



Uterine Rupture and Fetal Maceration in an Indian Mongrel Bitch

Deepti Bodh*, Mudasir Bashir Gugjoo, Malik Abu Rafee, Kiranjeet Singh

Division of Surgery, Indian Veterinary Research Institute, india

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Abstract

Uterine rupture and fetal maceration in an 11 year old mongrel bitch was diagnosed via lateral abdominal radiography and ventral midline laparotomy. The treatment of choice in cases of uterine rupture and fetal maceration is bilateral ovariohysterectomy along with plenty of intravenous fluid therapy and broad spectrum antibiotics. Incidences of uterine rupture and fetal maceration can be prevented by timely recognition of early signs of obstetrical-related complications and use of proper obstetrical techniques.

Keywords: Uterine; Rupture; Fetal; Maceration; Bitch

Introduction

Uterine rupture is one of the rarely diagnosed clinical entities in a pregnant bitch. Preparturient uterine ruptures have been associated with road traffic accidents (Jackson, 2004), while periparturient uterine ruptures are caused due to infection, dead fetus, uterine torsion, inappropriate obstetrical technique and excessive use of oxytocin (Allcock and Penhale, 1952; Oelzner and Munnich, 1997; Noakes *et al.*, 2001).

The condition of maceration of fetus *in utero* is rarely recognized in canine practice. Failure of an aborting fetus to be expelled, perhaps due to uterine inertia or intrauterine infections leads to fetal emphysema and maceration of fetus (Johnston *et al.*, 2001). During such conditions, bacteria enters the uterus through dilated cervix, and by a combination of putrefaction and autolysis of soft tissues gets digested, leaving behind a mass of fetal bones within the uterus (Jones *et al.*, 1997). The present commu-

nication reports a novel presentation of canine uterine rupture and fetal maceration suspected to have resulted from repeated manual intervention during previous parturition in an elderly mongrel bitch.

History and clinical signs

An 11 year old 25 kg mongrel bitch having history of serial dystocia was presented to Referral Veterinary Polyclinics, IVRI for evaluation of lethargy and inappetance of 72 hour duration. Owner reported that bitch was seven days above term and had delivered two dead pups overnight. There was no visible straining except a foul smelling serosanguinous vaginal discharge, which was present since last 2 weeks. Heart and respiratory rates were normal. Mucus membrane was pale and congested with capillary refill time more than 1 second. Complete blood count revealed decreased hemoglobin, increased packed cell volume and a markedly increased total leukocyte and neutrophil count. Abdomen was grossly distended and elicited pain on palpation. Abdominocentesis was performed and cytological examination of fluid collected from ab-

*Corresponding author: Deepti Bodh

E-mail address: dips.vet@gmail.com

domen revealed a septic inflammation characterized by presence of neutrophils and a mixed bacterial population consisting of *E. coli*, *proteus* and *streptococcus*. Lateral abdominal radiograph revealed presence of two fetal skeletons one in the pelvic cavity and the other in the abdominal cavity (Fig. 1). Presence of gas within the abdominal cavity and uterine horns suggested pneumoperitoneum compatible with uterine wall rupture.



Fig. 1. Lateral abdominal radiograph of fetus.

Surgical procedure

After the clinical and radiographic examination, it was decided to perform ventral midline laparotomy as treatment. The bitch was placed in dorsal recumbency, and the ventral abdomen was aseptically

prepared in standard fashion. Laparotomy was performed under atropine-diazepam-ketamine anaesthesia. A moderate quantity of foul smelling yellow to reddish brown fluid with fibrinous shreds and placental parts gushed out after opening the peritoneal cavity. Urinary bladder was fully turgid and evacuated via cystocentesis. The uterus was pale, highly friable and had lost its normal texture. Further exploration revealed a full thickness tear on the lesser curvature of right uterine horn, from which fetal head was seen coming out (Fig. 2). A bilateral ovariohysterectomy was performed after removing both the pups. The pup in the abdomen retrieved after separating severe adhesions with the omentum revealed partial maceration along with evisceration of intestines (Fig. 3). Abdomen was copiously and repeatedly flushed with about 300 ml of warm 0.9% sodium chloride and metrogyl solution and closed in a routine fashion. The cranial one-third of abdominal incision was left open and a drain was placed to allow continual peritoneal drainage.

Post operative care included Injection of Amoxirum- forte (500 mg) IM for 5 days, Revici 2ml for 3 days, Metrogyl (500 ml) IV for 3 days, Ringer's Lactate (500ml) IV for 3days and Melonex 1.5ml, IM for 3 days. Daily dressing was done with Betadine lotion and sutures were removed on 12th post operative day. The bitch recovered



Fig. 2. A full thickness tear in the uterine wall



Fig. 3. Macerated fetus with evisceration of intestine

smoothly from anaesthesia and was kept under observation for five days. There was no complication during the 1st week after surgery but on the 2nd week owner reported a gradual decline in the health of bitch, after which she died.

Discussion

Spontaneous uterine rupture associated with pregnancy is a rare condition that has been reported in few dogs and cats (Lucas *et al.*, 2003; Hayes, 2004). Linde-Forsberg (2010) reported no incidence of uterine rupture in female dogs secondary to death and/or fetal maceration. However, several reports found in literature agree with association of such complications with erroneous oxytocin or prostaglandin application or manually assisted whelping (Jackson, 2004; Hajurka *et al.*, 2005) or trauma during late pregnancy or even during normal whelping (Linde-Forsberg, 2007). Possible reason for uterine rupture in the present case could be the trauma inflicted during assisted manual delivery during subsequent whelpings, which might have lead to incomplete uterine rupture causing weakened areas in the uterine wall. Repeated dystocia and repeated assisted manual delivery of pups each time might have further turned these incomplete rupture to complete rupture with penetration

of the uterine serosa leading to expulsion of fetus into the abdominal cavity.

Extrusion of fetus into the abdominal cavity can occur in extensive uterine rupture, resulting in intestinal compression, severe adhesions, septic peritonitis and hemorrhage (Gonzalez-Dominguez, 2010) as observed in the present case. Sign of systemic illness and a foul and fetid uterine discharge is seen in bitches undergoing maceration (England, 1998; Johnston *et al.*, 2001). Clinical and laboratory tests supported the presence of systemic illness in bitch in the present study. A number of non-specific bacteria, including *Escherichia coli*, *Streptococcus Sp.*, *Proteus Sp.* and *Pseudomonas Sp.* have been identified in many cases of fetal maceration (England, 1998). Similar population of mixed bacteria was observed in fluid that was collected through abdominocentesis in this case. Foetal maceration can result due to prolonged pregnancy caused by progestin injections (Gonzalez-Dominguez and Maldonado-Estrada, 2006), but in this case there was no history of progesterone administration. Thus from history, clinical, and laboratory findings, it is considered that infectious agents were involved in causing abortion further leading to maceration. Therapy of maceration cases involves ovariohysterectomy or hysterotomy and removal of fetuses as performed in this case.

Although “inappropriate obstetrical technique” is suggested as a potential cause of canine uterine rupture, no cases of manual intervention during whelping associated with uterine rupture in dogs have been reported in the veterinary literature. Anecdotal reports suggest manual intervention, particularly with the use of whelping forceps, as a cause of canine uterine rupture. Forceps were used in this case to pull out pups from birth canal during previous whelpings. Although, in most of the dogs due to size constraints manual intervention is not possible but there are every chances that manually assisting the delivery in canine species using poor obstetrical technique predisposes to uterine ruptures. Death during post operative period in the present case might either be due to advanced peritonitis or toxæmia along with inadequate post operative monitoring of the animal once it showed signs of improvement.

Conclusion

Definitive diagnosis of uterine rupture can be made through abdominal radiography and ventral mid-line laparotomy. Bilateral ovariohysterectomy along with plenty of intravenous fluid therapy and broad spectrum antibiotics is the treatment of choice. Last but not the least, timely recognition of early signs of obstetrical-related complications, use of proper obstetrical techniques and proper post operative care of the animal can help in ensuring a successful outcome for bitch and puppies.

References

- Allcock, J., Penhale, B.M., 1952. Rupture of the uterus in the bitch. *Veterinary Record* 64, 357-358.
- England, G., 1998. Pregnancy diagnosis, abnormalities of pregnancy and pregnancy termination. In: England G., Harvey M. (eds.): *Manual of Small Animal Reproduction and Neonatology*. BSAVA Manuals, Hampshire. pp. 118-119.
- Gonzalez-Dominguez, M.S., Maldonado-Estrada, J.G., 2006. Prolonged pregnancy associated to an inappropriate medroxyprogesterone acetate prescription in a bitch: Is rational and ethics the use of exogenous progestin in the bitch? *Revista Colombiana de Ciencias Pecuarias* 19, 442-450.
- Gonzalez-Dominguez, M.S., Hernandez, C.A., Maldonado-Estrada, J.G., 2010. Protective compromise of great omentum in an asymptomatic uterine rupture in a bitch: a case report. *Revista Colombiana de Ciencias Pecuarias* 23, 369-376.
- Hajurka, J., Macak, V., Hura, V., Stavova, L., Hajurka, R., 2005. Spontaneous rupture of uterus in the bitch at parturition with evisceration of puppy intestine- a case report. *Veterinary Medicine* 50(2), 85-88.
- Hayes, G. 2004. Asymptomatic uterine rupture in a bitch. *Veterinary Record* 154, 438-439.
- Jackson, P.G.G., 2004. Postparturient problems in the dog and cat. In: Jackson, P.G.G. (Ed). *Handbook of Veterinary Obstetrics*. 2ed. London: WB Saunders. pp. 233-237.
- Johnston, S.D., Kusritz, M.V.R., Olson, P.N.S., 2001. Canine pregnancy. In: Johnston S.D. (ed.): *Canine and Feline Theriogenology*, W.B. Saunders, Philadelphia. pp. 88
- Jones, T.J., Hunt, R.D., King, N.W., 1997. Genital system. In: *Veterinary Pathology*. Lippincott Williams and Wilkins, Baltimore. pp. 1149-1222.
- Linde-Forsberg, C., 2007. Anomalías en la gestación, el parto y el período puerperal. In: Ettinger SJ, Feldman EC (Eds). *Tratado de medicina interna veterinaria* 6th ed. Elsevier, Madrid. pp. 1655-1667.
- Linde-Forsberg, C., 2010. Abnormalities in pregnancy, parturition, and the periparturient period. In: Ettinger, S.J.; Feldman, E.C. (Eds). *Textbook of Veterinary Internal Medicine*. 7th ed. St Louis, Missouri: Elsevier Saunders. pp.1890.
- Lucas, X., Agut, A., Ramis, G., Belda, E., Soler, M., 2003. Uterine rupture in a cat. *Veterinary Record* 152, 301-302.
- Noakes, D.E., Parkinson, T.J., England, G.C., 2001. Injuries and diseases incidental to parturition. In: Noakes DE, Parkinson TJ, England GC, eds. *Arthur's Veterinary Reproduction and Obstetrics*. 8th ed. Philadelphia: WB Saunders. pp. 319-332.
- Oelzner, J., Munnich, A., 1997. Diagnostic and therapeutic aspects of the pyometra endometritis complex in dogs. *Tierärztliche Praxis Ausgabe Kleintiere Heimtiere* 25, 249-253.