

Uterine prolapse in cattle

In the author's experience in the Mount Gambier (SA) district, uterine prolapse in cattle is encountered in the following circumstances:

a. Immediately following (virtually concurrent with) parturition

- a). By far the most common group is comprised of dairy cows, and occasionally beef cows, with hypocalcaemia.
- b). In beef heifers, most commonly Herefords, and occasionally in dairy heifers. Usually there is some evidence of at least minor dystocia. The soft tissues appear to have been stretched beyond their limits of immediate and adequate recovery. There is often, but not always, some loss of strength and co-ordination in the hind limbs, varying up to inability to remain standing.
- c). Occasionally in cows, and more rarely in heifers, of both dairy and beef breeds for no apparent reason or with no apparent association.

b. Some time after parturition

- Occasionally the uterus will prolapse, in both cows and heifers, up to a week post partum. In these cases it may be that the uterus was partially everted during parturition and a state of potential prolapse existed. In such cases it is common for marked induration and devitalisation to have occurred. This, and adhesions which have formed, may make it inadvisable or impossible to attempt reduction of the prolapse.

In some of these instances the animal and the organ appear to have reached a physiological compromise with neither being much bothered by the other. The impression may be created that, but for lack of courage, one could amputate the organ by merely cutting with a knife.

Uterine prolapse in cattle may be treated by **reduction** or **amputation**. Sale for slaughter after amputation should be postponed until the health of the animal is established by its ability to thrive and maintain or put on flesh. Euthanasia is the only choice where haemorrhage, or other factors have resulted in a state of irreversible shock.

Treatment Considerations

The only options for positive veterinary intervention are reduction or amputation and the decision depends upon consideration of the following factors:

- **a). Placenta.** In some cases the placenta has already separated. In others the placenta is easily removed. In 24 years of practice only 3 cases come to mind

in which it was impossible to cleanly separate the placenta. In contradistinction to the endometrium, it does not seem possible to adequately clean a placenta which has been lying on the ground. Also, its presence renders reduction of the prolapse well nigh impossible, and even if reduction and full involution could be achieved the dirty, retained placenta would interfere with the placement and dispersal of, even more necessary in such a case, intrauterine antibiotics.

Update Note: Cases where the placenta could not be manually removed were very few. Where it is not possible, in hindsight, if I was ever confronted with one again, I would take a pair of scissors and trim the placenta around each cotyledon, and thus leave only that which was intimately attached. Then I would bathe and disinfect the organ as thoroughly as possible, replace it and introduce 2-4 foaming antibiotic pessaries. GWM.

b). Trauma. Reduction of the prolapse should be performed unless trauma and/or exposure has caused obvious devitalisation of the organ. Experience indicates that when in doubt reduction should be the choice. The uterus is an organ the resilience of which never ceases to amaze; percentage recovery of uterine prolapse reduction cases is high, and almost all breed again. It certainly is desirable that trauma be minimal, but a few missing cotyledons, or 2 to 3 pints of lost blood seem to be of little consequence.

c). Gross haemorrhage. Where gross haemorrhage has occurred the animal may be so moribund as to render any attempt at immediate reduction futile. This situation is likely to occur when a timid animal cannot be quickly restrained. Any violent struggling or vigorous running commonly results in rupture of the uterine arteries, with distress, coma and death supervening in 10 minutes or so. In 1970 the author's practice had the experience of four Hereford heifers on the same property succumbing in this manner. Immediate amputation might save some animals which have haemorrhaged.

Treatment Techniques

1. Taking the message. Particularly in down dairy cows proplapsed uterus should be included with conditions justifying highest treatment priority. The handling of the case prior to arrival of the veterinarian is of great importance. Therefore, lay staff need to be trained to recognise this and react accordingly. In the author's practice staff were provided with a check list of questions to ask and instructions to give. This is regarded as important enough to submit it here as a treatment technique:

Question. Is the animal standing or down? **Answer.** Standing
Instruction. Attempt walking her **QUIETLY** to a small grassy enclosure or clean, concreted pen.

Answer. Down **Further question.** Lying flat on her side or sitting up?

Answer. Lying flat on her side.**Instruction.** As soon as possible prop her up so that the wither is as high as possible and, if she has calved more than twice, administer a

standard dose of Milk Fever Solution under the skin.

Answer. Sitting up.**Instruction.** Leave her quietly be, but administer Milk Fever Solution if she shows signs of tending to lie down on her side. Prop her up if necessary.

Final general instruction. Regardless of the answers given to the questions, the client is instructed to take **four things** to the vicinity of the animal:

1. Approximately 6 gallons of water - preferably warm, cold will do, but definitely not hot.
2. A cake of soap
3. Some pieces of clean rag
4. Three or four clean sacks, or some plastic sheeting.

The Receptionist should then repeat "Now that's four things".

The preceding questions and instructions are designed that the client does nothing prejudicial to the animal while the veterinarian is travelling to the case, and so that treatment can be commenced with minimal delay upon his arrival. Experience confirms that both can be achieved.

2. Reducing the prolapse.

a). Recumbent cases

i. Assess the likelihood that the patient may rise unexpectedly. If this is at all likely at least put on a halter or a neck rope and, perhaps, attach it short and low down to vehicle or other suitable object.

ii. Assess the patient and the possibility of hypocalcaemia and treat at this stage if indicated. Withholding hypocalcaemia treatment until after reduction of the prolapse has the advantages that there will be less straining during the uterine replacement and the risk of unexpected rising is minimised. However, if there is any doubt about patient welfare, or if she is being propped up, the hypocalcaemia should be treated forthwith.

iii. Prepare two buckets of antiseptic solution. Because of its detergent properties, about 1 tablespoonful of 40% Cetavlon Concentrate ® (Cetrimide, ICI Australia Operations Pty Ltd) in 2 gallons (9-10 litres) of water is excellent, but any good, non irritant antiseptic will do. Prepare 10mls of Oxytocin Injection ® (Novartis Animal Health Australasia) in a syringe. Have suitable antibiotic pessaries ready - Pfizer Foaming Terramycin Pessaries ® (Oxytetracycline Hydrochloride, Pfizer Animal Health) have been found very efficacious. Place rags, bags and soap within easy reach.

iv. Completely detach the placenta from the uterus and throw it well away. (Banana skins underfoot have nothing on placenta - veterinary cartoonists please note).

v. POSITION THE ANIMAL (very important). If the animal is on sloping or

uneven ground she should be positioned with her head, when sitting, looking straight down hill. This can be done by the veterinarian and one assistant by first putting the animal on its side (right for preference). Then one person grasps the animal's nostrils with one hand and the upper ear with the other. The other person then grasps both the fore or both the hind feet, or alternately fore and hind, and between the two people the animal can be pivoted round to face the desired direction when she is again placed upright. This procedure should also be done so that the uterus will be dragged the shortest distance.

Any tendency to bloat usually disappears fairly quickly once the animal is upright. Once the cow is sitting upright, it may occasionally be advisable to relieve bloat by passage of a stomach tube. A rumen distended with gas can significantly increase the difficulty in replacement of the uterus.

Then **SIT THE ANIMAL ON HER STIFLES**. Cattle naturally sit upright in front with one hind leg under and one hind leg free. Pull the free leg backwards, straight behind the cow, as far as possible, and have an assistant hold it if necessary. Face the hip of the leg pulled back and grasp the switch end of the tail and pull strongly, as if to roll the animal across the udder. At the same time the assistant assists the roll by pushing the lower hip. The cow is held steady once her weight is over the stifle of the backward projecting leg. The assistant then reaches under, frees the lower leg with a lateral pull and then pulls it rearwards, parallel to the one already so placed. In this position, and with the legs slightly spread, the cow should be quite stable. To assist in maintenance of the cow's position, the assistant should take a heavy seat astride the cow's sacrum, facing rearwards. To apparently be more comfortable, the cow may slightly flex the hock and fetlock joints, but this is of no consequence.

In this position the animal appears to be disadvantaged if she strains to resist uterine replacement (and they usually do). Low spinals, intended to prevent or limit straining during replacement, but with their tendency to add ataxia to recumbency from other causes, are no longer necessary. Also, the uterus is most often raised from the ground, and is coincidentally in a more comfortable working position. The longitudinal axis of the pelvis is tilted more downward and forward in favour of the operator, and resistance to replacement from viscera within the posterior abdomen seems to be reduced.

This positioning routine has been used in the author's practice for four years, conservatively on 200 cases, and no untoward sequelae have ever been attributed to it. It is considered that bovine uterine prolapse is most easily reduced with the patient in this position. The next most convenient position is with the animal standing, and any other is down the list.

vi. The assistant should now thoroughly wash his hands in one of the buckets of antiseptic solution. The veterinarian then uses the same bucket to completely wash the animal's tail and perineum. The tail is then taken as far forward as possible and retained beneath the seated assistant. Depending upon relative contamination this bucket of solution may be used to perform preliminary washing of the uterus. Rag should be used for bathing. Cotton wool is less satisfactory as it fragments in the bucket and attaches to the washed areas. The uterus should be rotated to reach all

parts and the solution "sloshed" on liberally.

At a suitable time a sack, or other material, can be placed under the uterus to assist the maintenance of established cleanliness. The sack may be changed as necessary.

vii. Inject the 10mls of Oxytocin Injection ® intravenously. The jugular or ventral tail vein can be used.

viii. Commence bathing the uterus from the second (clean) bucket of antiseptic solution, and watch for commencement of active uterine contractions, usually after about three minutes. Replacement should be commenced by at least this time or reinversion of the organ may be inhibited by its own contraction.

In some cases it appears that bathing alone initiates a degree of contraction.

ix. The vulval lips and complete surrounding perineum should be liberally soaped just prior to commencement of uterine replacement. Soap has proved to be the best lubricant and it should be concentrated on the aforementioned anatomy since this is the area of troublesome friction which resists the inward passage of the uterus and the operators hands.

x. To replace the uterus have the assistant support the middle of the mass from each side. He should be instructed to use only the flat of the palm and fingers, and to resist curling the fingers to obtain better grip. It is possible to have the point of a finger penetrate the uterus and allow soiling of its peritoneal surface. The operator, wearing disinfected obstetric gown or water-proof over trousers, may kneel close to the cow and assist support with the uterus on his lap. Buckets, shallow dishes and trays have been variously recommended but this author finds they tend to hinder free use of the hands. Whatever the preference, the aim is to prevent the outside mass of the uterus pulling out what has just been pushed into the vagina.

The operator works between the arms of the assistant. With the mass supported, the uterus nearest the vulva is pushed in, in bites of 2-3 inches. Some straining usually occurs when the uterus is nearly all within the vagina. The assistant, keeping his hands below the mass should move his hands back along it as it is reduced. As any straining commences he should resist it with his flat hands placed more behind the remaining mass. Once all the mass is within the vagina the operator should immediately reinvert it through the cervix so as to eliminate the danger of immediate re prolapse.

The operator should now redisinfect an arm and proceed to **totally reinvert** both horns of the uterus. If the operator's arm is not long enough to achieve this it may be extended, by grasping a suitable, disinfected bottle (500 plus ml) by the neck. This author believes that total reinversion is important, since anything less may create unusual muscular contractions which lead to re prolapse - see more comments later.

xi. Insert pessaries of choice into both horns.

b). Standing cases. The most important consideration in standing cases is to prevent serious damage to the large uterine arteries and to the uterus itself. By assessment of

the animal's temperament, ability to coordinate the hind limbs, and adequacy of available facilities, certain handling decisions may be made.

Strong, steady animals may be bailed.

Ataxic animals should be kept off smooth concrete. If possible, ataxic animals are best caught and secured short where they are. They may then be gently converted into recumbent cases. Once in the leg back position attempts to rise can be effectively constrained by holding the legs back with ropes. If the animal is too strong for this it should be dealt with standing.

The greatest problem is presented by the very nervous animal. These should be handled as quietly as possible, but as soon as they become really difficult they are better caught by the quickest means possible and, using the guidelines discussed earlier, decide whether to reduce or amputate. Where relatively wild cattle are being run it is not unusual to find individual men who are only too willing to demonstrate appropriate catching skills involving ropes and manual strength.

Replacement of the uterus in standing cases employs similar general technique to that described for recumbent cases. However, a low spinal anaesthetic is indicated to attempt some control of expulsive straining by the cow. Also, the mass held in a shallow dish, preferably by an assistant at each side, and some stable object to give the operator a raised standing position is advantageous. Depending upon the animal's temperament, and other considerations, the ventral tail vein is the one of choice for injection of the Oxytocin Injection ®.

c). General considerations

i. Contained abdominal viscera. It must be considered a possibility that abdominal viscera may be contained within the prolapse. In the author's experience the only organ which has definitely been involved is the bladder. If it is of any possible concern it can be palpated as a fluctuating mass within the prolapse. If it is not too large it can be manipulated forward, ahead of or with the first part of the reduction, and fall back into place ahead of the returning uterus as it fills the vagina. On a number of occasions, when size has been of concern, it has been possible to catheterise via the urethra, using a rubber catheter, and reduce the bladder by external pressure. This has been done prior to attempting uterine reduction. On one occasion only, when the bladder pressure and size prevented catheterisation, it has been reduced by transuterine tapping with a 7.5cm x 12 gauge needle.

ii. Other reduction aids. Such measures as covering the exposed organ with sugar, and/or wrapping it in a large cloth and reducing it by a twisting ("wringing") action on the cloth has been advocated. In the author's hands these methods have not proved worth the bother and they have been abandoned in favour of the more direct methods being advocated here.

iii. Reprolapse. In the author's practice re prolapse has never occurred in milk hypocalcaemia associated cases, and only rarely in other cases involving mature cows. In all cases great stress is placed on making every attempt to completely

reinvert the uterus, right to the end of the horns, at the time of primary reduction.

Reprolapse has occurred most frequently in heifers, especially when the tissues appear to have been overstretched, and in a few others which do not appear to have been able to control the urge to strain violently. It is the tendency in the author's practice to select only such animals for suturing. Various patterns and forms of through and through transvulval suturing have been tried and all of them are prone to tear out in cases of violent straining.

The method now favored is Bruhner's subcutaneous, perivulval suture of special Vetafil® (Sutures, D.L.C. Australia Pty Ltd) or umbilical tape. A Gerlach's or 12.5 cm post mortem needle is threaded to the centre of 75cms of the suture material. The needle is introduced into the subcutaneous plane immediately ventral to the vulva. It is then progressed dorsally alongside of the vulva in an attempt to have it emerge immediately dorsal to the vulva. The needle is immediately reintroduced to the subcutaneous plane and progressed ventrally on the other side of the vulva to emerge adjacent to the original entry point. This annular, perivulval suture is then tied so that the vulval opening is reduced to just comfortably admit two fingers.

In animals with large vulvas it may be necessary to exit and immediately reintroduce the needle half way up and down the sides of the vulva. This has proved to be a completely acceptable modification of the method as described by Bruhner. It also better accommodates to the use of a much cheaper post mortem needle, and makes unnecessary the purchase of the much more expensive Gerlach's needle. The pulling through of the postmortem needle is facilitated by the use of suitable pliers.

iv. Intravenous Oxytocin Injection®. This has been found to be of great value when used as detailed. Care should be exercised with the timing of the injection. If administered too soon the degree of contraction can cause some difficulty with reinversion at the prepubic position. Therefore, the timing used should be a compromise between the ease of reinsertion (into the vagina) and the organs reinversion (which can tend to be inhibited by the organ's contraction).

v. Shock. The author has been presented with cases in which the prolapse has obviously been in existence for up to a week, and the animal has clearly recovered from any shock it may have suffered. It seems more likely that these animals have just remained quietly in their pasture until eventually noticed. It is probable that severe shock is more likely to follow severe haemorrhage, severe trauma and inefficient methods of reduction.

Treatment of severe shock, particularly when associated with severe and on going haemorrhage, has a grave prognosis and is probably uneconomic. Because of the vessels likely to be involved, stopping the haemorrhage may not be practical without amputating the uterus. Therefore, in animals with high breeding value, reduction of the prolapse and treatment with volume expanding fluids is the only course if the animals are to breed naturally. Generally, the clinician can have a clear conscience if a 6ml dose of Betsolan Forte® (Betamethasone, Jurox Pty Ltd) is administered, and about 3 gallons of tepid electrolyte solution given by stomach tube. Cases which require more time consuming and otherwise expensive treatment are likely to be unrewarding, and should only be have continued treatment in consideration of their

value, or at the insistence of the client.

Update Note: These days so much more is known about it, and the practice of fluid therapy is now more common that, subject to economic considerations, some animals which are in hypovolaemic shock might be saved by intravenous administration of colloid and/or suitable isotonic fluids. For very valuable breeding animals, I wonder if it is possible these days that, after successful amputation, ova could be aspirated by ultrasonic guided needle and subjected to IVF. One would also hope that very valuable animals would be a) docile and unlikely to compound the problem by trauma, and b) the investment protected by proper surveillance and supervision. Many times, however, everything happens so quickly, or the situation is beyond help by the time one arrives, and no treatment will succeed. GWM.

vi. Antibiotic cover. As well as insertion of intrauterine pessaries 15mls of Procaine Penicillin, or other suitable parenteral antibiotic, is given to provide at least a full three days of cover. With timid or ataxic animals it is better to limit the handling by the use of long acting antibiotic formulations.

vii. Assistance. A veterinarian cannot be expected to perform the procedures described in this article without the assistance of one adult person of reasonable strength. The catching of excitable and infrequently handled animals presents a special challenge. In some years, some beef cattle properties have been known to suffer a run of prolapses in their heifers. An efficient catching technique needs to be devised for such properties and, even if more labour is required, the owner soon comes to this realisation.

viii. Gloves. Shoulder length plastic gloves are useful during prolapse reduction. In the author's practice the climate for most of the year demanded that routine on farm dress was long sleeved overalls. In prolapse cases, the sleeves were rolled up until the uterine bathing procedure was completed. Immediately after the Oxytocin Injection ® administration the hands and forearms are rough dried with a cloth, the sleeves rolled down, the cuffs refastened, and long plastic gloves pulled on to reduced the prolapse. During the final reinversion, with the arm deeply inserted, the assistant was in position to retain the glove so that the arm remained fully covered.

3. Amputation

a). Indications.

i. Good removal of the placenta not possible without gross trauma and haemorrhage resulting.

ii. Uterus showing gross damage with continuing haemorrhage.

iii. Permanent devitalisation of the uterus. Devitalisation of the endometrium commences immediately the exposed surface dries, and sloughing is often apparent after 5-6 hours. This may be followed by induration of the organ as a whole and/or necrosis if there has been impairment of circulation. Eventually, adhesions develop between the opposed peritoneal surfaces of the everted organ.

iv. Gross internal haemorrhage is likely to occur in excitable animals that have resisted capture and constraint. Even immediate, courageous amputation will not save all of these.

b). Urgency categories

i. Almost elective: longstanding (days) cases that show no systemic effect or mild illness only.

ii. Urgent: time to make a considered decision, but the animal showing definite systemic illness which is likely to progress.

iii. Extremely urgent: usually on-going gross haemorrhage and only heroic action may save the animal.

c). Amputation technique

The simple method described here covers all indications and urgency categories with slight modification in extremely urgent cases.

i. Materials: antiseptic solution; scalpel; scissors; 75 cm of plain rubber shock cord of 1cm diameter; heavy gauge, non absorbable suture material and a large curved needle (preferably round bodied).

ii. Procedure: In cases not extremely urgent bathe with antiseptic solution and/or otherwise surgically prepare the postero-dorsal surface of the exposed uterus. Avoiding cotyledons, make a hand sized incision within the prepared area into the everted uterine sac. With a surgically prepared hand explore for any contained viscera, e.g. bladder and if found repel same towards the abdominal cavity. Place the centre of the rubber cord over the mass, as far forward as possible, if possible anterior to all cotyledons but posterior to all cervical folds.

Pull the ends of the rubber shock cord down their respective sides, around and exchange ends left and right beneath the mass. Then have an assistant pull the ends firmly to right and left. Next, particularly if one has already been repelled, check that no viscus is included within the encircling rubber. The rubber should now be pulled tight enough to cause a reduction of approximately 50% in its diameter, the ends brought around to the top and, maintaining the tension, tied off with a reef knot. Some tension should be kept on the ends to prevent the knot creeping slack.

The suture needle is threaded with about 20cm of the suture material. The threaded needle is passed under the rubber surrounding a short distance from one side of the knot. While still maintaining enough tension to prevent knot creep, the free end of the rubber on that side is brought down between ends of the suture material which is then tied off firmly. A second, similar, suture is placed on the other side of the knot. The purpose of the suture material is to maintain enough tension in the rubber to prevent the knot becoming slack. The rubber must remain tight enough to cause necrosis of all tissue distal to it. A round bodied needle is preferred since it does not possess cutting edges; even so, the needle should be passed deeply enough to prevent damage, and consequent weakness, to the rubber. Even shallow penetration of the uterine wall is

preferable to damaging the rubber.

The whole organ may be left intact. It quickly dehydrates, and within the next 48 hours it becomes considerably lighter and less bulky. The rubber tourniquet prevents further loss of blood and absorption of toxic products. Complete sloughing takes about 7 days. Alternatively, the organ may be transected at least 20cm distal to the rubber. If it has been placed with enough tension there is little fear of the rubber slipping. Initially it is maintained by the mass of the organ and it quickly beds in as the tissue beneath it devitalises. If the operator is concerned, an anchoring can be placed diametrically through the organ on one side of the tourniquet and back through the organ on the other. Tails of rubber and sutures can be trimmed to about 3cm.

iii. Extremely urgent cases, where ongoing haemorrhage is suspected, should be dealt with by first getting the rubber quickly in place and held with tension, but not tied off. Then the inspection for enclosed viscera is done; with luck there won't be any. If there is, slacken the rubber just enough to repel and quickly retighten.

iv. Supporting therapy consists of antibiotic cover, and appropriate fluid therapy. The latter can only be determined by the clinical state of the animal and an assessment of the volume of blood lost. Tetanus antitoxin should be given.

v. Aftercare: it is best to allow the animal to regain its feet in its own time. Depending upon the property, excitable beef animals may be best left in their own, familiar herd, or with a few suitable companions. Quiet dairy animals may be better separated to avoid disturbance in the milking herd. The animal should have plenty of opportunity to drink, especially during the first 24 post operative hours.

After sloughing has occurred a gentle, clean vaginal examination can be made and any remaining foreign body (rubber cord, suture etc.) can be removed. If sloughing has not occurred within 12 days examination may reveal the reason (this has not happened in the author's experience).

Discussion

Over a period of years the methods detailed for the treatment of uterine prolapse have evolved out of a search for procedures that would reduce the time and physical effort involved, but without prejudice to obtaining a result expected from a professional person. Indeed, in most procedures in cattle surgery, reduced time and physical effort are important factors in the minimization of shock. The use of the leg back-on stifle position, and the well timed use of intravenous Oxytocin Injection®, has conservatively halved both time and effort for the reduction of uterine prolapse. The use of a rubber tourniquet-sloughing technique for amputation has reduced the time and further attendant blood loss associated with more conventional methods.

There is no control for uterine prolapse apart from attempting to minimise the incidence of hypocalcaemia, and maintaining beef heifers in strong condition and not over fat. However, some client education is justified. It should be made known, especially to those who are almost compulsive calf pullers, that the uterus can follow the calf out and, while the veterinarian cannot reliably predict which animals will so suffer, if he is performing the delivery then the resultant danger and inconvenience is minimal.

Especially with beef cattle, the client is often overly concerned that delay in obtaining professional obstetrical help will endanger the life of the calf. Information on the length of time the calf can remain alive during parturition, along with guidance as to which parts of the birth process are most dangerous to the calf, is usually well received and employed to mutual satisfaction.

The dairyman can also be instructed that, despite the calf being visible with the second stage of labour well advanced, no traction should be applied if there is the slightest chance the cow is hypocalcaemic. It is not unusual for the administration of parenteral calcium to solve both problems. Unfortunately, this **wisdom** is mostly heard **after the event**.

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