

# Practical fetotomies

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Dystocias can take on many forms and knowledge of when to perform a fetotomy vs a C-section can be a major headache saver. While there are places around the country where C-sections have been abandoned exclusively for performing a fetotomy and vice versa, my practice area has always been open to both procedures. This passage from the 1972 book *Fetotomy in Large Animals* by C J Bierschwal and CHW deBois sums it nicely:

*Fetotomy should not be considered a substitute for Cesarean section. Both have a place in veterinary practice, the choice of method in individual cases being governed by the circumstances. After the finding of a dead fetus in the case of dystocia, the uppermost question should be "Which is the better solution with regard to the life of the dam?" The answer may not be the easier procedure or the one involving the least amount of effort.*

The advent of sexed semen and beef on dairy technologies have seemed to greatly reduce the volume of dystocias due to large calves. That generally leaves malpositioned calves, emphysematous calves and the occasional fetal monster. Discussion of all presentations of dystocia are beyond the scope of this paper. The techniques presented here are a foundation that the veterinary obstetrician should be familiar with in order to apply to fetal presentations not discussed here.

## What

The tools required to perform a fetotomy are as follows:

- The fetatome. The purpose of the fetatome is twofold. It needs to hold the position of your wires in the place you wish to cut, and it needs to protect the birth canal from receiving damage while using the wire saw. It should have 2 individual barrels side by side and be capped with a hardened steel head to prevent damage from the saw. The far end will have a hand hold to allow for a strong grip and an anchoring plate to facilitate the attachment of OB chains which will lock the instrument in place.
- Fetatome threader. This long flexible but semi stiff "pipe cleaner" is used to place the wire into your fetatome. Eight feet of wire is suitable for most cuts, though 12 or more feet may be required for some cuts or for novice learners. The fetatome can be threaded 2 ways. The most common is to push the threader from the handle end to the head end and then pull the wire through one side and then repeat with the other barrel. You may also pull a wire from the handle end toward the head end then introduce your threader into the other side and push the wire back to the handle end.
- OB wire and wire cutters. Having extra wire, especially when starting out is a good idea. You can move your handles up to effectively shorten your wire, but you can't really add wire once you have cut it from the spool. The practitioners pickup tailgate is 4' wide and becomes a readily available measuring device to measure the wire.
- Wire saw handles. Various styles exist, with different methods of attaching to the wires. Some use tension, some just require the tying of a knot with your wires around the

handle. The ability to hold the wires taught while sawing is what is important.

- Wire passer (introducer). These come in a variety of shapes and sizes, but all serve the purpose of being able to wrap your wire around a piece of the calf that you wish to cut next. An OB chain can also be used in place of this.
- Krey hook. This double hinged hook is used to hold on to the fetus in situations where you have removed any parts that you can traditionally attach a chain. Its utility is probably second only to the fetatome itself. Because they do not come with a chain attached, you will need to place one on yourself. Most textbooks will show the chain attached by looping the chain through the eyehole creating a knot. However, if you go to any hardware store you can purchase a quick link chain connector and eliminate the knot.
- Fetotomy knife. Useful in certain situations. The author uses them sparingly.
- J-lube. Adequate lubrication is the key to successful fetotomies.
- Lidocaine. Caudal epidurals should be given. Six cc infused in between the first and second coccygeal vertebrae using the hanging drop technique.
- Oral speculum. This is something the author uses for a very specific cut that will be described later.

## Rules

The author has several rules that he has formulated over the years through performing fetotomies and from talking to colleagues.

- Rule 1: Take what is presented to you/don't be greedy/do not let perfect be the enemy of good. These are my way of saying basically the same thing which is to cut what you can. While it would be ideal to make the perfect textbook cut every time, it is not always possible. Many times, it is actually faster and thus less frustrating to make multiple cuts to get to where you were trying to get. This is one of the more frustrating lessons to learn when starting out. Be adaptable and adjust your plan as you go.
- Rule 2: Always know where the end of your fetatome is. If you are placing your fetatome you must have a hand on the far end controlling where it goes. It is possible to push a fetatome through the uterus if you are blindly shoving the instrument into the cow. That is not what you were called out for.
- Rule 3: Pay attention to the orientation of your fetatome when placing it. It is very easy for the tool to rotate longitudinally while you are trying to manipulate it into place. This can lead to the wires being crossed which will cause them to break.
- Rule 4: Have help. This is not a task that can be done alone. Once the fetatome is set in place, someone will need to hold it steady while the other cuts. The holder should not be trying to push the fetatome in, but they will need to hold against the force of the fetatome trying to come out with the cutting motion. When the fetatome is secured by an OB chain that is traditionally placed (wrapped around a limb)

the fetatome can be held from the outside. Once you get to a point where a krey hook is needed to hold the fetus in place, it will be necessary for your arm to be in the cow to control the far end of the fetatome.

- Rule 5: Don't rely on arm strength alone to make the cuts. Cuts should start with short slow strokes that get longer and faster as the wire is set. It is a very physically demanding task that will require some cardiovascular endurance. The ability to lean back into the cut (which utilizes your bodyweight) and fully extend and flex your arm will help make the task easier.
- Rule 6: Whenever possible, it is preferable to perform fetotomies with the cow standing. Excess traction should be avoided to keep her upright and reduce trauma. The goal is to get the calf out with the least amount of trauma possible. If the cow wants to lay down, then the obstetrician will need to get themselves into an uncomfortable position for the good of the patient.

## How

### Anterior presentation

1. Amputation of forelimbs. An OB chain is placed around the metacarpus. The fetatome is guided along the limb with the goal of placing it far enough caudally to rest distal to the scapula. The goal is to remove the entire scapula along with the leg.
2. Amputation of the head. If the head is engaged in the canal when you arrive it can be cut off first. A chain should be placed around the head in snare like fashion to lock into the fetatome handle. The head of the fetatome can be placed in such a manner as to remove as much of the neck as possible along with the head.
3. This order may be reversed depending on the presentation of the calf (head engaged or not, limbs more readily accessible). The result of these 2 steps should result in the thoracic inlet being accessible.
4. Division of the fetal trunk. This will be done using the krey hook to apply traction to the vertebrae. It should be noted that although one can generally use a krey hook to pull a fetus up to the canal, you will not be able to pull the calf with this instrument. Excess traction will result in the hook pulling out of where you placed leading to whoever is pulling falling. Conversely failure to keep the hook engaged will also cause it to open and fall off.
  - a. It is usually necessary to perform 2 or sometimes 3 cuts to get the entire trunk of the calf out.
  - b. Manual removal of the chest and abdominal cavities can be performed as well. Newer practitioners may find this step creates room to work. However, this step is not considered necessary and many practitioners may get comfortable skipping this with practice.
  - c. Occasionally after transverse dissection of the chest cavity, the rib cage can still be found to be too large to exteriorize. In these cases, a wire can be placed longitudinally along the spinal column and the ribs can be transected to allow the thorax to collapse. Care needs to be taken when removing these pieces as sharp bone fragments are exposed.
5. Longitudinal division of the pelvis. A wire passer is used to place a wire dorsally over the pelvis and drawn out ventrally between the hind limbs. The wire should rest between the tail and the tuber ischium. The fetatome can be threaded to make this cut, however because we are cutting

longitudinally, the pelvis will act as an anchor to hold the wire in place. I find at this point it is much quicker to place my wires into an oral speculum and introduce the speculum into the birth canal to protect it.

### Posterior presentation

1. Amputation of rear limbs. This is achieved by placing a chain on the metatarsal joint and placing the end of the fetatome cranial to the ilium. The wire should sit between the tail and the ischium. The goal is to reduce the width of the fetal pelvis as much as possible.
2. Many times, removal of one limb will be sufficient to pull the calf, but there are times it is necessary to repeat the removal of the other leg.
3. After removal of one or both rear limbs, you will make transverse cuts using the krey hook to dissect the fetal trunk once again. Manual evisceration is usually needed to make room to work.
4. Once the neck and shoulders can be reached 2 options exist.
  - a. A diagonal division from in front of one shoulder to the opposite side, ideally caudal to the opposite scapula. This will create two unequal pieces but many times they are able to safely be removed.
  - b. Two longitudinal cuts along the thoracic cavity with the goal of taking both forelimbs and scapulae off. This will leave the head, neck and chest to remove, but many times this large piece can be safely taken usually by flipping the remaining piece in utero and pulling the head first.

### Postural abnormalities

Malposition of calves tends to be the main presentation the author encounters. Many times, this means that the calf can be removed with only 1 or 2 cuts if the calf cannot be repositioned manually.

1. The lateral flexion of the head (or head back) presentation is very common. Using a wire passer, place the OB wire around the neck. Position the head of the fetatome near the thoracic inlet and place a chain on the metacarpal joint of one leg to anchor the fetatome in place with. Most times this cut will facilitate the removal of the calf via traction on the front limbs. Care needs to be taken to protect the birth canal from exposed vertebrae.
  - a. There are times when it may prove difficult to place a wire around the neck. In these cases, you can remove one or both front limbs in the same manner described above for an anterior presentation calf. This will usually result in enough space to correct the head and pull the calf by its head.
2. A front limb in lateral flexion can also be removed by placing the wire between the limb and thorax to remove the limb at the level of the shoulder. Again, this will usually result in the ability to pull the calf as normal provided it is not oversized.
3. Breech calves in hock flexion should have a wire placed through the metatarsus distal to the hock joint. Cutting here will result in the calcaneus being persevered allowing the OB chain to be securely anchored to the calf.
4. A true breech in hip flexion will require placement of the wire between the body and rear limb with the head of the fetatome set near the tuber ischii and tail head. This will result in removal of the entire rear limb. If there is room to correct the other limb it may be possible to pull the calf, otherwise you will end up doing the cuts described above for a posterior presentation.

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## Fetal monstrosities

1. Conjoined twins, 2-headed calves, etc. The only way to deal with these is to find something to cut and cut until you have reduced the size enough to get the calf out. Knowledge of the techniques described above will help facilitate your decisions in these cases about the best way to proceed.
2. Schistosomus reflexus. A krey hook can be attached to whatever boney protuberance that is available. This presentation is like a pyramid pointing toward you. It is possible to place the head of the fetatome on top of this shape with a large loop of wire wrapping around toward the bottom. If placed correctly this cut will result in 3 pieces that can be removed. The sternum, the front limbs with head and the rear limbs with pelvis.
  - a. If this cut cannot be performed, a wire passer can be used to wrap the wire in a longitudinal direction around the middle of the calf where it is folded. This will usually result in 2 pieces that will need additional cuts to reduce enough to remove.
  - b. If the calf is presented limbs first, it is recommended to just make the best cut you feel is possible. The author still finds that in these scenarios the calf can be removed more quickly via fetotomy than via c-section and with less trauma to the cow.

## Emphysematous calves

These can present unique challenges. Fetotomy knives usually are very practical for these. Many times, the calf will be so swollen that it is impossible to get your fetatome into the cow to begin working. Start with a generous amount of lubrication and see if you can place a hand into the cow. With an anterior presentation, if an OB chain can be placed on a front limb and the

limb can be exteriorized with traction, you can safely dissect the limb. This technique involves making a long cut from above the cubital joint, along the forelimb to end around the metacarpus. At this point you can make an encircling cut around the limb. Using blunt dissection with your fingers, begin to undermine the skin and peel it away from the limb. It is possible to reflect the skin completely off the limb all the way up to and past the cubital joint. An OB chain placed above the point of the elbow with a long half hitch placed on the metacarpus will result in the removal of the entire limb with the scapula attached. Repeating this process on the other side will usually result in enough room to work on the rest of the fetus. Removal of the calf from this point forward may require any or all of the above-mentioned cuts and techniques. It should be noted that the technique of removing the skin to amputate a leg will only work for front legs and is very difficult in fresh calves.

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## References

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