgical procedure performed routinely in the horse and significant controversy still exists regarding the optimal surgical technique to be used. The vast array of equine castration techniques available indicates that although often viewed by clients and practitioners alike as a simple, routine procedure, equine castration is far from that. It can be confusing for clients to understand the different options available and it is difficult to accept when complications arise. In the United States of America, castration complications are among the most common reasons for malpractice claims against veterinarians. Within each country we often see a selection of equine castration techniques advocated by representative organisations, often resulting from a pre-selection of techniques taught in the veterinary curriculum of institutions of veterinary education within that country. With ongoing internationalisation and easy and free access to international literature prejudice regarding certain techniques becomes confusing, and controversy and discussion often is more based on fear of the unknown than on scientific fact. Clearly “All roads lead to Rome” as far as equine castrations go. This presentation aims to provide an understanding of the pros and cons of the wide array of techniques available and practiced throughout the world, and will provide the tools to select or combine techniques most suited for your individual patient.

However, even with optimal selection of the technique used we will inevitably encounter complications following equine castration, ranging from minor, such as swelling or oedema, to the catastrophic, such as eventration, with everything in-between e.g. haemorrhage, infections, penile damage, hydrocoele formation and persistent stallion-like behaviour. Complications can be encountered at the time of surgery, immediately post-surgery and in the days or even months following surgery. Again controversy and variety of opinions exists regarding the treatment of complications which will be discussed in this presentation.

With every surgery, careful preparation and attention to detail at each stage of the procedure can help to minimise, if not eliminate, the risk of post-surgical complications. From the pre-surgical assessment to post-surgical management, there are critical points at each step of the procedure where, hopefully, risks can be identified, communicated, and steps taken to reduce the incidence of associated complications of castrations in the individual horse.

In conclusion equine castration remains an interesting and challenging surgical procedure for surgeons at every level despite the perception of being a routine procedure to render the horse more docile and manageable when not used for breeding.

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ABSTRACTS | EUROPEAN VETERINARY CONFERENCE VOORJAARSDAGEN 2014 Amsterdam, Netherlands
Orthopaedic infections in horses are often career and even life threatening, with serious economic and welfare implications. Treatment of septic arthritis, osteomyelitis, and soft-tissue infections associated with trauma or surgery can be challenging for the veterinary practitioner trying to balance effective treatment with cost efficiency.

Regional limb perfusion (RLP) has become a widely used treatment modality as it can provide high concentrations of antibiotics to affected areas while limiting systemic side effects and costs. RLP usually consists of an injection of antibiotic into a limb vein of a standing, sedated horse, while the blood in- and out-flow to the limb is interrupted for approximately 30 minutes by the application of a tourniquet. Due to the interrupted blood flow, the antibiotic is not flushed away and hence can concentrate in the tissues of the limb.

RLP is now commonly used and while it is widely believed that this technique has improved outcomes, this is based on anecdotal evidence and some retrospective studies, rather than on any case-controlled clinical trials.

Human studies and some recent equine studies however have provided us with some evidence to guide how we use RLP. For example, importance is now given to the type of tourniquet used. Wider tourniquets are regarded as preferable to narrower ones. The Esmarch bandage has been shown to be as effective, or even more so, than the more cumbersome pneumatic types.

Antibiotic selection is another consideration. Aminoglycosides are the most common antimicrobials administered because they are concentration-dependent and effective against most of the normal pathogens responsible for orthopedic infections in horses. Concentration-dependent antimicrobials are ideal for RLP because the rate and extent of bacterial kill is related to high maximum concentrations (Cmax) in relation to the minimum inhibitory concentration (MIC). A high peak Cmax:MIC ratio is associated with greater bactericidal effect and a longer postantibiotic effect. It has been shown that concentrations in excess of MIC can remain in the tissues of healthy horses for greater than 36 hours, implying the selection of time-dependent antibiotics is also valid, particularly in the presence of antibiotic susceptibility testing.

References
MULTIMODAL ANALGESIA: WHAT? WHEN? HOW?

What?
Simply, multimodal analgesia is using more than one method of pain management. This could involve using different combinations of drugs from different classes, or using different routes of administration, and could even involve non-drug treatments. Multiple methods can actually reduce the amount of medications necessary to relieve pain, and can minimise undesirable side-effects. Traditionally, equine practitioners have relied heavily on nonsteroidal anti-inflammatories to treat or prevent pain in our patients and with good reason - these drugs are effective, readily available and affordable. However, concerns about potential adverse effects of these drugs have led to a recent drive towards exploring new pain management options.

When?
You may already be using a multimodal approach to analgesia in some patients without recognising it as such. In our castration patients, we usually inject local anaesthetic solution into the testicles or cord, even if the patient is under general anaesthesia. This not only has an anaesthetic sparing effect as it diminishes surgical stimulation, but from an analgesia point of view, it reduces potential “wind-up” of the pain pathways, and has proven to be associated with increased levels of comfort post operatively. A multimodal approach may be even more useful in patients with chronic pain - such as the chronically laminitic horse, or horses with severe, intractable pain, such as the colicking or acutely laminitic animal.

How?
Many different drug classes are currently in use, or being investigated for use in horses. As mentioned, nonsteroidal anti-inflammatories are effective and widely used but supplementing their use by the addition of other drugs may give more effective analgesia and reduce the dose of nonsteroidal needed. Opioids seem to provide effective analgesia in horses, and may be most useful when used as part of a multimodal plan rather than as a stand-alone treatment. The use of drugs such as tramadol and gabapentin has also been reported in horses. Local anaesthetics can also be effective as part of a pain management protocol. Many drugs are also suitable for alternative routes of administration such as continuous rate infusions, transdermal, intrasynovial, or epidural routes, which may more efficiently target the site of pain, and reduce the overall dose of analgesic needed.

References
STANDING UROGENITAL SURGERY FOR THE EQUINE PRACTITIONER

Poor reproductive efficiency in the mare is of major economic significance to the equine industry. Selection of broodmares on the basis of their relatives or performance means that usually little thought is given to the mare's reproductive conformation, or suitability to carry and deliver a foal.

A wide variety of urogenital procedures are now performed in the standing sedated mare. These range from the widely performed Caslick's procedure, right up to more recently described laparoscopic procedures such as uterine suspension, or application of PGE2 gel directly on the oviduct, which require a higher level of expertise and equipment. Conditions such as pneumo- and uro-vagina, perineal lacerations and cervical injuries will be described, and the surgical options for correction of same outlined but, as detailed descriptions of all of these procedures would be beyond the scope of this presentation, the focus will be on reconstructive procedures of the caudal reproductive tract that could comfortably be performed "in the field".

With any surgery of the reproductive tract of the mare, a full clinical and reproductive examination should first be performed to determine if the procedure under consideration is likely to restore the mare to full reproductive efficacy. For example, a mare with a perineal laceration, may have a concurrent cervical laceration, which may be the limiting factor in determining future fertility. If a mare that has chronic pneumo- or uro-vagina has consequent severe endometrial changes, then her future prognosis for fertility may be poor regardless of the surgery undertaken.

There are numerous causes of poor reproductive performance, but these can be roughly categorised as structural abnormalities, or functional aberrations. Three protective "barriers" exist to shield the uterus from infection - the constrictor vulvae muscles, the vestibular sphincter and the cervix. When any or all of these protective seals are lost aspiration of air, particulate, urine and bacteria into the uterus may occur, leading to metritis. The mare's perineum is an essential structure in the reproductive tract as it incorporates both the vulvar and the vestibular seals. Since the work of Caslick in the 1930s, the significance of poor perineal conformation as a cause of poor reproductive function in the mare has been widely documented and accepted. Some mares have inherently poor perineal conformation, whilst in other mares the perineum may be disrupted by trauma, usually during foaling when perineal lacerations may occur. Both first and second degree perineal lacerations may compromise the vulvar seal, whereas a third degree perineal laceration completely disrupts the perineal body. Multiple pregnancies, poor body condition and aging can lead to splanchnoptosis, where the anus sinks cranial in relation to the vulva, leading to a more horizontal orientation of the vulva. Loss of the vulvar and vestibular seals and the subsequent pneumovagina are important causes of reduced reproductive efficiency.

A number of surgical interventions are described for the correction and prevention of pneumovagina, including the Caslick's procedure or Caslick's vulvoplasty, where the labia are sutured together from the level of the dorsal commisure down to 1-2 cm below the ischial floor. A Caslick's vulvoplasty may be inadequate where the perineal conformation is particularly poor, or where the perineal body has been weakened subsequent to a second degree perineal laceration for example. Other procedures described include perineal body resection, and Pouret's procedure. In 1975, John Gadd first described the Gadd's procedure, also known as episiotomy, vestibuloplasty, deep caslick or perineal body reconstruction. This procedure is generally recommended where both vulvar and vestibular barriers are ineffective.

Briefly, the perineal body reconstruction is performed as follows: The mare is sedated with a bolus of detomidine (10 μg/kg) and butorphanol (20 μg/kg) combined, and restrained in stocks. Caudal epidural anaesthesia is administered, usually at the Co1-Co2 joint space following a sterile preparation of the skin at this site, administering a combination of xylazine (0.17 mg/kg) and lidocaine 2% (0.22 mg/kg). The perineum and vulva are surgically prepared, using iodine based scrub solution. The perineal body is first incised along midline to the level of the dorsal commissure of the vulva. The labia are retracted to expose the roof of the vestibule. Incisions are made on either side along the mucocutaneous junction of the labia. The mucosa is undermined cranially from these incisions to the level of the vestibulovaginal junction, and the resulting

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right angled triangular flaps of mucosa resected. The left and right distal edges of the incised mucosa are apposed with an absorbable monofilament O USP suture material in a continuous horizontal mattress suture pattern from cranial to caudal, to create the new roof of the vestibule. The dead space in the submucosa above this suture line is apposed using simple interrupted sutures of the same suture material. Finally a vulvoplasty or Caslick’s procedure is used to appose the skin edges of the perineum and vulva.

References