Uterine Prolapse

Ashton B. Smith

CPC 6/22/18

Advisor: Dr. Grissett

Introduction

Uterine prolapse is when the gravid horn of the uterus is prolapsed and extroverted outside the abdominal cavity exposing the maternal caruncles. Uterine prolapse in caprine is not as common as in other species. Unlike vaginal prolapse, uterine prolapses are not associated with a hereditary component (4, 6). Reoccurrence is unlikely if full inversion of the uterus is obtained. There are many possible etiologies that can predispose and cause uterine prolapse. Prognosis is excellent however, this is determined by time, trauma, and secondary complications (3).

History and Presentation

Iris is a French Alpine yearling doe who presented to MSU-CVM Food Animal Service 4/10/18 for a suspected uterine prolapse after kidding. Iris kidded a single kid but the owner did not witness parturition. The time frame and difficulty of parturition was unclear. On presentation, Iris was bright, alert, and responsive. She was standing, straining, and the gravid horn of her uterus was protruding from her vuvla. Due to the emergent nature of her presentation, a full physical examination was not performed. There was no evidence of trauma or lacerations however, the uterine horn was hyperemic and edematous.

Pathophysiology

The caprine reproduction cycle is described as seasonal, spontaneous ovulations, and polyestrous. Regardless if the breeding season is in the temperate or tropical region, the length of the reproductive season is multifactorial (1). The estrous cycle is on average 21 days and copulation occurs prior to ovulation. After fertilization, the embryo arrives in the uterus 5 days after estrus (1). There are two aspects of the uterus, the myometrium and the endometrium (8). The placentomes arise when maternal caruncles from the endometrium and fetal cotyledons fuse

and allow hamotrophic exchange (8). The gestation length is on average 149 days. In 12-24 hours prior to parturition, a decline in progesterone occurs and estrogen begins to increase initiating oxytocin release (1,2, 6). This inversion of the hormones causes pelvic ligament relaxation. There is also enlargement of the vulva and udder (2). The first stage of labor last between 2-12 hours and myometrial contractions occur followed by cervical relaxation and the explosion of the cervical seal (2,6). Doe's appear restless and uncomfortable. The second stage of labor last up to 3 hours but this time frame depends on the number of kids. Dystocia is a concern if no progression occurs in 30 minutes (2). Doe's can be in recumbency or standing for parturition (2,6). Prior to the explosion of the fetus, the chorioallantois ruptures releasing the amniotic fluid followed by the fetus (2). The final stage of labor is the expulsion of the placenta and uterine involution. Fetal membranes are considered retained if not expelled by 12 hours. The complete involution of the uterus is completed by 28 hours but lochia is discharged up to 3 weeks past parturition (2). Lochia is the autolyzed red blood cell products, fetal fluids, and caruncles cells (7).

Dystocia in the caprine species is not as common as other species and only 3-5% need assistance (2). Doe's bearing a single fetus are associated with dystocia more often (6). Dystocia can arise from fetal abnormalities, fetal over size, uterine inertia, torsion, partial or incomplete cervical dilation (ringwomb), metabolic, and vaginal prolapse (2). Any of these circumstances can predispose the doe for a post-partum uterine prolapse. Uterine prolapse is when the gravid horn of the uterus is prolapsed and extroverted outside the abdominal cavity exposing the maternal caruncles. Uterine prolapses in caprine is rare and more commonly seen in bovine and ovine. Uterine prolapses generally occur up 24 hours post-partum but can happen immediately after parturition (2,3, 6). It is theorized that dystocia, myometrial tone, hypocalcemia, and

retained fetal membranes are predisposing factors that contribute to uterine prolapse (4,6). Estrogen contained feedstuff is also considered for initiating rectal, vaginal, and uterine prolapse because it decreases the calcium uptake (4,5). Fetal membranes should be completely expelled in caprine in 6 hours (6). Generally, the gravid horn of the uterus is prolapsed but there have been case studies in bovine of the non-gravid horn prolapse as well.Thorough examination of the prolapse tissues is needed due to that other anatomical structures can be prolapses as well including, the urethra, bladder, and intestinal content (4).

Complications arising from uterine prolapse can be complicated by bladder retrovulsion, prolapses urethra, and intestinal content (4). Retained fetal membranes, bacterial infections, or trauma from the prolapsed uterus can be a sequel for metritis, endometritis, peritonitis, and pyometra (6).

Diagnostic Approach/ Considerations

Uterine prolapses are considered post parturition emergencies and actual diagnostics are not warranted. This condition can be diagnosed over the phone by the visualization of maternal caruncles, this distinguishes between vaginal prolapse. A history on the phone with the owner is also beneficial for time line considerations, pre- or post-partum. It is important to replace the uterus prior to cervical closure, trauma, uterine artery rupture, or rupture from the internal iliac artery occurs (4). Uterine prolapses, unlike rectal and vaginal prolapse, have decreased likely hood of this reoccurrence with future pregnancies is slim and is not associated with a hereditary component (4, 6).

Treatment and Management

Survival for uterine prolapses in the doe is excellent if replacement is early with no trauma or metabolic complications (4). Treatment is started with restraint followed by analgesia. In caprine, standing throughout the procedure is an option but elevation of the hind quarters can help gravity in replacing the uterine prolapse (4,6). In bovine, sternal recumbency and frog legged hindlimbs is suggested to tilt the pelvis and assist with replacement (4). An epidural makes the retropulsion of the uterus easier, either the lumbosacral or the caudal epidural techniques can be used (3,4). The lumbosacral epidural technique is more time consuming and requires sterile protocols (6). Additionally, a lumbosacral epidural results in recumbency of the patient. Lidocaine is the most commonly used anesthetic, but combination with xylazine can be used (3). Gentle cleaning of the endometrium is indicated with any hypertonic solution as the best choice (4). Osmotic agents can be used to decrease uterine edema. However, these agents can cause further irritation to the endometrium (4). Prior to replacement, the tissues need to be examined for other anatomical organs and evaluation of possible tears or necrotic tissue. In these instances, amputation for salvage is warranted (4). The uterus is replaced from base to apex with gentle retropulsion. Once, the prolapse is replaced, manual palpation with hand can determine if the uterine horn is completely inverted or infusion of fluids into the cavity to ensure full inversion (4). If only partially inverted, straining will continue and the prolapse will reoccur (4). Administration of oxytocin will aid in uterine involution and tetanus toxoid is recommended (3,4). Prognosis is excellent. However, this is determined by time, trauma, and secondary complications (3). Antibiotics should be administered at the discrepancy of the veterinarian and the case. Antibiotics are given to treat a secondary bacterial infections. A form of retention suture on the vulva lips can be applied but this is also at the discrepancy of the veterinarian (6).

Unlike other prolapses, if the uterus is completely inverted into normal anatomical position, prolapse is unlikely to reoccur. Uterine artery rupture, or rupture from the internal iliac artery can occur which would lead to acute death (4). It was determined that the amount of blood flow volume to the uterus decreases by 80% days after parturition (7). In severe cases, amputation of uterine tissue is necessary.

In complicated uterine prolapses, lacerations, or necrosis, further techniques are needed. If there is a laceration, tension apposition suture patterns can be used (4). In cases of necrosis, amputation, or even humane euthanasia should be considered

Case Outcome

Iris was administered a caudal epidural with 2mls lidocaine (0.4 mls/kg) to provide local anesthesia and help decrease tenesmus. She remained standing throughout the entire process. The uterus was clean using water and mild soap. Examination of the uterus was unremarkable with no signs or lacerations, retained fetal membranes, or necrosis. A hypertonic sugar solution (Karo syrup) was lathered on the uterus and then a clean towel was wrapped around the tissue. Gentle compression and manipulation squeezed serosanguineous fluid from the tissues and decreased the overall size of the tissue. Steady pressure and lube were used to replace the horn into the vulva. Manual palpation of the uterine horn determined that full inversion was accomplished. A buhner stitch was placed in the subcutaneous tissues of the vulva. Oxytocin, 0.25mls (10-20 IU) was administered intravenously to aid in uterine contractibility and 4.5 mls of oxytetracycline (4mg/kg) was administered subcutaneously. Banamine (flunixin meglumine), 1 ml (1.1 mg/kg) was administered intravenously for analgesia and calcium gluconate, 60 ml (50-100 ml total) was administered subcutaneously in case of hypocalcemia. At discharge, Iris was standing and seemed comfortable. She was discharged with instructions to give 4.5 mls of oxytetracycline

subcutaneously (4.5 ml/100 lb) in 3 days, and monitor for excessive swelling, abnormal discharge, change in mentation, inappetence, fever, straining, or reoccurring prolapse. The buhner stitch was instructed to be removed in 2 weeks. Since presentation, Iris and kid are doing well.

References

1. Fatet, Alice, Pellicer-Rubio, Maria- Teresa, Laboeuf, Bernald. Reproductive cycle of goats. Animal Reproduction Science. Elsevier, 124. (2011) 211-219.
2. Braun, Jr. William. Parturition and Dystocia in the Goat. Chapter 73. Current Therapy in Large Animal Theriogenology (second edition). 2007.
3. Ermilio, M. Elisa DVM, Smith, C. Mary DVM. Treatments of Emergency Conditions in Sheep and Goats. doi: 10.1016/j.cvfa.2010.10.005. Vet Clinical Food Animal 27 (2011) 33-45.
4. Miesner, D. Matt, DVM, MS, Anderson, E. David, DVM, MS. Management of Uterine and Vaginal Prolapse in the Bovine. Department of Clinical Science, College of Veterinary Medicine, Kansas State University. Veterinary Clinics Food Animal 24 (2008) 409-419.
5. Miesner, D. Matt, DVM, MS, Anderson, E. David, DVM, MS. Rectal Prolapse. Department of Clinical Science, College of Veterinary Medicine, Kansas State University. Veterinary Clinics Food Animal 24 (2008) 403-409.
6. Seyedmehdi, Mobini, Heath M. Alan, Pugh D.G. Theriogenology of Sheep and Goats. Chapter 6. Sheep & Goat Medicine. 2002. pg 129-186.
7. Mohammed, Elmetwally, Bollwein, Heinrich. Uterine blood flow in sheep and goats during the peri-partium period assessed by transrectal Doppler sonography. Animal Reproduction Science. Elsevier.,176 (2017) 32-39.

Igwebuike, U.M. A review of uterine structural modifications that influence conceptus implantation and development in sheep and goats. Animal Reproduction Science 112 (2009) 1-7. Elsevier.