

ruminal juice which can be very rapidly obtained and checked for pH. The paper that I use is manufactured or sold through Scientific Products and is a wide range pH paper. The pH variation is 4-9. This would involve most of the hyperacidity conditions as well as alkaline conditions. I think the use of pH paper permits you to make a logical judgment as to what type of therapeutic agent

you're going to put in the rumen. When you consider the packaged products available to us, almost all of them are alkalizing agents. Now, in some simple indigestion problems they may be contraindicated; so if you will check the ruminal pH—it will not take you long—and it will serve you and your client well.

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## Amputation of Prolapsed Cervical Rings

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The cow's cervix is normally two to four inches in length and three-fourths to two and three fourths in diameter. The cervix in a heifer may be smaller than the minimum size given for cows. As a cow increases in the number of parturitions and in age, the size of her cervix usually increases. The size of the cervix in aged cows may exceed the dimensions listed, especially in regard to diameter.

The cervix is part of the tubular genitalia and forms the connection between the vagina and uterus. Internally, the cervix is a potential canal which is effectively closed by partially interdigitating, muscular, fibrous, transverse annular rings which have a cartilaginous consistency.

The external os of the cervix is normally flush with the fornix of the vagina and does not protrude into the lumen of the vagina. When the normal cervix is viewed through a vaginal speculum, it appears as a slightly thickened extension of the vaginal wall with a central opening, pale pink in color, in the anterior fornix of the vagina.

On rectal palpation the cervix is identified by its firm rope-like consistency of the dimensions described.

Occasionally the cervix is identified as being abnormal when palpated rectally. One of the abnormal conditions of the cervix which can be identified is prolapse of the transverse annular rings through the external os into the lumen of the vagina. This condition is identified by its "door-knob"-like structure. The external os of the cervix will be enlarged two to three times the diameter of

the body of the cervix. In some extreme cases the enlargement may be greater.

When viewed through a vaginal speculum, the cervix with prolapsed rings appears enlarged and greatly thickened. The opening is dilated with folds of tissue protruding through it. Not always, but usually, petechial hemorrhages can be seen on the prolapsed rings. One should be aware that vigorous palpation or attempts to pass an insemination rod may cause this evidence of inflammation.

We think that prolapsed rings occur subsequent to trauma at the time of parturition. It may represent a site of chronic infection which may or may not be due to the trauma of calving. We also think that injudicious attempts to dilate the cervix and remove retained fetal membranes can result in chronic cervicitis and prolapsed cervical rings.

When we identify prolapsed cervical rings on a postpartum exam, we are usually not concerned with immediate therapy or surgery. Most mild or moderate cases will correct with time. Many cases diagnosed at 30 days postpartum will not be found at sixty to ninety days postpartum. In addition, many cows will conceive and experience normal gestation in spite of the presence of prolapsed cervical rings at the time of breeding.

There are, in general, two situations when we will attempt to correct this condition. If we feel that the condition is severe when found on postpartum examination, we treat the condition medically with infusions of antiseptic solutions into the cervix and vagina. If the condition does not respond and the cow does not conceive after

three services, we will surgically remove the prolapsed rings. If our initial examination is for reason of infertility and prolapsed rings are present, we will remove them.

Our hypothesis is that this condition may interfere with conception in one of two ways. The prolapsed rings represent a site of chronic infection which may ascend into the uterus precluding implantation. An observation in support of this is that some affected cows experience a longer than normal interval between estrus periods. Also in support of this, we and others have cultured a variety of organisms from the area of the prolapsed rings; however, the significance of this observation and finding is inconclusive.

Another possibility exists that the cervix affected with prolapsed rings may not form a cervical plug. This could cause early termination of pregnancy.

Our procedure for removing the rings is as follows. We begin by administering a light epidural anesthetic. We inject 3 cc of 2% lidocaine HCl epidurally. Although there are no sensory fibers present in the cervix, we use the epidural technique to avoid causing the cow to strain. A tail tie is then used to secure the tail, or an assistant is used for this purpose. We prepare the perineal area by scrubbing and then applying 2% tincture of iodine. We use a plastic sleeve and enter the vagina with

the left hand and arm. A uterine forceps is directed into the vagina with the right hand. The left hand is used to identify the best location to secure the jaws of the uterine forceps. The forceps is attached to the largest part of the prolapsed ring. Then, with gradual traction the cervix is drawn out through the lips of the vulva and exposed. The left hand is used to aid in extracting the cervix. Occasionally it is necessary to have an assistant push inward on the vulva to aid exposure. Once the cervix is exposed, the prolapsed rings are amputated with a scissors. The cervix immediately retracts to its normal position. The vagina is then irrigated with an antiseptic solution. Our preference is dilute iodine solution (2% Lugols solution).

If the cow is to be bred, it should be done prior to the surgery or at the following estrus period. Results are measured by subsequent conception. We have not done an extensive number of these, but results have been rewarding.

#### References

Roberts, S. J. (1971). *Veterinary Obstetrics and Genital Diseases*, 2nd ed., Edwards Bros., Ann Arbor, Mich. — Arthur, G. H. (1964). *Wright's Veterinary Obstetrics*, 3rd ed., Williams & Wilkins Co., Baltimore, Md.

*Question:* Have you had any scar tissue build up after this surgical procedure?

*Answer:* No, we have not had a problem with this.

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## Application of Certain Enzyme Tests in Bovine Practice

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Having read the article on serum enzymes in *The Bovine Practitioner* of November 1972 by Dr. L. J. Rich and Dr. M. L. Dunavant, I decided to attend the seminar on Laboratory Medicine in Bovine Practice given by Dr. G. W. Osbandiston held at the Milwaukee meeting in 1972. From these two exposures, I decided to further explore the value of kinetic enzymes and their meaningfulness in our practice. We spent considerable time evaluating the different types of equipment to determine which would be the most satisfactory in our type of operation. We decided on the Coleman Spectrophotometer, Model 55. Even though it was more

expensive, we felt that its accuracy and ease of cleaning and care justified this expense. From our experience I feel that it is important to have an available competent service representative who is fully qualified and experienced to give service as well as information on the performance of these tests and on the equipment sold.

The enzyme tests that we have performed are: Serum glutamic oxaloacetic transaminase or SGOT; Creatine phosphokinase or CPK; Lactate dehydrogenase or LDH; Glutamic dehydrogenase or GLDH; and Sorbitol dehydrogenase or SDH.