

Uterine Torsion in Llamas and Alpacas

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Abstract

Uterine torsion is a recognized cause of dystocia in large animals. Relative frequency and severity vary between species, but both dam and offspring can be saved and torsion corrected if the condition is diagnosed in a timely fashion. Uterine torsion is recognized as a cause of colic and dystocia in llamas and alpacas, but is usually regarded as less common than malpresentations involving the long neck and limbs of crias. In fact, uterine torsion may be responsible for some of those malpresentations.

Résumé

La torsion utérine est une cause reconnue de dystocie chez les grands animaux. Sa fréquence relative et sa gravité varient selon les espèces, mais la mère et sa progéniture peuvent être sauvées et la torsion peut être corrigée si cet état est diagnostiqué à temps. La torsion utérine est aussi reconnue comme une cause de colique et de dystocie chez les llamas et les alpagas, mais est habituellement considérée comme moins courante que les présentations anormales mettant en cause le long cou et les membres des petits. En fait, la torsion utérine peut être responsable de certaines de ces présentations anormales.

Etiology

Various factors have been advanced as promoting uterine torsion in cattle. These include oversized calves, sloped pastures and awkward standing. Of these, only high birth weights have been shown statistically significant, and there is anecdotal information suggesting this is also true for llamas.

In cattle, risk and direction of torsion appear to relate to the horn of pregnancy and location of the uterus (intra- or extraomental). Torsion usually occurs when the gravid horn passes dorsally over the non-gravid horn. Camelids differ from cattle in that their greater omentum extends only between the ventral aspects of the two main gastric compartments, without any dorsal component. Also, almost all (98%) pregnancies implant in the left horn. The gravid uterus is usually pushed into the right abdomen by the first gastric compartment, but is not as narrowly confined as an extraomental bovine pregnancy.

Similar to cattle, the gravid horn tends to twist over the non-gravid one in camelids. Thus, most (95%) torsions are to the right, or clockwise when viewed from the rear. It is unknown whether the few counterclockwise torsions correspond to right-horn pregnancies. Personally, I doubt it. Most counterclockwise torsions (in camelids) are less convincing to diagnose and less satisfying to treat, and it is my belief they are the result of abnormal uterine motility.

Although most camelid pregnancies implant in the left horn, ovulation can occur off either or both ovaries. The extension of placentation into the body and right horn increases from right to bilateral to left ovary ovulation. It is possible that asymmetry or symmetry of the uterine horns promotes torsion.

When torsion occurs is unknown. Some people think it develops early, but only becomes apparent with onset of uterine contractions. Others feel torsion occurs shortly before it becomes apparent. Torsion can be precervical (in the body of the uterus) or postcervical (in the vagina). The cervix itself is usually too rigid to twist. Although multiple twists can occur, most clinical torsions are between 90 and 270 degrees.

Diagnosis

Torsion becomes apparent due to colic, dystocia, prolonged pregnancy, or depression. Colic results from tension on the broad ligaments and is possibly aggravated by uterine contractions. Dystocia is due to narrowing of the uterine body or vagina. Of these two signs, colic is the usual complaint with precervical and dystocia with postcervical torsion. Torsion of the uterine body prevents the fetus from entering the cervix, rupturing the membranes and stimulating abdominal contractions, whereas all of these events (as well as presentation of the head or a limb into the vagina) can occur with vaginal torsion. Prolonged gestation or depression are undesirable signs of torsion, as prolonged gestation usually means that signs of colic or dystocia were missed and the dam has quit trying to deliver. This usually means the fetus is dead (in some cases, it is possible that an abnormal fetus somehow promoted torsion—we do not know). Depression also usually signifies death of the fetus and toxemia of the dam. Although uterine compromise can occur due to interruption of blood flow (especially with >360 degree torsion), it is more common with retention of a dead (and possibly infected) fetus.

Timing of these signs is helpful. Usually, torsion becomes clinical after 11 full months of gestation. Torsion noted before this time is usually less convincing (and often counterclockwise).

The best ways to diagnose uterine torsion are palpating of the twist per rectum, per vagina, or through a celiotomy. Vaginal palpation is best for postcervical torsion, which leads to corkscrewing of the vaginal folds. It may reveal abnormal position of the cervix and the fetus (bizarre presentation) with precervical torsion. Rectal palpation (after judicious use of lubricants and local anesthetics) reveals dorsal tightening of one broad ligament (usually the left in camelids), sometimes with extra space palpable on the other side, as well as malpresentation of the fetus. All of this is palpable in the caudal abdomen—the palpator need only introduce a hand past the wrist and certainly no further than mid-forearm. The ability to palpate per rectum is partially dictated by size of the animal, and is becoming more problematic as alpacas become the more common camelid species we deal with.

Correction

There are four basic methods to correct torsion. All require prior knowledge of the direction of the twist. Vaginal manipulation of the fetus is easiest with mild (90 degree) postcervical torsion, but may result in trauma to the dam (even rupture of the uterus) if the cervix is poorly dilated. Manipulating the head and feet into normal presentation is often all that is required, but pushing the chest wall upright may be helpful. Rolling the dam in the direction of torsion is useful for correcting more severe (180 to 360 degree) precervical torsion. When the dam is in lateral recumbency, the fetus can be palpated through the paralumbar fossa in all but overconditioned camelids. Applying pressure adjacent to the fetus to force it to move during rolling is very helpful; often a flip can be felt as the fetus nears the dam's ventral midline. In smaller camelids, torsion may be corrected simply by working the fetus around with the dam standing. The final method, surgical correction, is usually reserved for cases when non-surgical methods fail, the cria cannot be delivered safely, or direct observation of the uterus is considered important. A ventral midline or paramedian approach is most common.

Because most torsions are diagnosed when the fetus is close to gestational maturity, I usually try to deliver the cria if the cervix is open. With vaginal manipulation, delivery is part of correction. After rolling (dam or fetus), a vaginal examination may be performed to see if the cervix is open. If it is closed, the dam may be left alone for an hour or so to try to deliver on her own. The cria may be delivered by cesarean section after surgical correction or if the cervix remains closed after manual correction. After delivery by any method, I usually treat the dam with oxytocin (0.2 U/kg, IM); flunixin meglumine and antibiotics after a difficult delivery.

If torsion is diagnosed too early to deliver the cria (<317-321 days?), correction should still be performed (obviously not transvaginally). On rare occasions, re-torsion occurs.

Outcome and Conclusions

Timely intervention and careful handling are the most important factors for a good outcome. Diagnosis and correction usually take less than 30 minutes and the earlier they get done, the better for both cria and dam. Most dams get up quickly after non-surgical correction. I often wait up to one hour before attempting to deliver the cria postcorrection of precervical torsion, in order to give the cervix the opportunity to dilate. Delivery is usually routine at that point. Retention of fetal membranes for a few hours (rarely more than six) is common. Dams recover more slowly after surgery, and retention of fetal membranes up to two days is common. Uterine prolapse occurs about 10% of the time, whether surgical or not. Most dams breed back; rebreeding success is slightly lower after surgery, possibly because we usually do surgery on the worst cases. Although not reported in any other species, I know of several camelids that have developed torsion in successive pregnancies, as well as family lines that appear to be prone.

Further Reading

Cebra CK, Cebra ML, Garry FB, Johnson LW: Surgical and non-surgical correction of uterine torsion in New World camelids: 20 cases (1990-1996). *J Am Vet Med Assn* 211:600-602, 1997.