# MANAGEMENT OF UROGENITAL INJURY IN THE COW

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# Abstract

Most urogenital problems in the cow mandate culling; however there are situations in which the value of the animal dictates an attempt at treatment. Most injuries occur in conjunction with parturition or pregnancy. Although many of the problems are very common, some different approaches will be discussed.

#### Key words

Cow, mummified fetus, vaginal prolapse, urovagina

# Introduction

Many urogenital problems in the cow mandate culling due to economic considerations and prognosis; however, there are situations in which the value of the animal dictates an attempt at treatment, with restoration of fertility the goal. Because most urogenital accidents or injuries occur in conjunction with pregnancy or parturition, the goal of surgical intervention may be simply to allow for delivery of the calf, or if parturition has occurred, allow for increased weight gain of the calf and/or cow for sale at a later date. Thus, although restoration of fertility may not always be achieved, a salvage procedure is often an economically viable option.

### Surgical management of the mummified fetus

A mummified fetus is rarely encountered and often the cow is culled. This condition should be differentiated from the macerated fetus, which probably has a poorer prognosis. If treatment is elected first try prostaglandins<sup>1</sup>. If this is not effective try priming the cervix with misoprostil followed in a few days with serial prostaglandin. In cases in which there is no response to these treatments a surgical remedy may be effective. Although it is possible that some of these could be removed via a hysterotomy utilizing a flank or mid-line approach, most "mummies" are so small that it is hard to get good exposure. A hysterotomy via a colpotomy<sup>2</sup> approach can be performed easier and in less time.

# [FIGURE 1 here]

The cow is restrained in a chute. If possible fast the cow, removing feed 24 hours and water overnight. Sedation or tranquilization is dependent on the patient's personality. Administer an epidural and evacuate the rectum as effectively as possible. Then place a length of 3-inch stockinette packed with cotton within the rectum. Clean the vulva and prepare the vagina by lavaging with a dilute disinfectant. Using dampened cotton pledgets dry or at least remove water from the vaginal vault. Creating a pneumovagina by introducing or allowing air in will facilitate the procedure. With a blade carefully guarded between finger and thumb, introduce your hand

into the vagina and at a location in the anterior vagina that is dorso-lateral (10:00) to the cervix make a small stab incision. Then remove your hand and re-enter the vagina without the blade. Enlarge the incision bluntly first with your fingers and then hand until you can introduce your hand into the abdomen. At this time you can easily palpate the uterus and when the horn with the mummy is located grasp and retract it out through the rent that you created in the vagina. Once it is exposed make an incision into the uterus, extract the mummy, and suture the uterus with a continuous suture pattern as you would a c-section hysterotomy. Replace the uterus. Although suturing the vagina is considered optional and I do not attempt to close colpotomy incisions on mares, I close it in cows. This can be done with a continuous pattern (the suture technique described later for uterine tears can be utilized). Fertility should be the same as those that respond to prostaglandins.

In the case of a macerated fetus this procedure did not work as well. In that case fetal bones were embedded into the endometrium. A colleague has suggested that repeated inter-uterine infusions of vinegar prior to removal might soften the fetal bones and make them more amenable to removal. However, my expectation is that the prognosis for a return to fertility would still be low in these cases even if the fetal parts could be successfully removed.

#### Vaginal and cervical prolapse

There are several methods employed to retain a prolapse and prevent (at least temporarily) reprolapse. The most commonly used method for retention is the Buhner. This is a purse string suture that utilizes the long specially designed Buhner needle and gauze tape. Advantages are that it is easy to do, it provides good retention, and there are usually few complications. It is the method of choice for cows that are not pregnant and destined to be culled. The main disadvantage is that if the cow is pregnant and most vaginal prolapses occur in late pregnancy, the suture must be removed prior to calving.

I began using the prolapse pins after some cows (typically Brahman influence) developed swelling, cellulitis, and infection after a Buhner procedure was performed. These are small pins (about the diameter of a 20 penny nail and 10cm long) with wooden pegs on the ends. These are placed transversely through and across the vulva. Typically 3, but sometimes 2 pins will provide adequate retention. Advantages are that it is external, does not cause the swelling that a Buhner will, and provides good retention. The disadvantages are that the pins must be removed prior to calving and that you must keep a supply of the pins as well as a specialized needle that facilitates passage of the pins on hand.

Another type of prolapse pin which can be used in the pregnant cow and allow calving without removal is marketed by Jorgensen Laboratories under the name Jorvet Prolapse Kit and by Kane Enterprises as the Pro-Fix Button<sup>™</sup>. This is basically a modification of the Minchev procedure and so I will briefly describe both. After replacing the vagina and/or cervix introduce the prolapse needle (this is a sharpened metal pin housed inside a rigid plastic fixature) vaginally to a point in the cranial vagina close to the cervix. This is important because pins or sutures placed mid way in the vagina will allow a "partial" prolapse of the vagina and with the straining that is stimulated by that, tearing and complete prolapse can follow. With an appreciation for the location of the rectum as well as the iliac artery and vein place the needle through the vaginal wall and direct it out through the sacrosciatic ligament toward the skin over the gluteal area.

These products have "buttons" that are fixed to the outer area and facilitate retention. The old Minchev procedure simply utilizes umbilical tape rather than a rigid pin. In a modification<sup>3</sup> of this technique, the tape is passed using a Gerlach needle and then fastened to the outside with a gauze stent. It is fixed on the inside (vaginal wall with a button (a top from a syringe case can be used). The advantage to this procedure is that because it does not restrict the vagina, calving can proceed. Also, because adhesions are created; it can provide a "permanent" repair.

Another method is the Winkler or cervicopexy in which the cervix is sutured down to the prepubic tendon. Using a nonabsorbable (8mm Braunamid<sup>™</sup>) with a long S-shaped needle (13cm length) that has been bent into a U-shape take a transverse bite through the cervix. This can be most easily done with the cervix retracted (prolapsed cervix prior to replacement). Then after replacing the cervix pass the needle through the vagina ventrally 4-5 cm off the midline (placement of a urinary catheter is recommended to prevent its entrapment). Engaging the prepubic tendon, return the needle through the vagina and tie the suture ends. A modification of this procedure has been described that utilizes a 2<sup>nd</sup> surgeon who from a lateral flank approach assists by placing and passing the needle through the prepubic tendon and back to you through the vagina. In my opinion the main difficulty in performing this procedure without assistance is not in engaging the prepubic tendon, but in the re-introduction through the vagina. If you attempt this without assistance and have trouble passing the needle back into the vagina, a colpotomy approach (like that described in the mummy removal surgery) can be used. This will also help you better assure proper suture placement with respect to the urethra and bladder. This incision must be closed however as evisceration would be a possible (likely) complication due to the fact that most prolapse cows continue to strain following prolapse repair.

It also important to remember that these prolapses unlike the uterine prolapse are hereditary and the owner would be well advised to cull the cow. The situation that is encountered that probably warrants an exception is the embryo donor that has had repeated superovulatory treatments. If there is not an incidence or history of vaginal or cervical prolapse in the cows daughters or her dam, then it is possible the condition is iatrogenic.

# **Chronic Urine Poolers**

These seem to be a result of one of two etiologies. Some are the result of a calving injury and some occur in older donor cows due to multiple superovulation treatments. In either case there are several ways this can be managed. In the case of the donor cow, a temporary solution is to place a urinary catheter (Foley<sup>TM</sup>) and leave in place 2 days prior to breeding through embryo recovery. At the egress of the catheter place the "finger" from a latex surgery/exam glove. Tape or glue it so that it will stay in place and make a slit in the end. This will allow the outflow of urine, while preventing the inflow of air.

From the standpoint of a more permanent solution the urethral extension surgery as performed on mares can be done. This can be fairly time consuming and thus expensive. To me it is harder to perform on a cow than a mare so why charge less? Also, two easier options exist. The first is the placement of a circumferential suture in the cranial vagina. This is described by some Spanish veterinarians (Dr. Gonzalez-Martin and others).<sup>4</sup>

This is simply the placement of suture in the vestibule of the cow. To do this you place the first bite starting at about 4:00 o'clock 3-4 cm cranial and superficial to the urethra (you may place a catheter in the urethra to confirm this). This bite is about 4-6 cm in length, the needle coming out at about 8:00 o'clock. The needle is then re-introduced into the vaginal mucosa at about 12:00 o'clock and passed until close to the original (4:00 o'clock) insertion point. The suture is then tightened. You will want to allow a diameter of 3-6cm (2 fingers) and this will obviously allow an AI breeding.

Another option that we have employed is the utilization of the Minchev (or a modification using the Johnson Pins<sup>™</sup>). This serves to "pull up" the vagina enough to correct the urine pooling.

Finally, an old standby is a procedure described by Dr. Hudson.<sup>5</sup> In this technique the creation of a transverse dam across the floor of the vagina cranial to the urinary meatus after which a caslick procedure may be performed. The patient is prepared as with the other procedures, restrained, an epidural administered and the vagina prepared with antiseptic lavage. Entering the vagina manually, a fold of tissue is grasped and rolled up at the level of the constrictor vestibuli m. to create a transverse fold. Place an anchor suture with a half curved, cutting edge needle and either #3 or #4 catgut at the four o'clock position on the lateral wall and continuing with a mattress suture pattern in which you are alternatively passing the needle cranially and caudally through the fold you created. Care should be taken to avoid the urethra and you should begin, proceed

and end the pattern keeping in mind the goal of incorporating 120° of the vaginal circumference and the creation of a semilunar dam of about 5cm. Because of a "drawstring" effect that results from the mattress suture, there will not be a consistent height of the dam, but this does not affect the effectiveness. Adhesions should form within the tissues pulled together to form the dam making this a permanent barrier to urine retention.

# Summary

All of the procedures described can be performed on the farm if there are proper facilities with adequate restraint. Also because the projected outcome of many cows with the aforementioned conditions is culling, there is really no downside to attempting treatment if the breeding value of the cow exceeds her slaughter value.

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Urogenital surgery in the cow figures



# FIGURE 1

The exteriorized uterine horn is excised

FIGURE 2

