Scientific Report

Caesarean in mare by Marcenac incision under local anaesthesia

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Summary

A nulliparous non-descript mare was presented with a complaint of dystocia. The mare was recumbent and physical examination revealed that the animal was in shock. There was no straining and foetal forelimbs were visible outside the vulva. The foetus was dead as there was no pedal reflex. Vaginal examination revealed anterior presentation with dorso-sacral position and rigid lateral head deviation. Pre-operatively, the mare was given 5 ml Tetanus toxoid and 3 g Ceftriaxone as intramuscular injection, and 5 ml Dexamethasone in 15 L of 5% Dextrose Normal Saline (DNS) as intravenous (i/v) infusion. As pelvic space was inadequate and the mal posture was not correctable, manual correction or foetotomy could not be attempted and therefore caesarean section was planned. Condition of the animal warranted the use of local anaesthetic infiltration instead of general anesthesia. Post-operative care included intravenous fluids, anti-inflammatory/analgesics and daily antiseptic dressing. The owner reported uneventful recovery. The authors would like to conclude the case as a rare emergency caesarean in equine where the surgery was done with animal in lateral recumbency employing a Marcenac incision under local anaesthesia.

Key words: Caesarean, Marcenac incision, Local anaesthesia, Mare

Introduction

In mares, less than 1% of parturitions result in dystocia (Threlfall, 2007) and it varies according to breed (Vandeplassche, 1980). Equine dystocia is regarded as a true emergency as it is a threat for the dam and foetus (Freeman *et al*., 1999). Though lateral deviation of head is a common cause of dystocia, its correction in prolonged cases is almost impossible if there is lack of space. In a small pelvis that does not provide sufficient space for foetotomy, caesarean is indicated (Threlfall, 2007). Equine caesarean is an emergency situation where the veterinarian should decide the need for general anaesthesia (Johnston, 1992). The choice is made after considering the safety and comfort of mare and foetus, comfort of the surgeon so that the surgery is completed rapidly, and most specifically, the familiarity of the anaesthetist with the anaesthetic technique (Benson and Thurmon, 1987). Local anaesthesia for caesarean section should be considered a life saving procedure in very high risk patients (Shinde *et al*., 2012). However, in equine patients few reports on C-section solely on local infiltration could be found. Dorsal recumbency during anesthesia in mare is more likely to cause hypotension due to aortocaval compression by the gravid uterus than lateral recumbency. Marcenac incision is a lower abdominal incision that extends from a point posterior to last rib to a point in front of the fold of the flank (Milne and Horney, 1960) and hence can be an incision of choice in mare on lateral recumbency.

Case description

A nulliparous non-descript mare, aged 6 years, was referred to the Division of Surgery of Indian Veterinary Research Institute with a history of anorexia and restlessness following dystocia. The mare was recumbent, dull and depressed when presented in clinic. Mucous membranes were congested and rectal temperature was 36.7°C with cool extremities. Pulse rate was 43/min and pulse was weak with low amplitude. The owner reported that the signs of restlessness were noticed 16 h ago, indicating the beginning of foaling and the chorioallantoic sac ruptured 12 h ago. Foetal forelimbs were visible outside the vulva but straining was absent. Absence of pedal reflex confirmed the death of the foetus. Vaginal examination revealed that there was complete cervical dilatation. The presentation was anterior and position dorso-sacral with rigid lateral head deviation. As pelvic space was inadequate, manual correction or foetotomy could not be attempted and

hence it was decided to perform caesarean. Animal was recumbent and in shock as evident from general demeanour, weak pulse, subnormal temperature, capillary refill time of 4 s and pale mucosa of the gums. Considering the emergency of the situation a decision was made to conduct the surgery immediately and therefore no paraclinical evaluation was done because of lack of time. The surgery was planned under infiltration of local anaesthetic instead of general anaesthesia.

Pre-operatively, the mare was given 5 ml Tetanus toxoid (Serum Institute of India Limited, Pune, India) as a deep intramuscular injection (i/m), Ceftriaxone sodium, 3.0 g i/m (Intacef, Intas Pharmaceuticals Limited, Ahmedabad, India) and 5 ml Dexamethasone (Zydus Animal Health, Ahmedabad, India), in 15 L of 5% DNS as intravenous infusion. The operation was planned with Marcenac incision and accordingly line of incision was decided from the caudo-ventral aspect of the last rib to the fold of flank (left side) in a curvilinear fashion. Animal was restrained in right lateral recumbency and the proposed line of incision was infiltrated with 15 ml of 2% lignocaine solution (Xylocaine-Astra Zeneca Pharma India Limited, Hyderabad, India). The external and internal oblique abdominal muscles were separated in the direction of its fibres. Transverse abdominal muscle and peritoneum was split in the same plane as the skin incision. The uterus was exteriorised. After packing the uterus from sides with sterile drapes, a blunt incision was made on the uterine body and the dead foetus (Fig. 1) was pulled out. Unlike the normal cases, there was no significant bleeding from the incised uterine edges, possibly due to hypotension and hence the usual technique of applying simple continuous sutures on edges of incised uterine wall was bypassed. The placenta had already separated and so could be removed easily. The uterus was lavaged with normal saline, and sutured by absorbable chromic catgut # 2 (Ethicon, Johnson and Johnson, Aurangabad, India) using Cushing and Lembert suture pattern, a double layer inverted pattern. Peritoneum and transverse abdominal muscle were sutured together with double layer of chromic catgut # 2 (Ethicon, Johnson and Johnson, Aurangabad, India) using simple interrupted pattern followed by re-enforcing layer of lock stitch. Internal and external oblique abdominal muscles were sutured together by lock stitch pattern using a double layer of chromic catgut # 2 (Ethicon, Johnson and Johnson, Aurangabad, India). Skin incision was closed by interrupted horizontal mattress pattern with nylon (Fig. 2). Throughout the surgery, an intravenous line using 5% DNS was maintained. Fluid administration continued post-operatively and about 15 L of 5% DNS was administered. Following this, 20 ml of Meloxicam (Melonex, Intas Pharmaceuticals Limited, Ahmedabad, India) was also given i/m. Post-operatively 6 h after the surgery, the mare could walk up to the vehicle for boarding.

The animal was prescribed, 3 g of Ceftriaxone (Intacef, Intas Pharmaceuticals Limited, Ahmedabad, India) twice daily along with 20 ml Gentamycin (Intagenta, Intas Pharmaceuticals Limited, Ahmedabad, India) once daily and Meloxicam (Melonex, Intas Pharmaceuticals Limited, Ahmedabad, India) 20 ml once daily, as i/m injections. Meloxicam was administered for three days while the rest of the treatment continued till the seventh postoperative day. Daily antiseptic dressing of wound, feeding of food and water in small quantities at 4 h intervals was advised. Sutures were removed on 12th post-operative day. After a month, the owner reported an uneventful recovery.

Fig. 1: The dead foetus showing lateral deviation of head

Fig. 2: The skin incision closed by interrupted horizontal mattress suture pattern with nylon

Discussion

The case was complicated by manipulation done by local inexperienced personnel before presenting to the Referral Veterinary Polyclinics of Indian Veterinary Research Institute. The pale mucosa of gums together

with weak pulse, prolonged capillary refill time, cool extremities and subnormal rectal temperature indicated shock which might have resulted from prior rough handling. The animal was not responding to pain stimuli with needle pricks on skin and this may be due to increased pain tolerance or because of CNS depression. General anaesthesia may be life threatening in cases of shock and in epidural administration, there may be greater cranial spread of local anaesthetics together with the risk of difficult recovery due to panic (Donaldson, 2006). It is difficult to accomplish safe anaesthesia in horses in comparison to small animals and human beings (Taylor, 2002). The mortality rate in healthy horses undergoing general anaesthesia ranges between 0.6 to 1.8% and if systemically ill horses are included in the calculation, mortality rates increases to as high as 5% (Young and Taylor, 1993; Mee *et al*., 1998a; Mee *et al*., 1998b; Johnston *et al*., 2002). These reports together with the observation of Cornick-Seahorn (2004), that some critically ill equine patients will be amenable to standing chemical restraint and local anaesthetic techniques led us to the decision to use local anaesthesia in this case. Since the animal was recumbent, we felt no need for the use of chemical restraint. It was decided to do the surgery under local infiltration to provide analgesia. Among the local anaesthetics, lidocaine tends to be the least toxic in horses owing to its short half life (Labelle and Clark-Price, 2013). Here we employed Marcenac/grid-iron incision for C-section versus the most commonly employed ventral midline incision and no difficulty was felt in exteriorising the uterus and no post-operative complications were reported. This was in agreement with the claims of Marcenac (1950) who stated that this site and technique are suitable for abdominal surgery in recumbent horses.

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