Tips and tricks for managing bovine dystocia

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Abstract

Acquisition of skills in bovine obstetrics is essential for every food animal practitioner, especially those engaged in dairy or cow-calf practice. A dystocia is often the first call a veterinarian makes to a cattle producer's facility and demonstrating competence, confidence, and professionalism many times leads to the development of a long-term relationship with that producer. A conversation with the producer describing the practitioner's requirements for patient restraint is paramount to avoiding frustration and a poor outcome. Planning and the willingness to modify the dystocia management plan "on the fly" requires thoughtful consideration when the initial procedures do not result in relief of a dystocia. Purchase of a full array of high quality obstetrical equipment and learning their proper application greatly facilitates dystocia management. Knowledge and skill in handling complications of dystocia such as uterine rupture, uterine prolapse, and perivaginal hemorrhage are required to preserve the reproductive potential of the patient.

Key words: dystocia, obstetrics, obstetrical equipment, fetotomy

Introduction

Bovine obstetrics can be either the bane or delight of a bovine veterinarian's practice. Which of these becomes your attitude towards OB cases is shaped by your level of previous frustration, effort, and case outcomes associated with obstetrics. It is my intent to pass along a few tips you may find useful in dealing with both routine and complicated obstetrical cases and hopefully put the fun back into obstetrical cases.

Restraint

One of the most frustrating practice scenarios is when a client calls with an emergency obstetrical case and your schedule is either already full or it is just a very inopportune time. Anxiety level rises when you arrive at the farm/ranch and the animal to be examined is unrestrained and may even be acting aggressively towards humans. Even generally docile dairy cattle may be ready to fight when in labor and the maternal instincts take over! It is nothing short of amazing how a 'down' cow can suddenly get a burst of energy at the sight of the vet truck and run off! The way I avert this is by simply asking the owner to have the animal restrained, if not in chute, at least by a halter and tied to a secure stationary object before I arrive at the farm. I also ask the client, if they are having trouble catching the animal, to please call me as soon as it is apparent that it may take some additional time so that I may plan accordingly. When a client balks at my insistence for restraint I simply tell them that I am a reasonable veterinarian but a very expensive (and not highly skilled) cowboy, and they seem to get the point. However, just in case, I do have a seldom-used blowgun for the occasional loose cow situation in which I can get close but just can't quite catch her.

As veterinarians, we are rarely consulted on design of calving facilities, but it is something I cover in detail when asked to provide producer-level continuing education on calving management. I recommend a head catch with hinged, swing-away gates on either side and sufficient room to the rear to use a calf jack. This facilitates quietly moving the animal into the restraint area and allows the animal to lie down, which usually occurs during forced extraction. It is essential that the head catch opens all the way to ground level and has straight side bars that constrain the animal's head. This design allows the animal to lie down during the obstetrical process without the risk of compressing the carotid arteries ("choking"). The diagram in Figure 1 shows the schematic design of a very workable facility used for dystocia management.

When I arrive to attend a bovine OB case and the patient is restrained in a chute, I generally conduct my initial obstetrical exam in the chute and decide on a course of action. However, I do not recommend attempting a forced vaginal

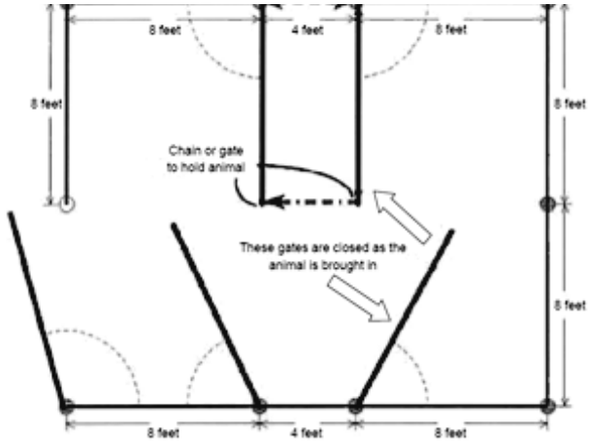

Figure 1. Sample of design of facility for management of cows with dystocia.
(from: Calving School Handbook, OSU Extension Service, R. Cooke, A. Villarroel, C. Estill, publication # BEEF020)

delivery or fetotomy in the chute unless the sides are designed to swing out in the likely event the patient lays down. An alternative is to devise a way to put the animal into the chute backwards. In other words, have the animal's head in the headgate with the remainder of the body outside the chute. This way, if the animal goes down, you will not be working within the cramped confines of the chute.

OB Equipment Recommendations

First of all, buy high quality equipment. Don't skimp on quality just because a particular piece of equipment is rarely used. Buy high quality stainless steel when that is an option, and buy German-made quality when available.

- **OB chains**- buy at least three 60-inch (152 cm) chains made of stainless steel. Also, look for chains that have the curved end loop made to conform to the calves' lower limbs (Figure 2). Avoid the less expensive chrome-plated chains, as the chrome will eventually chip off, resulting in rusty chains.
- **OB handles**- throw away those D-ring shaped handles (Moore's/Muir's OB handle)! They are painful to use and impossible to use both hands at once or apply a lot of force to without cramping your grip. Instead, buy the pipe-type handles (T-bar/Gibbon's handles) which provide a wider hand hold and allow the application of greater traction Figure 3). In a pinch, a couple of dowels made from a broom handle or cylindrical piece of wood or metal pipe works well. Just cut off two 12" pieces, make a slip knot on your OB chain and insert the handle through the loop of the slip knot.
- **Head snare**- the cable type or the HEAD-hunter[a] is a really valuable piece of equipment and should be used to guide the head through the birth canal in almost all cases of anterior presentation (Figure 4).
- **Krey's hook**- this is necessary when performing a fetotomy in order to provide counter-traction when making a cut through the thorax or abdomen after limb removal. This instrument does not come ready-to-use, so either attach a stainless quick link or open and weld the end link of an OB chain to the Krey's hook (Figure 5).
- **Fetotome**- most agree the Utrecht model is the most versatile and is readily available.
- **Fetotomy wire reel**- this instrument serves as a spool for the OB wire but also doubles as a handle.

Figure 2. 60" stainless steel obstetrical chain with limb conforming endlink.

Figur ecure grip, and both hands can be used to increase force of traction and reduce operator discomfort.

Figure 4. The calf head snare is useful to maintain head and neck alignment during a forced extraction. Avoid excessive force on the head to prevent injury to the nerves in the neck.

Figure 5. Krey's hook is attached to the vertebral column during a fetotomy to apply traction following removal of legs. Note that the instrument has been modified by attaching an obstetrical chain to the ring on the Krey's hook. This was done by cutting the link open, inserting the Krey's hook ring then welding the obstetrical chain link closed.

Figure 6. The obstetrical wire reel allows a fresh piece of wire to be played out without re-threading the fetatome. It also doubles as a comfortable wire handle.

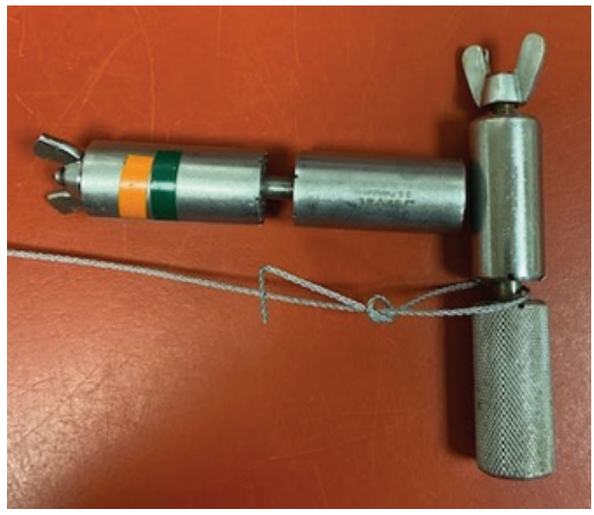

Figure 7. Secure, easy-to-attach OB wire handles ensure comfort and safety for the operator. Note a slip knot has been formed in the free end of the wire before slipping the wire between the 2 halves of the handle.

The main advantages are that you can peel off new wire as needed for the next cut without having to re-thread the fetotome (Figure 6). This allows you to quickly have a new section of wire for reach cut to avoid frustrating breakage during a cut.

- **Fetotomy wire handles**- get the type with the 2 halves pinched together with a bolt and wing nut (Figure 7). Avoid the Lyss type where the 2 halves are hinged and rely on squeezing wire to hold it. Also, always tie a 'stopper' knot at the end of the wire to prevent it from slipping out of the handle.
- **Eye hooks**- buy the short-shanked blunt type (Ostertag's/Harms). These work very well when the head/neck is flexed and a head snare cannot be placed. Use a piece of nylon rope attached to the hooks with a loop tied in the other end to use as a handle (Figure 8).
- **Detorsion rod**- A Cornell-type detorsion rod (Figure 9) can be very useful in a limited number of cases, but it is hard to find directions on how to properly use it. This will be demonstrated.
- **Toilet plunger or Gyn-stick**- unless you were blessed with extremely long arms, repulsion of a calf into the abdominal cavity may be nearly impossible on a very large, deep-bodied cow. I have never used this, but some short-stature obstetricians claim that a household toilet plunger is very effective when placed against the calf and an assistant pushes to repel the calf. Perhaps the German-made Gyn-Stick[b] is a more professional appearing alternative.

How to a place chain loop: Sometimes it can be quite frustrating when reaching deep into the reproductive tract to place a loop of chain around a distal extremity. The frustration arises when the operator's hand reaches the calf's foot, but the chain has slipped up onto the operator's wrist and the loop cannot be worked onto the calf's fetlock. This situation necessitates removing the hand and arm and starting over. This can be avoided by placing the chain loop over all of your fingers except the index finger where it passed under the finger. The index finger will prevent the chain from slipping off your hand and back towards your elbow. Once the calf's limb is well within the vagina or exteriorized, a double

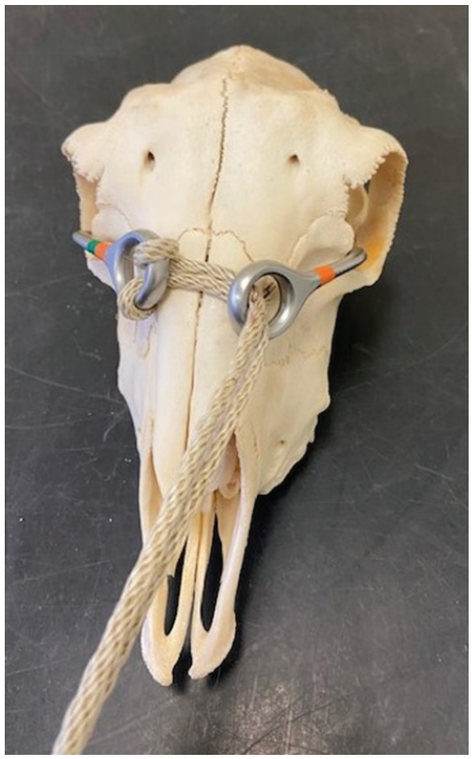

Figure 8. Eye hooks are useful to mutate the head and neck in cases of lateral deviation when it is not possible to place a head snare. The blunt style eye hooks should be used to avoid injury to the globe or orbit.

Figure 9. In the case of a uterine torsion in which the cervix is open, the uterus can be detorsed by using a Cornell detorsion rod. First a chain loop is placed around 1 leg of the calf, then a loop of the same chain is threaded through the ring on 1 end of the detorsion rod. This loop is then placed around the opposite leg and the detorsion rod advanced until the ring lays between the calf's legs. Finally, the free end of the chain is pulled snug and wrapped around a dowel placed through the ring on the opposite end of the rod. The dowel is used as a handle to twist the calf and uterus into a normal position.

half hitch with 1 loop above the fetlock and the other on the pastern can be placed.

Stretch vulva: Two things I almost never do in bovine obstetrics are tear a vulva or perform an episiotomy. The way to avoid both of these is to spend 5 to 10 minutes stretching the vulva/vagina prior to delivering the calf vaginally by forced extraction. Begin by cleaning your arms and the patient's perineum and liberally applying lubricant to both of your hands and forearms. Both hands/arms are gently worked into the vagina with the hands placed over the calf's head or in the case of posterior presentation, the hind quarters. Then slowly but forcibly spread your wrists and elbows apart to stretch the vulva/vagina. Do this side-to-side and up-and-down until the vagina is sufficiently stretched to allow the calf to pass without undue trauma.

Pump in lube: Be cautious with J-lube®[c] if there is a possibility that a C-section may be required or you suspect a uterine tear. J-Lube® is lethal if spilled into the cow's abdomen. There are multiple reasons to be very generous with obstetrical lubricant during a vaginal delivery or fetotomy. The first is obvious, everything will be slippery and facilitate passage of the calf through the birth canal. The second is less obvious, by pumping 2-3+ gallons of lube into the uterine lumen, you will expand the space between the calf and uterine wall, giving you more working room.

Twist and shout: Hip lock can be very challenging to correct because of the difficulty repelling the calf. However, it is generally easy to prevent. Once the calf's shoulders have cleared the vulva, simply rotate the calf on its long axis about 90° causing the hips to rotate 45°. This technique aligns the largest axis of the calf's hips (between the greater trochanters) with the largest diameter of the dam's pelvis (on an oblique angle). This should become a routine habit with every delivery, as it is difficult to predict which calves will develop a hip lock.

How to properly use a fetal extractor (aka calf jack): A calf jack can be a blessing or a curse. It is easy to apply up to 2500 lb (1000 kg) of tension to a calf with this instrument, resulting in damage to both calf and dam. However, when used properly it can really be a help in applying controlled, directed, intermittent force on the calf with minimal operator effort. I prefer the "double action" type as I can "walk" the front legs out 1 shoulder at a time. When used on a case with cranial presentation, it is advisable to place a head snare to guide the calf's head and neck while traction is alternately applied to the forelegs to extract the calf. Most cows will lie down as soon as traction is applied with the jack, so it is generally a good idea to cast the cow on her right side before attaching the jack. The way to apply traction is to take up slack on the chains, then slowly apply downward force on the distal end of the jack. As the calf is advanced rearward, take the slack out of the chains then repeat the process. Continue to do this until the shoulders have passed the vulva. At this point, rotate the calf, take up the slack, and pull the end of the jack down towards the udder or between the cow's rear legs. This will avoid hip-lock and deliver the calf following the normal arc of the birth canal. With the calf in posterior presentation, begin jacking straight back until the calf's hips have cleared the vulva, then pull the distal end of the jack down towards the udder and between the cow's rear legs.

How to prolapse a uterus: It is a fact of life that eventually you will encounter a full-thickness uterine tear. It may be spontaneous or iatrogenic. Generally, the herdsman caused this prior to veterinary intervention. Most commonly, the tear is located dorsally just craniad to the cervix. These are difficult to access surgically through the abdomen, as the uterus quickly retracts toward the pelvic inlet once the calf is removed. An option is to purposely prolapse the uterus, suture the rent, then replace the uterus. The procedure is described below[1]:

1. The cervix must be wide open. This means that the procedure should be done within 6 to 12 hours after delivery.
2. Administer 10 mL of 1:1000 epinephrine, preferably diluted in 250 to 500 mL of sterile physiological saline solution. Administer slowly intravenously to effect. That much epinephrine, given rapidly, taxes the heart, especially in older cows.
3. While someone gives the epinephrine, reach as far as possible into the uterus and grasp a placentome or 2 and invaginate/evert the horn by slowly and gently pulling it into the vagina. The cow will feel the pressure of your arm and the uterine mass and will begin to strain. Quickly reach for other placentomes deeper into the uterus and pull them into the birth canal as well.
4. At this point the whole uterus oozes out.
5. Perhaps redundant to say, but do not give an epidural. The cow needs to strain. Also, do not give oxytocin. The uterus needs to be totally flaccid, which is the purpose of administering epinephrine (tocolytic effect).

Fetotomy tips: Use the modified Utrecht method. This permits most calves to be delivered in 3 cuts when in anterior presentation. The use of counter-traction during removal of the forequarter and neck is imperative to maintain proper wire placement during the cut. Many cases of malposture can be greatly simplified by performing a partial fetotomy. This goes against the dogma of the 'standard' technique, but I find it very useful. For example, a simple shoulder or carpal flexion on a calf whose dam has been pushing for hours can be nearly impossible to mutate because the calf cannot be easily repelled back in to the cow's abdomen. Simply looping the obstetrical wire around the flexed carpus or around the axilla in the case of shoulder flexion, followed by removal of the limb distal to the wire, makes removal of the rest of the calf easy. The same technique can be used in cases of hock or hip flexion when the calf is in posterior presentation. Thread the fetotome half-threaded for wire placement in these abnormal postures, then fully threaded for the cut.

Uterine prolapse replacement tricks: Strange as it may seem, uterine prolapse is among my favorite emergency calls. The uterus can be replaced with the cow either standing or recumbent, but standing is preferred when the cow is able. The uterus should be thoroughly washed with surgical scrub and any adherent debris removed. If the placenta is attached it should be gently peeled away provided it detaches easily, otherwise leave it alone. If the uterus is very edematous, applying sugar directly to the exposed uterus can dramatically reduce uterine size. Administer an epidural without xylazine. It is ideal to have 2 assistants when beginning to replace the prolapse. The assistants stand/kneel on either side at the hindquarters of the cow and support the uterus in a sling made with a large towel, plastic trash bag, or a lunch tray. Remember that the part of the uterus that came out last goes in first! Therefore, begin replacing the area closest to the cervix by carefully working it into the vagina. Use the flat parts of your hands to avoid perforating the uterus and keep the uterus covered with obstetrical lubricant. When the uterus "disappears" into the back end of the cow take a short break and get ready for the final steps. Gently push the entire uterus through the cervix, beginning with the non-gravid horn followed by the previously gravid horn. Do this until the uterus drops into the abdomen. At this point, an effort should be made to completely straighten the uterus out or the cow will begin straining again and re-prolapse. In most cows it is physically impossible to reach all the way to the tips of both horns. To ensure the uterus is fully straightened out, pump in about 10 gallons of water to allow gravity to complete the straightening out process. If possible, force the cow to walk about with the fluid in her uterus as the sloshing will ensure the uterus is returned to normal position. After this, administer a dose of oxytocin (20 i.u.) to induce uterine contractions. Placement of a vulvar or Buhner suture is optional and may actually lead to resumed straining.

When the cow is recumbent and unable to rise, it is important to properly position the rear legs to facilitate replacement of the uterus. The hind legs should be stretched out fully extended directly behind the cow so she is supported on her stifles and abdomen. To do this, place the cow in lateral recumbency with both legs stretched out behind her. Then roll the cow up onto one stifle. She will often draw the opposite leg in to a flexed posture at this point so pull that leg out behind her and roll her fully up on to both stifles. There is some risk of causing coxofemoral luxation if the cow struggles in this position. From this point proceed as for a standing cow. Don't forget to treat the cow for hypocalcemia if required.

Endnotes

[a] Head-hunter premium calf snare, Jorgensen Laboratoriess Inc., Loveland, CO

[b] Gyn-Stick, Jorgensen Laboratoriess Inc., Loveland, CO

[c] J Lube® Powder, Jorgensen Laboratoriess Inc., Loveland, CO

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