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MANAGEMENT OF OBSTETRIC INJURIES IN MARES

Obstetric injuries occur relatively frequent given the powerfull second stage labour in the mare. These injuries and complications can be lifethreatening for mare and foal and can interfere with future fertility of the mare. Trauma to the birthcanal can result in complications such as third degree perineal lacerations(TDPL) or rectovaginal fistulae(RVF). Whereby the limbs or head of the foal perforate the tissue between vagina and rectum. Predisposing factors are, primiparity, dystocia, forced extraction of a large foal(Coalburn 1985).

Prevention

Close observation basically without interference is important. Although dystocia is relatively rare (<10%) it is important that the right order of decisions are made. When the foal presents in a normal position and all goes well the second stage labour takes 10-30min. In some cases assisted vaginal delivery (AVD) is indicated. When this is not succesfull controlled vaginal delivery (CVD) can be performed with the mare under general anaesthesia with the hind quarter lifted in order to create space for repositioning of the foal. When this is unsuccessfull to deliver the foal, cesarean section can be undertaken in case of a normal life foal or fetotomy in cases of a dead or abnormal foal. Adequate decision making is crucial to prevent injury or possible fatal complications for mare and foal.

First and second degree perineal laceration(1st,2nd PL): Most perineal lacerations occur at the time of foaling and are associated with malpresented or oversized foals. Unavoidable or sometimes inappropriate manipulation during expulsion phase can lead to different degrees of injury. Powerfull and sometimes violent efforts of the mare can play an important role. These injuries are mostly graded in 1st, 2nd and 3rd degree PL (Embertson 1990).1st PL involves only mucosa of vestibule and skin of the dorsal commisure of the vulva. 2nd PL involve both mucosa and submucosa of the dorsal vulva and some of the musculature of the perineal body(constrictor vulvae muscle) with no damage to the rectal mucosae. Minor 1st degree PL requires no treatment. More extensive 1st PL may require episoplasty or perineal body reconstruction. Surgical correction is often delayed for some weeks untill swelling, edema en infection have resolved.

Third degree perineal laceration(3rd PL): 3rd PL involves tearing of the vestibular ans possibly vaginal wall and disruption of the perineal body, anal sphincter and rectal wall. This leads to a common opening between the rectum and vestibule(cloaca). Resulting in constant presence of feaces in the vestibule and occasional air movement with exercise. Surgical repair is imperative for future breeding and recommended for riding horses. Maiden mares are by far most commonly injured with 3rdPL When 3rdDPL occurs local wound management and systemic support needs to be initiated but surgical correction is not advised in the acute stage and is performed with best results at a later stage following conservative wound management and healing of the traumatised tissue. This is due to the local devitalised tissue, swelling and infection making immediate surgical correction unsuccessfull in most cases.

Many techniques with the horse standing or under general anesthesia have been described and are currenly used for repair of 3rd degree PL. With so many different techniques available it mostly means there is no ideal or golden standard surgery. Most techniques are modifications of the two stage repair bij Aanes in 1974 or modifications of the single stage repair first described by Goetze and quated by Straub and Fowler in 1961. At our clinic we perform a single stage procedure since 2000 which we refer to as the Utrecht method.

Utrecht Method

This technique was first developed by Fontijne. We have used this technique as the sole approach for 3rd degree PL and rectovaginal fistulae(RVF) since 2000. It involves a long 14 day fasting period and a long tedious surgery of 2-3 hours under general anaesthesia. We realise it is a heavy procedure for the mare but the results of success in one attempt have been the motivation to stick to this technique I would like to share.

Fasting protocol

This needs to be strict. Therefore horses are always hospitalised at our clinic for the fasting period and closely monitored. Nu shortcuts are taken. We have tried several fasting, laxating methods together with several specialists but the original fasting protocol seems to be the only relyable way for us so we currently stick tot his method. The fasting method has been published by Hospes and Bleul in 2007. It involves 10

days of preop fasting followed by 4 days of postop fasting and a very strict protocol of gradual return to normal feeding.

Surgical technique

Surgery is performed under general anaesthesia with the horse in dorsal recumbency. Following local prep the horse is draped. Level of the dorsal commissure of the vulva is marked with two small skin incisions. Two stay sutures are placed to expose the surgical field. A tissue flap is then dissected and retracted caudally to create a rectovaginal shelf using modified cushioning in a Y shape. At this stage the anal sphincter is reconstructed supported with a stay suture. Several Y layers are placed over the first layer for further support. As last step vaginal tissue and perineum are closed. Recovery is assisted using head and tail ropes for support. Advantages of this technique are no fecal passage pre and postop, good surgical overview and tissue presentation and one single procedure. Disadvantages are the long fasting period and long somewhat tedious surgical procedure with the horse in dorsal recumbency.

Results Utrecht method (drs Davidse, dr TAE Stout, dr H Jonker 2007): A total of 95 horses were operated between 1987 and 2007. On 60 horses long term follow up was available. For 57 mares reconstruction was successful (95%). In 3 cases a small rectovaginal fistula remained. For 90% of the mares it was the first foal and 50% of the foals survived. Most (71%) of the horses were operated following 6mo or more. A fair number (32/62) of horses was used for breeding of which 84% became pregnant (high compared to literature) and 76% foaled. No recurrence was observed.

Conclusions

Given our own experience over time and the described results it can be concluded that this method is a good method with high pregnancy rates and no recurrence. What needs consideration is that these techniques are largely dictated by experience and therefore sufficient training and guidance are key.

Rectovaginal fistulae (RVF)

RVF concerns a rupture of the tissue between rectum and vestibulae vagina with anal sphincter, perineal body and musc constrictor vulvae intact. This occurs in a

situation that the limbs or head can be manipulated and repositioned in the birth canal during AVD. As with 3rd degree PL surgical correction is postponed until wounds have healed sufficiently. At our clinic we have reconstructed these RVF in the past using a similar technique as 3rd degree PL under general anaesthesia for which the mares go through the same fasting regime. Different techniques and modifications have been described. Some surgeons first convert a 3rd degree PL. We do not advise this approach and advise strongly to preserve the anal sphincter and perineal body. McKinnon et al described a transrectal approach in 1991. Several modifications have been made since. Horses are taken off food for a shorter period and receive laxating diet pre and postop. Surgery is performed on the standing sedated horse combined with epidural anaesthesia. Surgical exposure is improved significantly by use of modified Finocchio anal retractors. The fistula is debrided and closed in 3 layers without conversion to 3rd degree PL. The vestibular portion may be closed from the vagina, middle portion (perineal body) from the rectum and the rectal portion is inverted into the rectum. All layers are closed transversely using PDS 0. This technique has the advantage of shorter fasting and is performed as a standing procedure.

Uterine trauma

Uterine ruptures by the foal mostly occur at the tip of the uterine horn whereas iatrogenic injury most frequently is located at the level of the uterine body. Decision making and adequate technique are essential during AVD, CVD and fetotomy to prevent iatrogenic uterine lacerations. In some cases uterine lacerations can occur spontaneous in cases of uterine torsions which needs to be checked during surgical correction. At our clinic correction of uterine torsions is routinely performed using flank approach on the standing mare. Uterine prolapse is encountered uncommonly. They need to be treated as emergency cases. Prompt adequate support is essential to prevent fatal haemorrhage caused by rupture of the uterine artery. Removal of gross contamination can be performed by lavage but manual reduction must be as quick as possible to prevent fatal damage to the uterus or uterine arteries. Following reduction mares should be monitored and supported closely. Prognosis is good when arteries and uterus are intact.

Cervical injuries

These occur most commonly during foaling. In many cases they are not associated with a recognised dystocia. During examination immediately following foaling only major defects will be diagnosed. Most cervical lacerations are best assessed in diestrus. This evaluation is best performed by manual palpation. Only mares with extensive cervical lesions are candidates for surgery (more than 50% of cervix). In general only in those mares in which defects progress cranially to involve the junction of the external os with the vagina surgical intervention is advised. In addition only mares with obvious subfertility are considered good candidates. Surgery is performed on the standing mare. Sedated and restrained in stocks local anaesthesia is infused dorsally and laterally deep in the vaginal tissue. Modified Finochetto retractors are useful as well as long forceps on both sides of the defect to draw the cervix caudally for repair. The lesion is debrided to the level of cervical musculature and external vaginal mucosa undermined. Closure can be performed in one or more layers. Previously repaired cervixes often are reinjured at breeding or foaling.

Ventral abdominal herniae

Uncommonly ventral herniae occur in prepartum mares. In these mares ventral edema develops. Soft tissues most commonly involved include prepubic tendon of the rectus abdominus muscle. Defects can involve other muscles like the internal and external oblique as well as the transverse muscle. The exact cause is unknown. Factors that increase the weight can predispose for ventral herniation. Ultrasonography is useful to locate and evaluate the size of the defect. Conservative supportive management is the treatment of choice initially. This consists of stall confinement and abdominal support, NSAID and close monitoring of mare and foal. The survival rate of foals is reported as good. Indication for surgical correction in select cases depends on size and location of the defect. Surgery is recommended to be delayed until several months following foaling when the borders of the defect are organised and have sufficient scar tissue to be repaired successfully. Modified mattress sutures or Mayo overlap technique can be used. We often use synthetic mesh to distribute tension and get a stable reconstruction.