

Excision of a Bovine Uterine Intramural Abscess via Colpotomy

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Introduction

The College of Veterinary Medicine at Mississippi State University received an emergency request for assistance in relieving a dystocia in a genetically superior four year old Holstein dairy cow. Prior to the arrival of the responding veterinary clinician, the dystocia was relieved by the dairy herdsman using forced extraction. Immediately post-calving, the cow retained her fetal membranes and developed problems with pneumovagina due to a vulvar tear. Reproductive examinations were performed on the cow at weekly intervals until uterine involution was complete. During the sixty days following calving, a series of related problems developed. A metritis resulted from placental retention and pneumovagina. Despite injectable estrogen therapy and intrauterine oxytetracycline infusions, the metritis progressed to pyometra. The pyometra responded to treatment during the fourth and fifth weeks postpartum; however, a distinct mass developed in the right uterine horn near its junction with the uterine body.

By the sixth week postpartum, uterine involution was complete except for the presence of the well demarcated, egg-shaped mass 12 centimeters in diameter located in the wall of the right uterine horn near its junction with the uterine body (see figure 1). It was determined by repeated examinations over the next 2 weeks that the intramural mass was slowly enlarging, becoming more fluctuant and softening on the anterior-lateral side. The intramural mass was tentatively diagnosed to be a 12 centimeter intramural uterine abscess. The treatment offering the best prognosis for return to reproductive soundness was determined to be surgical removal of the abscess *in toto*, completely ablating the abscess while avoiding contamination of the abdomen with purulent material.

Surgical Procedure

It was desirable to exteriorize the uterine abscess for visualization during dissection in order to remove it *in toto* and to avoid spilling its contents into the ab-

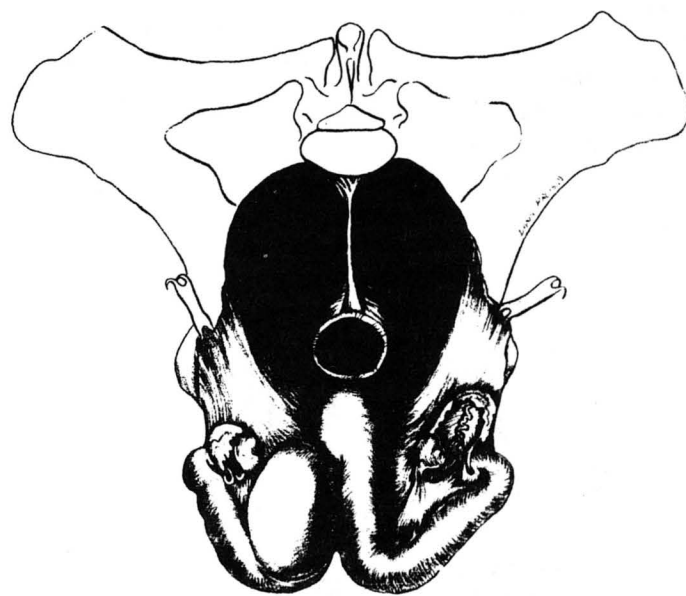


Figure 1. Anterior-posterior view depicting size and relative location of intramural abscess.

dominal cavity. Anatomical restriction imposed by the size and location of the reproductive tract within the pelvic cavity of the mature Holstein complicated the selection of a surgical approach. Since the abscess was located midway the length of a 45 centimeter reproductive tract, it could not be exteriorized through the standard paralumbar fossa nor the midventral surgical approaches. An approach by colpotomy was therefore chosen as the only method for complete exteriorization.

The surgical procedure was performed with the animal in the standing position. The posterior pelvic cavity and the perineal area were anesthetized using a standard caudal epidural block¹ with 6 ml of 2% Lidocaine hydrochloride. The perineal area was prepared for surgery by first placing a purse-string suture in the anus with umbilical tape. The proposed surgical site in the vagina was prepared with repeated iodophor douches. In the event that additional access to the mass was desirable, a second operative site was prepared in the right paralumbar fossa and was anesthetized with a local in-

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filtration block using 2% Lidocaine hydrochloride.

The incision in the vagina was located approximately 3 centimeters from the vaginal fornix and extended caudally for approximately 6 centimeters (see figure 2). The incision through the vaginal wall was made with a blunt Lichty's teat knife.^a When the vaginal surface of the rectovaginal pouch was encountered it was manually disrupted the approximate length of the vaginal incision. A hand was introduced through this incision to the point where the mass could be palpated. Attempts to exteriorize the uterine horn and mass with one hand through the single vaginal incision failed due to these three factors: the size of the lesion precluded encompassing the lesion manually; the lack of friction between the operator's gloved hand and the serosal surface the uterine mass prevented adequate traction on the mass, and the mass became entangled in loose connective tissue association with the vaginal incision.

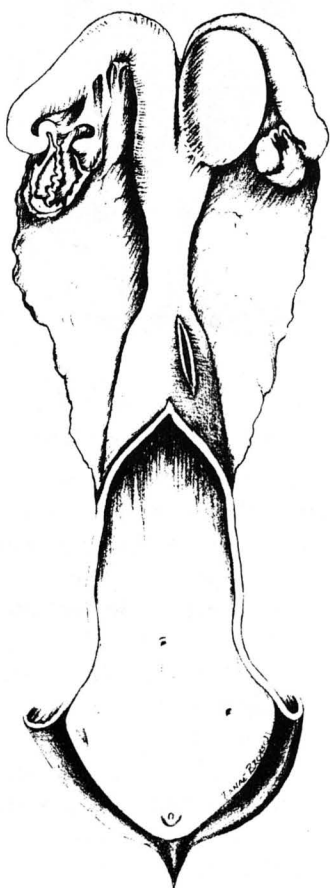


Figure 2. Posterior view demonstrating location of vaginal incision.

The second operative site had been prepared in the event that the attempt by a single hand to exteriorize the mass was unsuccessful. The second surgical approach was a standard right paralumbar fossa

laparotomy² 12 centimeters in length which provided a second surgeon access to the intramural mass. One hand from each of the operators was introduced through their respective incisions. The operator in the vaginal incision applied gentle traction on the mass guiding it through the vaginal incision while the operator in the right flank applied a coordinated repelling force. The right uterine horn and accompanying intramural mass were thereby prolapsed through the vaginal incision into the vagina and exteriorized through the vulvar labiae (see figure 3).

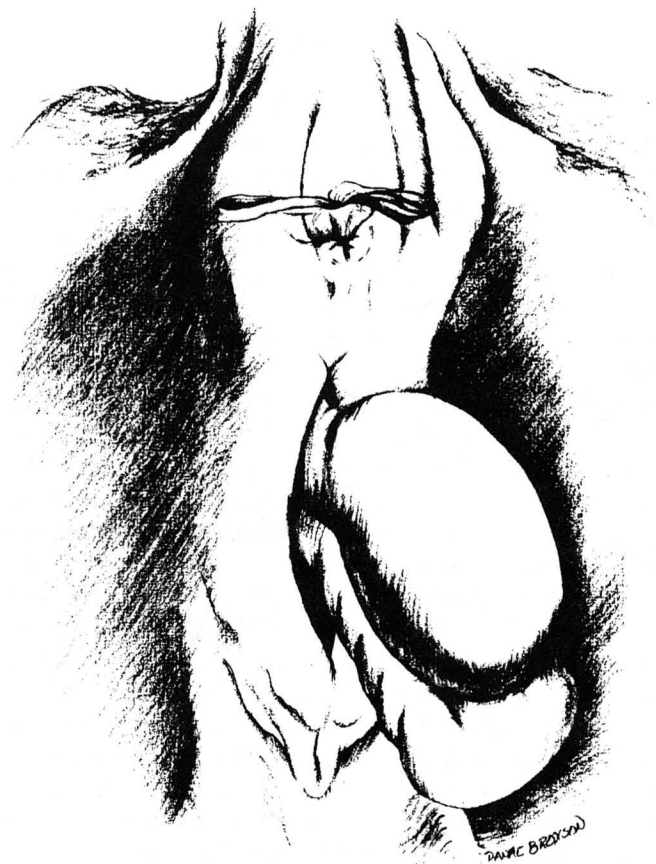


Figure 3. Posterior view showing right uterine horn with intramural abscess exteriorized through the vulvar labiae. Note purse-string suture in anus.

With the affected tissues exteriorized it was possible to definitively diagnose the mass as an abscess. Dissection of the abscess was begun by creating an elliptical incision over the outer edges of the mass approximately 13 centimeters in length and 8 centimeters in breadth using a scalpel. The abscess was removed in toto without spilling its content by bluntly dissecting it free from the remaining uterine serosa, muscularis, and mucosa. The lesion and the accompanying portion of the uterine wall was submitted for histopathology and bacteriology.

^aJorgensen Laboratories Inc., Loveland, CO.

The uterine wound was closed in 2 layers, the first a simple continuous pattern oversewn by a continuous Cushings, both with 2/0 Dexon^b using a swaged on atraumatic needle. The exposed uterine suture line was bathed in 500 milliliters of normal saline and 1 million IU of potassium penicillin before the organ was returned to the pelvic cavity. Proper anatomical reduction was verified through the right paralumbar fossa wound. The wound in the right flank was closed using a routine 3-layer closure². The vaginal wound was approximated with 2/0 Dexon^b in a simple continuous pattern.

Results

Postsurgically the cow was placed on 3 grams of oxytetracycline intravenously twice daily for five days and discharged to the care of the owner. The cow was re-evaluated at weekly intervals after discharge. Two weeks after discharge, the cow experienced a mild pelvic peritonitis which responded well to penicillin; however, adhesions developed between the uterus and other pelvic structures. Additionally, a mild metritis developed which responded to intrauterine infusions of oxytetracycline. Within 2½ months postsurgery or about 4½ months postcalving, the uterine adhesions were negligible and the metritis was resolved, so the cow was programmed for breeding. The cow became pregnant in the right uterine horn through artificial insemination.

The cow maintained the pregnancy and carried the calf to full-term but did not experience a normal parturition. Labor began, but before the calf was delivered, labor ceased, and the calf was delivered by the herdsman. Several hours following parturition the cow became depressed, anorexic and febrile and was once again presented to the College of Veterinary Medicine, Mississippi State University for evaluation. Clinical examination at this time revealed a dorsal uterine rupture approximately 40 centimeters in length extending from 5 centimeters anterior to the cervix to the tip of the right uterine horn. The uterine rupture occurred in the same location as the site of abscess excision. By right side laparotomy the ruptured uterus was sutured and healing was uncomplicated with the exception of scarring at the site of rupture. The cow was returned to production.

Discussion

Development of an intramural uterine abscess occurs infrequently as a sequel to severe metritis, improper removal of the placenta, or localized traumatic injury to the wall of the uterus during delivery or subsequent medication of the uterus during involution^{3,4}. Excision of such an abscess should be considered in the genetically superior cow if it interferes with fertility, or

manipulation of the uterus for embryo recovery procedures, or if there is fear that the abscess will spontaneously rupture. Using colpotomy as the surgical approach allows one to completely exteriorize the uterine horn for removal of the abscess thereby increasing visibility and protecting the abdomen from contamination in the event of abscess rupture during excision. Colpotomy has been described as an approach for ovarian removal but has not been described for a procedure such as removal of a uterine abscess^{5,6}.

An approach via colpotomy was chosen so that the uterine mass could be completely exteriorized for safe excision. No other approach would allow complete exteriorization^{7,8}. A midline approach in this instance was not practical because of the presence of a large early lactation udder with extensive venous drainage and the difficulty in exteriorizing a mass located 20 cm from the vulva of the cow on the involuted uterus. Likewise, due to the shortness of the involuted uterus and mid-way location of the mass, it was deemed impractical to try to exteriorize the mass through a flank approach. Other authors have described successful removal of uterine masses through standard flank and midline approaches, but poor exposure did not allow dissection of the masses. In these other reports the entire uterine horn and ovary on the ipsilateral side were excised along with the masses.^{7,8}

The cow in this report was restored to reproductive soundness as evidenced by the pregnancy which followed surgery. However, the rupture of the uterus at parturition discloses one complication possible after extensive uterine wall surgery - that of scarring and weakening of the uterine wall. In human literature uterine rupture at parturition is a common sequel to uterine scarring^{9,10}. When selecting a cow for this procedure it may be wise to avoid full term pregnancy by placing the cow in an embryo transfer program where recipient animals will deliver the calves.

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