

necropsy findings. Rumen and blood ammonia levels are of diagnostic value if obtained from the live animal or one dead less than a few hours. Rumen ammonia levels in this case were noncontributory because of the prolonged post-mortem interval prior to collection of samples.

Consumption of approximately 100 gallons of water indicates each of the 31 heifers could have received 300 grams of urea or potentially enough to kill a 660 pound animal if each drank equal quantities. (The estimated average weight of the smaller group was 500 pounds and 800 pounds in the large.) The heifers necropsied apparently were quite thirsty as evidenced by the empty urinary bladders and drank excessively

as evidence by the "tanked up" rumens. Differing quantities consumed obviously accounted for the deaths in some and not in others.

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References

1. Brookes, I.M., et. al.: Urea and Sodium Bicarbonate Metabolism by Ruminants and by Ruminant Micro-organisms. *Jour. of An. Sci.*, 35 (1972): 877-882. - 2. Buck, W.B.: Laboratory Toxicologic Tests and Their Interpretation. *Jour. Am. Vet. Med. Assoc.*, 155 (Sept. 15, 1969): 1928-1940. - 3. Jacobs, M.B.: *Analytical Chemistry of Industrial Pollutants, Hazards, and Solvents.* Interscience Publishers, 1949.

Examination and Surgery of Prolapsed Cervical Rings

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The purpose of this presentation is to focus attention on the value of the vaginal speculum as a diagnostic aid and secondly to emphasize abnormalities of the cervix as a cause of infertility. The use of a vaginal speculum should be routine in the examination of repeat breeder cows.

As veterinarians, often we overlook or ignore cervical problems in our examination of the reproductive tract. With the use of a vaginal speculum, especially one with the light at the distal end, it is possible to thoroughly examine the vagina and the cervix. With this instrument we can diagnose vaginitis, pneumovagina and urovagina, abnormal discharge from the cervix, scar tissue involving the cervix and prolapsed (everted) cervical annular rings. The above listed conditions may go undetected if only a rectal examination is made.

If we detect injury to the cervix as evidenced by the presence of scar tissue in a repeat breeder cow, we may not be able to correct the situation, but we can advise the owner that it may be responsible for the cow's failure to conceive and/or maintain pregnancy.

Cervicitis as evidenced by swelling, redness and enlargement of the external os and muco-purulent discharge can be recognized and treated with antibiotic or disinfectant (2% Lugol's solution) infusion plus sexual rest until the inflammation subsides.

Prolapsed Cervical Annular Rings

Eversion of annular rings through the external os of the cervix is evidence of injury to the cervical canal, which may have occurred during parturition or manual dilatation of the cervix for removal of retained fetal membranes. Amputation of the prolapsed tissue has proven beneficial in repeat breeder cows.

The everted tissue varies in size from a small protrusion to a cauliflower-like structure, of 1" to 2" diameter which is actually the free border of the annular fold which tapers to its attachment in the cervical canal. On rectal palpation the posterior end of the cervix feels 2-3 times normal size.

This condition may interfere with conception by providing a site for chronic infection which may invade the

uterus and prevent implantation. Another possibility is that the prolapsed rings prevent the external os of the cervix from closing and maintaining a cervical plug. This may allow early fetal death or premature termination of pregnancy.

Surgical Procedure

1. Epidural 4-5 cc. Xylocaine, 2% prevents straining and defecation during surgery.
2. Surgical scrub of vulva and perineal area.
3. Secure the prolapsed tissue in the jaws of a uterine forceps with the aid of the left hand in the vagina.
4. Expose the cervix at the vulvar lips by gradual traction with left hand holding the cervix and right hand holding the uterine forceps.
5. Have assistant retract the lips of the vulva to expose the cervix.
6. Amputate the prolapsed tissue as close as possible to its attachment in the cervical canal with a scissors or scalpel.
7. The cervix retracts to the normal position and the vagina may be irrigated with 2% Lugol's.

Following are the results of surgery in 12 cases which we have detected in the past 2-1/2 years.

Results of Surgery

No. of Cases	12
No. of Pregnancies Resulting	11 (1 abortion)
Avg. Age of Cows	10 years
Avg. Interval Calving to Surgery	7.6 months
Avg. No. of Services Before Surgery	3.5
Avg. Interval Surgery to Conception	1.5 months
Avg. No. of Services After Surgery	1.58

In conclusion, may I remind you that the use of a vaginal speculum opens up a whole new world in the diagnosis of infertility in repeat breeder animals.

References

Heider, L.E., and Tharp, V.L. Amputation of Prolapsed Cervical Rings. Ohio State University, Columbus, Ohio. - Williams, W.L. (1921). *The Diseases of the Genital Organs of Domestic Animals.*