

How ya' wanna roll with this? Tips and tricks for uterine torsions

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Abstract

If you work with breeding livestock, obstetrical problems are inevitable. In bovine, there are numerous types of dystocias. Uterine torsions, rotation of the gravid uterine horn over the broad ligament, is one type that has a higher prevalence in the bovine. While the true underlying cause of torsions is not known, there are several factors that can increase the odds including pluriparous, deep-bodied dams, and increased movement of fetus during the beginning of parturition. Timeliness of assessing and determining direction and degree of torsion are important factors for determining options to resolve the torsion. Resolution options include cast-and-roll dam, manual detorsion or cesarean section. Each option has to be weighed with degree of torsion, stability of dam, facility and assistance availability. Complications that arise include uterine vascular complications, potential complication to the overall health of dam, and lack of cervical dilation after detorsion. With either of the two non-surgical approaches, vaginal evaluation during the process is warranted to determine progress. If the cervix is not dilated during detorsion, often surgical extraction of fetus is necessary. Outcome of dam and fetus depends on duration and extent of torsion and ability to intervene in a timely manner.

Key words: uterine torsion, detorsion, cesarean section

Introduction

Regardless of how you look at it, dystocias in cattle can be physically and emotionally draining, time consuming and downright messy. There is often two main thoughts of a veterinarian when the phone rings with a frantic client on the other end with a dystocia. Either dystocias fall in the category of worst kind of emergencies and your heart immediately sinks, or you look at it as an exciting challenge and find them thrilling to navigate. At the end of the day, regardless of your opinion of them, if you work with any breeding livestock, dystocias will occur.

Approximately 10% of all heifer calvings and 5% of cow calvings result in dystocias.¹⁰ In terms of causes of dystocias, there are generally two categories, fetal cause and dam cause. Fetal causes generally include fetal-maternal mismatch, fetal malposition or twins. Dam causes of dystocias include cervical or vulvar stenosis, uterine torsion, uterine inertia, or underlying metabolic conditions. Of these causes, primiparous dams often have a higher incidence of stenosis of the birth canal and an increased feto-maternal mismatch than pluriparous dams. Whereas pluriparous dams have a higher incidence of uterine torsions.^{1,2} For the remainder of this proceedings, the focus will be on management and resolution of uterine torsions in cattle.

Uterine torsion, by definition, is the rotation of the gravid uterus along its long axis, basically rotating over one of the broad ligaments. We do not truly know the cause of each torsion, however, we do know that cattle have an increased rate of torsions near or at parturition.² Some potential causes include deep-bodied dams, increased movement of fetus near or at

parturition, and increased uterine instability with increased size and movement of cattle when standing up.⁷ Torsions account for approximately 20% of dystocias attended by a veterinarian.^{1,2} Interestingly, uterine torsions are the most common cause of dystocia in water buffalo.⁶ They can be frustrating, exhausting and physically enduring depending the presentation, duration, available assistance and facilities.

Approach to dystocias

As with any dystocia, the earlier the diagnosis and intervention, the greater the odds of a successful delivery with a live calf and dam. Educating cattle producers about the signs of a dystocia are important as they have to recognize an issue has delayed parturition. With uterine torsions, cows will show signs of stage 1 parturition with restlessness, isolation from the herd and occasional abdominal contractions. They often show these signs and even appear colicky and then stop progression.⁸ The author's general rule of thumb is if stage one labor takes more than 8 to 10 hours, the cow should be evaluated.

Proper restraint before assessment is critical for the safety of you and those assisting you. An adequate-size working chute with head catch and both sides that open would be ideal in most settings. This would allow for easy access to any area of the cow for examination or if surgical assistance is warranted. If a functional chute is not available, work to find a place to restrain the head of the cow. Regardless of how nice the dam may be prior to parturition, once the calf is out, she can become a very protective and aggressive mother. Having the dam restrained before you begin assisting in the delivery is essential for your safety as well as those around you. At the bare minimum, a halter on the head tied to a post or her own leg can slow her down.

Having clean, functional equipment and supplies is important in dystocias. In the author's opinion, having a small toolbox with common dystocia supplies makes it easy to carry to any area where the dam may be. The following are author's recommended supplies for dystocia:

- Palpation sleeves and hand gloves
- OB chains – 3 long (60") – 2 for legs, 1 for a modified head snare
- Head snare (if preferred over using a long chain on the head)
- OB handles – 2
- OB lube – at least 1 gallon, does not have to be sterile. Recommend one that is made of carboxy methyl cellulose as this is not toxic to the peritoneal cavity.
- Lidocaine (2%) – epidurals – 4-6mLs
- Epinephrine – tocolytic – aids in relaxation of uterus
- Oxytocin – Recommend only using after fetus is out to aid in uterine involution and expelling fetal membranes, especially with dams that have dead calves.
- Needles/syringes – for administering previously listed medications

- Buhner needle and umbilical tape
- Scalpel blades – episiotomies
- #1 or #2 absorbable suture – suturing episiotomies, ligate ruptured vessels, ligate calf umbilicus

Other equipment that is beneficial:

- Detorsion rod plus bar or handle for fetus rotation
- Lariat rope with quick release
- Calf jack
- Rope pulley – can be used similar to a calf jack

Once the dam is restrained, it best to clean the vulvar area prior to vaginal palpation. The more fecal material and other contaminants into the vagina and uterus, the more the dam has to expel and overcome potential infections post-partum. Depending on where the dam is and what resources are available, soapy water to clean the vulvar area is a minimum. Once cleaned, wearing palpation sleeves and using adequate lube, palpate the vagina to determine whether the dam is in stage 2 labor with cervix dilated as well as assessing any potential obstacles or stenosis that would prevent the calf from fitting out vaginally, such as torsion. Additionally, vaginal palpation allows you to locate the calf to determine if it is in or near the birth canal as well as presentation, position and posture of calf. If you are unable to feel the cervix or calf, a rectal palpation is warranted to further determine calf position and if a torsion is present.

Diagnosis of uterine torsion

Uterine torsions can occur pre-cervical (cranial to cervix, involving only uterus) or post-cervical (cervix and part of vagina included in rotation). They can rotate in either direction as well. Several studies report that the majority of torsions occur post-cervical (vaginal involvement) and approximately 65% of torsions were in the counter-clockwise position.^{5,1} A palpator may be able to diagnose the torsion vaginally by appreciating the tension and spiral folds on the vaginal tissue pulling to one side or the other. A rectal palpation may allow for better appreciation of the tension on the broad ligament and better assessment of the direction of the torsion.

Correction of torsion

Once a torsion is diagnosed and the direction of the torsion is identified, evaluate your options for resolution. As with any dystocia, timeliness of identifying the issue and resolution is key to improved outcomes for all. Inherent risks associated with uterine torsions include compressed or occluded blood flow to uterus and fetus, death of fetus prior to delivery, rupture of vessels into abdomen, rupture of uterus, or even death to dam as well.^{3,4} According to one study, having intact fetal membranes during correction of torsion was associated with increase calf survival rate.⁵

There are 3 primary options for resolving the dystocia, depending on degree of torsion, facility space, available assistance, and cow demeanor. Each option has its benefits in any given situation. In a review study done in the United Kingdom on dairy cattle, 93% of torsions were corrected with 43% of those needing further obstetrical assistance following the detorsion.⁵ The most common reason for further assistance was due to incomplete cervical dilation. Options for torsion correction include casting and rolling the dam with or without a plank in her flank area, manual detorsion or cesarean section (c-section) with manual correction of the uterus intra-abdominally.

Cast-and-roll

Casting and rolling a dam to correct a torsion is a very common practice. The goal of a cast-and-roll is to “roll the cow up to the calf”. It has its advantages if you are unable to palpate into uterus or reach the calf. It can be a fairly labor intense option and you need to assess your surrounds to determine if you have enough room and assistance to roll her. As with any torsion, you need to be confident in which direction the uterus is torsed, to be able to determine the direction to roll the cow. You will want to roll the cow the same direction that her uterus is torsed. The goal is to use the calf’s weight and position to hold it in place while the dam is rolling and her uterus unwinds.

When taking the cast-and-roll approach, it is recommended to have everyone who is helping understand the plan of action and how to be of assistance. Depending on the demeanor of the cow, mild sedation may be recommended. However, ensure that the sedation you use can be reversed on the calf as you will sedate the calf as well. There are 2 common methods for casting a cow – Rueff’s Method and Alternative Method. Either one can get the job done of bring the cow down; the Rueff’s Method is likely the more commonly used one in many parts of the country. Additionally, in the author’s experience, tie the dam’s head low to the ground to help keep her down once casted. There is some advantages to placing a plank, with someone weighing it down in the dam’s flank while the roll occurs.¹ The pressure from the plank helps keep the calf in its position (Figure 1).

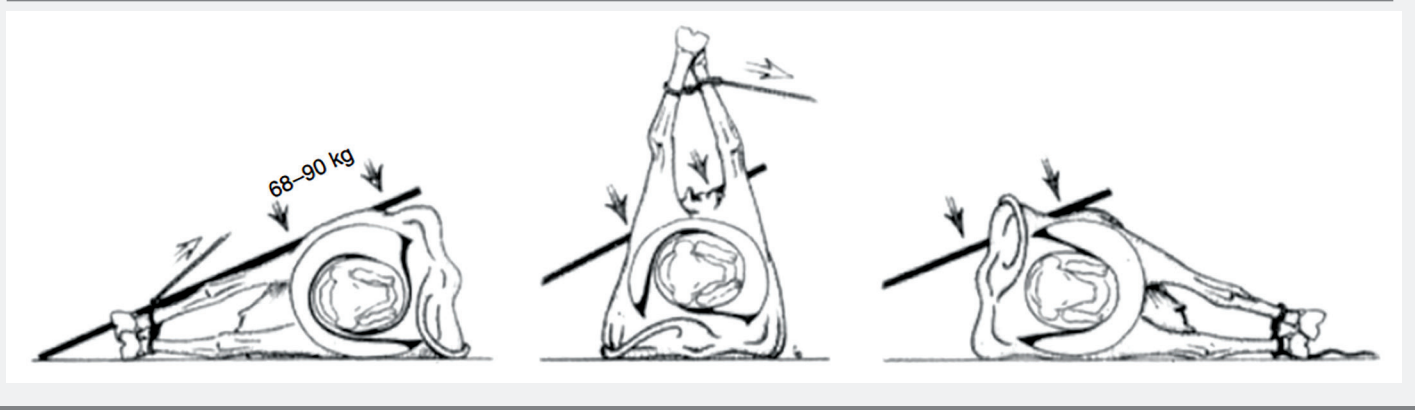
Depending on the degree of torsion, you may have to roll the dam again to further detorse the uterus. After a complete roll, before uncasting the dam, palpate vaginally and determine if the torsion has been resolved and you are able to access the cervix and uterus. If there are still spiral folds present, you will need to roll again. It often may take several rolls to get the uterus detorsed. Once the torsion is corrected, you can work to extract the calf.

Manual detorsion

As previously mentioned, multiple factors play into options for detorsion of a cow’s uterus with the primary factor being the degree of the torsion. If upon presentation you are able to palpate the feet of the calf through the torsion vaginally, you may be able to manually detorse the uterus with a detorsion rod. Benefits of a detorsion rod include minimal assistance, minimal space requirements and equipment that easily fits in your vehicle. The limiting factor on use of a detorsion rod is whether the cervix is dilated enough to access the legs of the calf. Additionally, the dam needs to be able to stand to adequately be able to manually detorse the calf.

Once you determine you can access the legs of the calf through the torsion, place a chain on each leg. It is beneficial to use long chains in this procedure. Using either end of the detorsion rod, criss-cross the chains through one eye of the rod (Figure 2). Slide the rod into vagina and snug up the chains until the rod is tight between the two legs (medial aspect of each leg) and the chains are taut outside of the vagina. Take a rod, broom handle, metal bar, etc., and put it through the opposite end of the detorsion rod that is outside the dam. This will be the rotation handle for rotating the calf. The author wraps the extra length of the chains around the rotation handle to help keep tension on the chains and the detorsion rod in place (Figure 3). With the detorsion rod, you will want to rotate it opposite of the torsion, untwisting the calf with the uterus. As you start to rotate, there will become increasing pressure on the rotation rod and then

Figure 1: Image depicting the “Plank in the flank” approach during a cast and roll to untorse the uterus. Note the plank with weight of an adult person aids in keeping fetus from rotating with the dam, allowing the uterus to correct itself.⁹



a release of pressure. This is generally a good point to palpate and re-evaluate the torsion situation. Key things to take note of and be cautious with when using a detorsion rod is to check and make sure you do not have the uterus or vagina wrapped in the chains. Additionally, there is a higher risk of potentially fracturing a calf leg due to the pressure on the legs. To help reduce this risk, make sure to have the chains on the legs with a half hitch (two points of pressure).

Once you feel the torsion has been resolved, you can continue on with working to extract the calf. Often if you are able to use a detorsion rod to resolve the torsion, the cervix is dilated enough that you can extract the calf vaginally. If the uterus is torted less than 180 degrees and you can reach the legs and head, you may be able to detorse without a rod. Applying chains to the legs and head, you can work to rock the calf into a dorso-sacral position.

Cesarean section

Aside from the two previously mentioned methods to resolve a uterine torsion, c-section is an option as well. If it is not the first option, it is always a back-up option if the cervix is not dilated after resolving the torsion. One reason to potentially go to a c-section first is that you determined the cervix is closed on your initial vaginal palpation or if the uterus is torted greater than 360 degrees. In the author’s experience as well as others published

papers, if the cervix is not dilated prior to detorsing or by the time the uterus is detorsed, it generally is not going to dilate,^{1,2,5} in which case, the decision to do a cesarean section needs to be made. A closed cervix can be one of the biggest frustrations with uterine torsions. As the veterinarian, you can do the best job getting the uterus detorsed, and yet if the cervix is not dilated partially, you have to make the decision of the next step.

In cases that warrant a c-section to resolve the torsion, there are still options in the approach. The author’s approach to most bovine c-sections is the left paralumbar fossa. Once into the abdominal cavity, you can either choose to detorse the uterus and then incise the uterus or incise the uterus in the torted state, extract the calf, suture closed and detorse into the correct anatomical location. In the author’s experience, it is easier to exteriorize and incise the uterus after detorsion. The uterus is less taut and it’s easier to locate a calf leg to aid in bringing the uterus up to the incision. Depending on the duration of the torsion and health state of the uterus, you will have to make the intra-abdominal detorsion on a case-by-case basis. In the author’s experience, administering epinephrine (6-10mLs, intramuscular) prior to incising the dam aids in relaxing the uterus and allowing for easier manipulation during surgery.

Figure 2: Close up image of chain placement and assembling to detorsion rod.



Figure 3: Depiction of detorsion rod snug between medial aspect of calf legs. Chains are tightly wrapped around rotation bar.



Conclusion

Several factors play into treatment and resolution of uterine torsions. Torsions add an extra layer to a dystocia in the fact that you have to get the uterus back into its correct position and then get the fetus out. The degree of the torsion as well as the amount of cervical dilation can impact the approach you take to resolve it. As the veterinarian, being thorough in your initial evaluation of the uterine, weighing your options for detorsion, using your available resources, and working diligently is the best you can do to resolve it. Outcome of torsions in terms of dam and calf ultimately come down to timeliness of recognizing a dystocia is occurring with a lack of progression of parturition and starting intervention. Working with livestock producers to recognize a dystocia can having the dam evaluated can positively impact the resolution and outcome.

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