

Non-surgical management of vaginal prolapse in a late gestation alpaca (*Lamos pacos*)

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Summary:

A multiparous alpaca at day 358 of gestation was presented with a four week history of intermittent vaginal prolapse. The vaginal prolapse was initially managed by the owner. Due to the duration of prolapse and increase in its size, combined with pollakiuria and stranguria, the alpaca was presented to the University of Florida, Large Animal Hospital. Transcutaneous and transabdominal ultrasonography was performed to assess the prolapsed tissue and to confirm that the fetus was viable. The vaginal prolapse was manually reduced and a commercially available plastic retention device for small ruminants was placed in the vagina and secured to a harness for stability. The retention device was well-tolerated and the hembra successfully delivered a healthy cria with the device in place.

Keywords: Camelid, reproductive emergency, fetal assessment, ultrasound, vagina

Background

Vaginal prolapse is a condition that may affect lamoids in late gestation, similar to the condition in cattle and sheep.^{1,2} There are multiple theories regarding the etiology of vaginal prolapse in camelids, but the accepted predisposing factors include age, parity, and obesity.¹ While early recognition and treatment usually carries a good prognosis for the dam and fetus, it is speculated that the condition may reoccur during subsequent pregnancies and that there may be a genetic component.

After manual reduction of the prolapse, surgical techniques that involve suturing the vulvar tissue are often used to maintain the prolapse in situ.^{3,4} The technique that is most often reported is placement of truss sutures, at the muco-cutaneous perineal junction, but these sutures must be removed prior to delivery.^{3,4} Plastic intravaginal prolapse retention devices are commonly utilized in sheep with vaginal prolapse.² The device places pressure on the ventral vagina preventing the prolapse from reoccurring. The benefit of this device is that it is a non-surgical treatment that does not need to be removed prior to parturition. To the authors' knowledge, there are no published reports of successful use of such a plastic retention device for the management of vaginal prolapse in an alpaca.

Case presentation

A seven-year-old huacaya alpaca hembra at day 358 of gestation was presented to the University of Florida, College of Veterinary Medicine, with a four week history of intermittent vaginal prolapse. The owner reported that the hembra had successfully delivered four crias prior to this pregnancy without incident. At the onset of signs, the tennis ball sized structure would spontaneously reduce. Over the next four weeks, the prolapsed tissue was exteriorized for longer durations, grew increasing large, and the owner was required to reduce the prolapse with manual pressure several times per day. The day prior to presentation, the hembra was observed to be intermittently uncomfortable with pollakiuria and was admitted for evaluation. A softball sized mass (approximately 10 cm diameter) was protruding from the vulva at the time of presentation (Figure 1). Vital parameters and the remainder of the physical examination were within normal limits. The hembra weighed 81 kilograms with a body condition score of 4/5, indicating moderate over conditioning.

Ultrasonographic evaluation performed transcutaneously though the prolapsed vaginal tissue revealed an invaginating uterine pouch with fetal membranes and anechoic fetal fluids. There was no evidence that the urinary bladder or gastrointestinal tract were incarcerated. Transabdominal ultrasonography performed from the right ventral abdomen confirmed a viable fetus, in anterior presentation, with fetal heart rate of 112-133 beats per minute (bpm). The owner elected to hospitalize the alpaca for management of the prolapse and any potential periparturient complications.

Treatment

With the hembra standing, the vaginal prolapse was cleansed with sterile isotonic saline and lathered in a sterile lubricant. The prolapse was gently massaged with manual cranial pressure until it was reduced. When the hembra subsequently pushed, the tissue again prolapsed. A disposable mare vaginal speculum was used to aid with the second attempt to manually reduce the prolapse. The speculum was inserted into the vagina and gently advanced, aiding in reduction of the prolapse. Visual examination was performed at this time to assess the vagina and cervix, in order to ensure that there was not excess vaginal stretching or trauma, both of which have been proposed as predisposing factors for vaginal prolapse.⁴ The cervix was tightly closed and the mucous plug was present. There was no evidence of vaginal trauma, but the vaginal mucosa was hyperemic. A small amount of tan mucopurulent exudate was noted in the caudal vagina and cytology of this exudate showed polymorphonuclear cells, but bacteria were not identified. Based upon visual and cytological evidence, vaginitis caused by chronic intermittent prolapse and repeated irritation from manual reduction was evident.

Following the second reduction of the prolapse, a commercially available plastic prolapse retainer device (Ewe Savers, PBS Animal Health, Massillon, OH) was aseptically placed in the vagina. A foal fluid therapy surcingle (Line Management Surcingle, Mila International, Erlanger, KY) was fitted to the hembra and strings attached to the device were secured to the surcingle buckles to stabilize the device (Figure 2). The harness was positioned around the alpaca's thorax and held in position with an elastic chest strap, as designed for use in a foal. The hembra was administered flunixin meglumine (1.1mg/kg, PO) to reduce vaginal inflammation. In addition, ceftiofur (2.2mg/kg, SQ, Q24hr) was administered due to the chronic nature of the prolapse and concerns for potential bacterial contamination of the genitourinary tract. Serial transabdominal ultrasonographic examinations were performed to monitor fetal wellbeing and the hembra was closely observed for signs of parturition.

Outcome

The hembra was monitored for the next five days. The retention apparatus was well tolerated, the alpaca could easily stand, push, urinate, and defecate. The second day that the device was in place, the vaginal prolapse reoccurred (Figure 3) due to loosening of the surcingle and subsequent loosening of the tension on the retention device. The apparatus was assessed daily to ensure that the plastic device remained under tension and subsequently the prolapse did not reoccur. On day 363 of gestation, a live cria was spontaneously delivered vaginally without removal of the retention device. In spite of frequent observations, parturition was unattended. The retention device had passed out of the vagina, but was still attached to the harness. The fetal membranes were expelled 30 minutes after delivery of the cria. Vaginal prolapse was observed on two occasions a few hours postpartum, but both incidents resolved spontaneously. Physical examination revealed a normal 6.8 kg female cria. The hembra and cria were discharged the following day. There were no further reports of vaginal prolapse from the owner and the hembra has not been rebred.

Discussion

Vaginal prolapse is most commonly reported in pregnant camelids in late gestation.¹ While the condition is known to occur in alpacas, the frequency is not known. The incidence has been reported to be as high as 15% in sheep.⁵ Cervico-vaginal prolapse may occur, but in most cases the prolapse is limited to 3-5 cm of vaginal tissue.³ In cases where the vaginal prolapse resolves spontaneously, no treatment is necessary.⁴ Inflammation and edema may increase the size of the prolapse, thus impairing spontaneous reduction.³ If the tissue is continually exposed, it may become traumatized resulting in necrosis of the vaginal tissue⁴ and increased risk of ascending infectious placentitis.³ While it has not been reported in alpacas, the urinary bladder can be found inside the prolapsed vaginal tissue of sheep and cattle.^{2,6} In one report, the urinary bladder was identified in 41% of sheep with vaginal prolapse that were examined via ultrasonography.⁷ In this case, ultrasonography was used to confirm the contents of the prolapsed tissue prior to correction.

Some authors recommend the use of epidural anesthesia prior to manual reduction.^{3,4} In this case, epidural anesthesia was not required for successful replacement. The prolapsed tissue should be thoroughly cleansed and examined for the presence of any necrosis. If necrotic tissue is identified, it should be debrided prior to reduction of the prolapse.⁴ While no necrotic tissue was visible in this case, inflammatory cells were found on the cytological examination of the vaginal exudate. Despite ascending placentitis being a rare sequela to recurrent vaginal prolapse in camelids, the hembra was treated prophylactically with antimicrobials.⁸

In cases where the prolapse has become inflamed and edematous, suturing the vulva is often required following manual reduction.^{3,4} Most authors suggest the use of the truss shoelace pattern as the method of choice for retention of vaginal prolapse in camelids.^{3,4} The procedure requires epidural or local anesthesia prior to placement of two or three loops of suture on either side of the vulva at the mucocutaneous junction lateral to the vulvar lip. Umbilical tape is threaded through the loops of suture in a shoelace fashion. A disadvantage of this technique is that the umbilical tape must be removed prior to parturition requiring that the dam be closely monitored for signs of the first stage of labor.^{1,4}

In most cases, prolapsed vaginal tissue arises from the ventral vaginal floor.² The plastic retention device utilized in sheep is based on the principle that the broad spoon-shaped device places pressure on the ventral vagina floor to prevent the prolapse from reoccurring. In this case the authors elected to utilize this same retention device, theorizing that the hembra would be able to deliver the cria with the plastic device in situ, similar to ewes that are managed for the same condition.² The plastic retention device was secured to a harness for stability.

While serial ultrasonographic fetal assessments are not required for management of cases with vaginal prolapse, they were performed in this case. In late gestation, normal fetal heart rate (FHR) is between 80 and 120 bpm in alpacas.⁹ Alterations in the normal FHR occur in response to activity level and external stimulus. Periods of tachycardia or bradycardia are expected, but sustained FHR greater than 130 bpm or less than 70 bpm may be associated with fetal stress.^{3,10} It is important to note that the FHR may decrease to 80 bpm or less prior to parturition.³ At the time of admission the first FHR was 133 bpm which decreased to 112 bpm over a period of several minutes. Over the next several days of hospitalization, the average FHR was 100 bpm. On the morning of delivery the initial FHR was 45 bpm. The bradycardia was a cause for concern and the fetus was balloted through the abdominal wall. Subsequent measurements of FHR were 67 bpm and 88 bpm, suggestive of adequate fetal wellbeing and impending parturition.

After delivery, the cria was found in the stall and the retention device was found hanging still attached to the harness worn by the alpaca. While the delivery was unattended, less than 20 minutes had elapsed between the last monitoring evaluation and when the cria was found. The second stage of labor in camelids is an expulsive event and similar to the mare, any delay in delivery may be life threatening to the fetus. The majority of hembras will deliver within eight to twenty four minutes.⁴ There was no evidence to suggest that delivery was prolonged or that the retention device impeded passage of the cria. The authors speculate that the elastic nature of the harness allowed the hembra to pass the retention device as the cria was pushed into the vaginal vault. In this case, the apparatus did not need to be removed for partition to occur, unlike truss sutures.

Vaginal prolapse is not uncommon and in the majority of cases, on-farm management is instituted. Use of the plastic prolapse retention device was a novel alternative and non-surgical approach to managing this condition in an alpaca. This case report demonstrates that vaginal prolapse in the late gestation alpaca may be managed successfully through parturition using a non-surgical retainer device.

Learning points

- Vaginal prolapse in a pregnant alpaca can be successfully maintained in reduction with an intravaginal retention device (Ewe Savers).
- It is important to maintain the device under adequate tension to ensure that the prolapse does not reoccur.
- Late gestation ultrasonographic monitoring is a valuable method to monitor fetal wellbeing.

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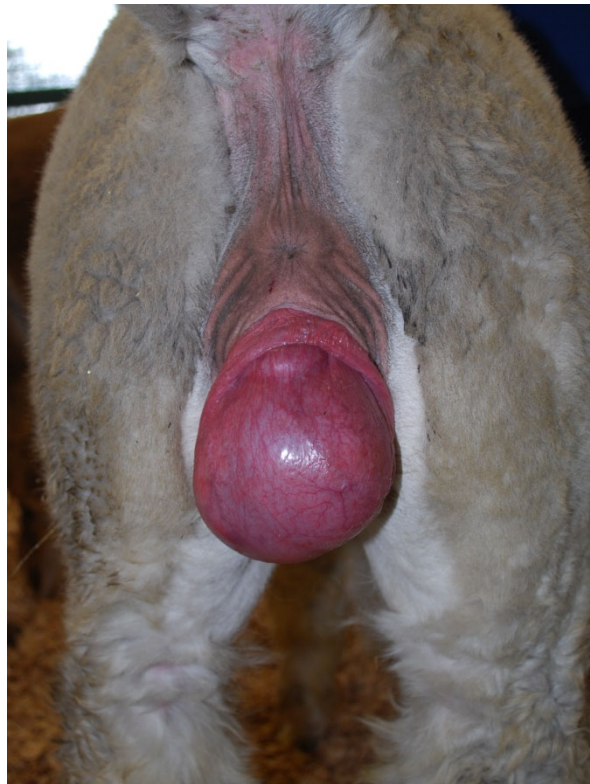


Figure 1. Vaginal prolapse in a seven-year-old multiparous pregnant alpaca at 358 days of gestation.



Figure 2. Plastic prolapse retention device (Ewe Savers) in situ secured to harness. Vaginal prolapse is held in a reduced state.



Figure 3. Vaginal prolapse recurrence with the retention device in place when adequate tension was not maintained.

(Editor's note: The photographs in this manuscript are available in color in the online edition of *Clinical Theriogenology*.)

