Uterine rupture with connection to an ectopic fetus in a doe

William Whitler, Clare Scully, Charles Estill
Lois Bates Acheson Veterinary Hospital, Carlson College of Veterinary Medicine
Oregon State University, Corvallis, OR

Abstract

Ten weeks after delivery of 2 viable kids, a necrotic, headless fetus was removed surgically from the abdominal mass of a Nigerian Dwarf doe goat. The outcome was good, although prognosis for future fertility was considered poor.

Keywords: Goat, doe, postpartum, ectopic fetus

Case Presentation

A 4-year-old, 25 kg, Nigerian Dwarf doe goat was presented for an enlarged right ventral abdomen. This doe had delivered 2 live kids without assistance ~ 10 weeks prior to presentation. The swelling was first noted ~ 4 weeks previously, during which time the owner observed weight loss. The owner reported that the mass had doubled in size over the last 10 days. The referring veterinarian had performed an ultrasound directed examination of the mass 10 days prior to admission and visualized suspected fetal remains. A fine needle aspirate at that time recovered purulent material with hair. Appetite, water consumption, defecation, and urination were described as normal, and the kids were nursing and growing as expected. On presentation, the doe was bright and alert, her rectal temperature, pulse, respiratory rate, and rumen motility were within normal limits. Ocular mucous membrane color was pink, with a FAMACHA score of 1/5. A soft, slightly fluctuant swelling ~ 20 cm in diameter was present along the lateral ventral right abdominal wall, extending cranially from the mammary gland. A soft irregular (~ 10 x 15 cm) mass was palpable within the swelling.

Ultrasonographic examination of the mass revealed multiple irregular echogenic areas with many highly echogenic foci, each ~ 0.5 - 1 cm in diameter. Plain radiography and computed tomography scan procedures were suggested, but declined by the owner for economic reasons.

Treatment

Anesthesia was induced IV with diazepam, (0.1 mg/kg; Hospira, Lake Forest, IL), butorphanol, (0.022 mg/kg; Torbugesic®, Zoetis, Kalamazoo, MI) and ketamine (2 mg/kg; Ketaset®, Zoetis, Kalamazoo, MI) and maintained with isoflurane (Fluriso® VetOne, MWI, Boise, ID) in oxygen via an oral endotracheal tube.

The patient was placed in dorsal recumbency and an area from the xiphoid to the mammary glands was clipped and scrubbed with povidone iodine surgical scrub, then rinsed with isopropyl alcohol. After sterile draping, a 15 cm elliptical incision was made into the mass, oriented in a cranio-caudal direction. Approximately 1 liter of purulent material was expressed and a decomposing headless fetus removed (Figure 1). A sample of the fluid was collected in an aseptic fashion and submitted for aerobic culture and sensitivity. The surgical site was copiously lavaged. The layer of tissue incised over the mass was $\leq$ 1 cm thick; it was not clear as to whether the wall of the mass was only cutaneous tissue or a combination of skin and tightly adhered uterine wall. There were 2 tracts along the abdominal wall side of the cavity (Figure 2). A 2 cm sample of the incised wall of the mass was submitted for histopathology. Two half-inch Penrose drains were placed into the surgical site, 1 exiting axially and the other abaxially to the incision at the most dependent location. Subcuticular tissues were apposed with 2-0 polydioxanone suture (PDS®, Ethicon US, LLC Cincinnati, OH) in a continuous pattern and skin closed with 1-0 Polyamide (Braunamid, Jorgensen Labs, Loveland, CO) in a Ford interlocking pattern. The doe was given IV flunixin (1 mg/kg; Prevail®, MWI) and ceftiofur suspension SC (6.6 mg/kg; Excede®, Zoetis), prior to recovery (which was uneventful).

The following day, right lateral radiographs in a standing position were obtained (Figure 3). The head visible in the radiograph was delivered per vagina. The vagina was lavaged with sterile saline, which

subsequently flowed out around the Penrose drains through the ventral abdominal skin, confirming the suspicion that 1 tract leading out of the pocket extended towards the cervix.

The doe was hospitalized for 6 days after surgery for wound care. Initially meloxicam (1 mg/kg; Unichem Pharmaceuticals, Hasbrouck Heights, NJ) was given orally once daily. However, on day 3 the doe seemed more painful and morphine (0.1 mg/kg; Hospira, Lake Forest, IL) was given IM every 4 hours for 24 hours. Subsequently, a fentanyl patch delivering 25 µg/hour (Apotex Corp, Weston, FL) was applied to the skin of her foreleg after clipping hair. The penrose drains were removed on day 5 and she was discharged from the hospital with instructions to monitor her incision and overall condition.

Outcome

The biopsy of the mass wall suggested dense fibrovascular tissue, with evidence of chronic presumed suppurative inflammation. No specific uterine tissue or body wall musculature was identified. Bacterial culture had heavy growth of *Pasturella sp.,* in addition to a mixture of contaminants.

Two weeks post operatively, the owner reported that the doe was doing well with a good appetite and that the surviving kids were growing normally. An area of the incision had dehisced but was granulating well. Approximately 2 years after the initial events, the owner reported the swelling in the right inguinal area returned and the referring veterinarian felt it was an enlargement of the original surgical site based on palpation. No ultrasonographic evaluation was done and the patient remained bright, alert with a good appetite and apparently normal urine and fecal production. Approximately 5 months later, the doe was found dead in the barn. No necropsy was performed and cause of death was unknown.

Discussion

While ectopic pregnancies and fetus have been reported,[1-5] this is not a case of ectopic pregnancy. In ectopic pregnancy the fetus develops outside of the uterus.[1] The present case was regarded as unique and not apparently reported in goats. Two possible etiologies are suggested: 1) rupture of uterine and abdominal walls, leading to a subcutaneous fistula, gravid uterus herniating and vascular compromise; or 2) decomposing fetus that caused necrosis of the uterine wall and replacement with fibrovasular tissue. Although histopathology of the tissue overlying the fetus did not identify uterine tissue, communication with the vagina suggested that vagina and/or uterus communicated with the subcutaneous tissue. Location and size of the head in the pelvic canal indicated that the fetus was at least partially within the uterus until close to or up to parturition.

The head was retained in the vagina cranial to the urethral orifice. The time of decapitation of the fetal triplet remains unknown. Presumably, the normally delivered kids were in 1 uterine horn and this fetus was in the contralateral (right) horn. Prepartum herniation of the uterus has been reported in goats.[6] Although this is a possibility, it was considered unlikely, as the swelling was not noticed until postpartum. It is likely that the rupture occurred intrapartum following delivery of the first 2 kids. While the triplet was retained in the birth canal, straining or some external trauma ruptured the abdominal wall (and possibly the uterus) and the uterine horn and/or body of the fetus exited the abdomen. At some point, the head disarticulated from the body and as the uterine horn and abdominal wall constricted around the neck, the body became necrotic and septic.

Learning points

- Consider the presence of a fetus within a subcutaneous mass.
- Always rule out retained fetuses in a postpartum animal, even if they are acting normally.

Conflict of interest

The authors have no conflicts of interest or sources of funding to disclose.

References

1. Corpa JM: Ectopic pregnancy in animals and humans. Reproduction 2006;131:631-640.
2. Rosset E, Galet G, Buff S: A case report of an ectopic fetus in a cat. J Feline Med Surg 2011;13:610-613.
3. Mitchell KW: Ectopic pregnancy in a ewe. Vet Rec 1989;124:498.
4. Sontas BH, Toydemir FTS, Erdogan O, et al: Inguinal herniation with hydrometra/mucometra in a poodle bitch. Can Vet J 2013;54:840-844.
5. Noakes DE, Parkinson TJ, England GCW: Arthur's Veterinary Reproduction and Obstetrics, 8th edition, Philadelphia: W.B. Saunders; 2001. p. 238-241.
6. Smith MC, Sherman DM: Goat Medicine, Ist edition, Philadelphia: Lea and Febiger; 1994. p. 57.

Figure 1. Headless necrotic caprine fetus removed from an abdominal mass.

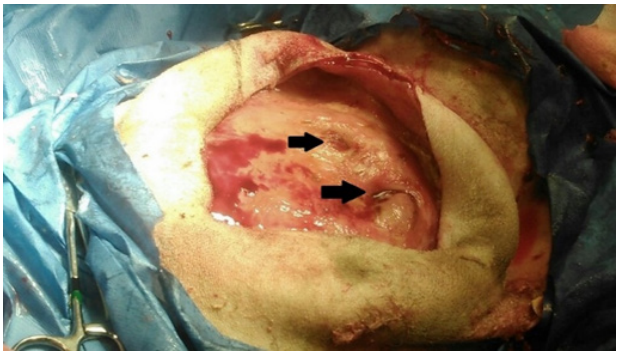

Figure 2. Incised cavity that had the headless caprine fetus. Two tracts (black arrows) appeared to lead into the abdominal cavity.

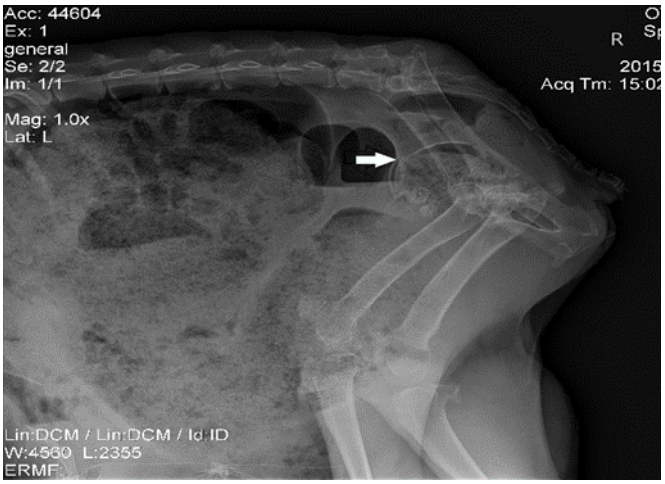

Figure 3. Radiograph of abdomen of doe on day after surgery; note the fetal head (white arrow) in the pelvic vagina.