Practical OB tips

W. Mark Hilton, DVM, PAS, DABVP (beef cattle)
Senior Technical Consultant, Elanco Animal Health, West Lafayette, IN 47906, w.mark.hilton@elanco.com

Abstract

While prevention of dystocia is the goal for every beef and dairy herd, there will be instances when assistance is necessary. Teaching owners when to call is paramount to having a successful delivery where both dam and calf are vibrant after delivery.

The Utrecht technique for delivery has served me well for almost 30 years of veterinary practice. The hallmarks of the Utrecht technique are: manual dilation of the birth canal, correct positioning of the calf if needed while the cow is standing, lying the cow down in lateral recumbency and applying traction only when the cow has a contraction with the traction being in a direction parallel with her dorsal spine.

This technique more closely mimics delivery of a calf in nature and allows the calf to be delivered more easily than when the cow is standing.

Key words: bovine, dystocia, Utrecht

Résumé

Bien que prévenir la dystocie soit un but dans chaque troupeau laitier ou de boucherie, il y aura toujours des situations où une assistance est nécessaire. Apprendre aux producteurs quand appeler est primordial pour une mise bas réussie avec mère et veau en bonne santé après la naissance.

La technique de mise bas Utrecht m'a bien servi pendant presque 30 ans de pratique vétérinaire. Les caractéristiques de la technique Utrecht sont les suivantes : dilater manuellement le canal génital, positionner correctement le veau si nécessaire lorsque la vache est debout, coucher la vache en décubitus latéral et appliquer une traction seulement quand la vache a une contraction en s'assurant que la traction soit appliquée dans une direction parallèle à son épine dorsale.

Cette technique imite davantage la mise bas naturelle d'un veau et permet une mise bas du veau plus facile que lorsque la vache est debout.

Prevention of Dystocia

Dystocia continues to be an important issue for the cow-calf industry, despite an apparent decrease in incidence during the last 20 to 30 years.[10]

Genetics

The most common cause of a dystocia is a fetal-dam disparity, and first-calf heifers are the most likely animals in the herd to experience dystocia.[11] The most successful way to prevent dystocia in heifers is to breed them to highly proven sires that have high calving ease, direct expected progeny differences (CED EPD), and are from breeds known to have acceptable calving ease.[4] Each breed association publishes CED EPDs for bulls in their respective breeds, and it is important to note that some breeds have improved calving ease compared to others. Breeds that excel in calving ease include Angus and Red Angus, where breeds like Charolais and Shorthorn would have very few calving-ease bulls. At this time there are not across-breed EPD adjustment factors for calving ease as there are for traits like birth weight.

Birth-weight EPDs can be used to assess the relative calving ease of different bulls if CED EPDs are not available. The correlation between birth weight and calving ease is strong, but it is not a direct correlation. Studies show that for each pound or kilogram increase in birthweight there is a 1.6 to 4.2% increase in dystocia rate.[3,8]

When selecting bulls to use on heifers, it is ideal to use an artificial insemination (AI) sire that has high accuracy for calving ease. Many AI sires are available that have an accuracy of over 0.80 for calving ease, and this would be considered a highly proven bull to use on heifers. Yearling bulls are frequently used via natural service and most will have very low accuracies, sometimes as low as 0.05.

The service sire selected to use on a group of yearling heifers is the most important factor in limiting the dystocia rate the following year. But, we must remember that the dam supplies half of the genetic material to the calf, so selecting heifers with moderate birth weights or high maternal calving ease EPDs is also very important.

Pelvic Area

Since the primary cause of dystocia in beef cattle is due to a fetal-dam disparity, numerous researchers have looked at pelvic measurements of the yearling female to predict subsequent risk of dystocia. Unfortunately, heifers with larger pelvic openings tend to be larger in frame score, and also have calves with heavier birth weights. Therefore, selecting for larger pelvic openings does not lead to a reduction in rate of dystocia.[5]

Nutrition

Numerous trials have been conducted to examine the relationship between pre-calving nutrition, calf birth weights, and incidence of dystocia. In 9 trials where pre-calving nutrition was influenced to cause heifers to calve from body

condition scores (BCS) 4 to 6, calf birth weight increased from 0 to 6.6 lb (0 to 3 kg) as BCS increased.[2] In these same studies, the incidence of dystocia was unchanged in 7 trials and increased in 2. When protein levels were increased, similar results were produced. While increasing pre-calving nutrition generally had no effect on dystocia rate, it had a profound effect on subsequent reproduction. In 1 study, 2-year-old heifers nursing their first calf that calved in BCS 4 had a pregnancy percentage of 56% in a 60-day breeding season, where heifers calving at BCS 6 had a 96% pregnancy percentage in the same time frame.[9] It is clear that restricting feed intake to below NRC guidelines is not an effective way to reduce dystocia rates in heifers.

Treatment of Dystocia: Teaching the Beef Producer when to Check/when to Call for Help

My experience working with producers for over 30 years is that all the 'timing' data we give them for the different stages of labor is confusing and leads to them calling too late on many dystocias. When we started emphasizing ***"PROGRESS EVERY HOUR"*** to our clients in newsletters and at producer meetings, our success rate on being called early enough to deliver a live calf soared. For even more precise timing information, a heifer should make progress every hour while a cow should make progress every 30 minutes. This makes sense, in that a multiparous animal nearly always delivers more quickly than a primiparous animal.

Common Problems that Lead to More Problems

Many heifers and some cows with a dystocia have an incompletely dilated birth canal (vagina and/or vulva). After you clean the cow up, place both gloved and lubed arms into the birth canal, interlock your fingers and expand your arms outward. Do this for about 1 to 2 minutes. Many times manual dilation of the vagina is necessary and will greatly ease delivery (very important!!). Have the owner dilate while you go to truck to get something. This way you are not worn out when the real work begins.

Do not use J-lube® if there is any chance of a caesarian section. If any of the product spills into the abdomen it will likely cause death due to the overwhelming inflammatory response.[1]

Definitions

Presentation – what part of the calf is entering the birth canal first? Normal is head first, or anterior presentation.

Position – where is calf's back in relation to the cow's back? Normal is dorsal/sacral.

Posture – where are front legs and head in relation to the trunk of the body? Normal is front legs extended and head/neck forward, resting on the legs.

Obstetrical Technique

If the calf is in an abnormal presentation, position, or posture, you must have the cow standing to effectively manipulate the calf. When the cow is lying down, the weight of her rumen is pushing on the uterus and the calf and it makes manipulation nearly impossible.

To aid in relaxing the uterus when you have to manipulate the calf, give the cow 10 mL epinephrine (1:1000) IM in the neck and in about 2 minutes, the uterus will be relaxed. This relaxation will allow you to push the calf farther into the uterus and make the malpresentation much easier to resolve. This technique is most effective with a live calf.

Once the calf is in normal presentation, position or posture, lay the cow down on her side using a long rope. The half-hitch method of rope placement is depicted in Figure 1. Lying down is the natural position of the cow during labor, and our goal is to mimic nature. In addition, in recumbency, the unburdened pelvic floor is pulled forward to functionally increase the vertical diameter of the pelvis.[7] When the cow is standing, the pelvic floor is unable to move. It is also my experience that once the cow is in lateral recumbency she increases the force of her abdominal contraction.

To deliver the calf, only pull when the cow pushes.[6] This is true if using manpower or the calf jack. When the cow rests, you should also rest. The goal is not to launch the calf out of the cow. When the calf is delivered to the hips, take a break and the cow will generally rest and then push the calf a bit more. Because of the short rest, the calf will generally rotate about 45° to 90° so that he slides right out. If we pull too quickly, we can wedge the calf's hips into the cow's pelvis before the calf has a chance to rotate.

Keys to Success

- Lay the cow down on her side only after the calf is in the correct position for delivery.
- Use a maximum force of one man per leg, pull lower leg first, walk shoulders out, pull straight out to get shoulders past pelvis of cow, then gently pull on both legs to get calf's hips up to cow's pelvis. (I nearly

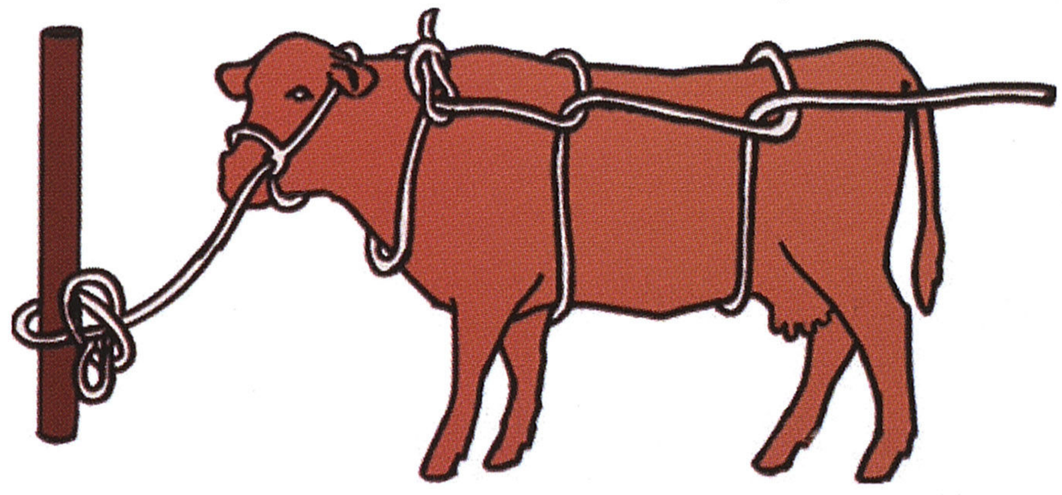

Figure 1.

always use the jack. First, it teaches the owner the correct use of this equipment and second it is easier on my back.) STOP pulling at this point and allow cow to rest. The cow will usually rotate the calf into her pelvis so that the calf does not become hiplocked.
- After delivery, put calf in dog-sitting position so lungs inflate equally; never hang calf upside down.
- Stick a clean straw in calf's nostril to stimulate breathing.
- Check the cow for additional calves.
- Get the cow up so she begins licking the calf.
- Place the calf out of the wind; be sure the calf is up in 30 minutes and nursing colostrum 30 minutes after standing.
- Dip the navel with tincture of iodine if indicated; put the cow and calf into a clean environment.

Teach your Clients When to Call for Assistance[6]

Owners should be taught to call when they:

1. Don't know what the problem is.
2. Know the problem, but don't know the solution.
3. Know the problem, know the solution, but unable to make progress. If you make no progress in 30 minutes, call for assistance.

Video clip demonstrations at www.mwbeefcattle.com. Click on video demonstrations.

References

1. Frazer GS, Beard WL, Abrahamsen E, et al. Systemic effects of peritoneal instillation of a polyethylene polymer based obstetrical lubricant in horses. In: Wolfe D, ed. *Proceedings*. Annu Conf Soc Therio, Lexington, KY, 2004; p 93-97.
2. Funston R. Nutrition and reproduction interactions. In: *Proceedings*. Applied reproductive strategies in beef cattle, 2010, pp 175-191. Available at http://www.beefusa.org/Udocs/PR101-Nutrition.pdf.
3. Gregory K, Cundiff L, Koch R. Breed effects and heterosis in advanced generations of composite populations for birth weight, birth date, dystocia, and survival as traits of dam in beef cattle. *J Anim Sci* 1991;69:3574-3589.
4. Hilton WM, Glynn D. Management to prevent dystocia. *Bovine Reproduction* 2015; 404-408.
5. Laster D. Factors affecting pelvic size and dystocia in beef cattle. *J Anim Sci* 1974;38:496-503.
6. Mortimer RG. Calving and handling calving difficulties. In: *Calving management manual*. 2009. Available at: http://www.cvmbs.colostate.edu/ilm/projects/neonatal/Calving%20and%20Handling%20Calving%20Difficulties.pdf. Accessed September 14, 2015.
7. Schuijt G. Dystocia in the cow. The Utrecht way of physical examination, diagnosis, obstetrical approach and delivery, in *Proceedings.* Annu Conf Soc Therio, 1988.
8. Smith G, Laster D, Gregory K. Characterization of biological types of cattle. I. Dystocia and preweaning growth. *J Anim Sci* 1976;43:27-36.
9. Spitzer J, Morrison D, Wettemann R, Faulkner L. Reproductive responses and calf birth and weaning weights as affected by body condition at parturition and postpartum weight gain in primiparous beef cows. *J Anim Sci* 1995;73:1251-1257.
10. United States Department of Agriculture (USDA), Beef 2007-08. Part V: reference of beef cow–calf management practices in the United States 2007-2008; 2010. p16. Available at: https://www.aphis.usda.gov/animal_health/nahms/beefcowcalf/downloads/beef0708/Beef0708_dr_PartV.pdf. Accessed September 14, 2015.
11. Waldner CL. Cow attributes, herd management and environmental factors associated with the risk of calf death at or within 1h of birth and the risk of dystocia in cow-calf herds in western Canada. *Livest Sci* 2014;163:126-139.