Urethral Diverticulum Prevents Catheterization in Male White-tailed Deer (Odocoileus virginianus Zimmermann)

Terry J. Kreeger and Glenn D. Del Giudice, Department of Fisheries and Wildlife, University of Minnesota, St. Paul, Minnesota 55108, USA; and Ulysses S. Seal, Veteran's Administration Medical Center, Research Service, Minneapolis, Minnesota 55417, USA and Departments of Biochemistry and Fisheries and Wildlife, University of Minnesota, St. Paul, Minnesota 55108, USA.

Urinanalysis can provide information on several physiologic states including nutrition (Warren et al., 1981, J. Wildl. Manage. 45: 926-936), reproduction (Lasley et al., 1984, Am. Assoc. Zoo Vet. Proc., pp. 165-167) and disease (Benjamin, 1978, Outline of Veterinary Clinical Pathology, Iowa St. Univ. Press, Ames, Iowa, pp. 180-215). Urine has recently been analyzed as an index of nutrition in white-tailed deer (Warren et al., 1982, J. Wildl. Manage. 46: 302-312; Del Giudice et al., unpubl. data). The three primary methods of urine collection are voiding, catheterization and cystocentesis. Catheterization is advantageous in that it is efficacious and relatively free of contamination (Duncan and Prasse, 1977, Veterinary Laboratory Medicine Clinical Pathology, Iowa St. Univ. Press, Ames, Iowa, pp. 99-113). While urethral catheterization is relatively easy to do, it is difficult, if not impossible, to perform on bucks due to an anatomic barrier.

We have attempted to collect urine in anesthetized male deer several times via catheterization using a size five French polypropylene urethral catheter (Sovereign®, Sherwood Medical Co., St. Louis, Missouri 63155, USA). After the catheter was advanced approximately 22 cm into the urethra, passage was blocked prior to reaching the urinary bladder. The blockage appeared to occur at the level of the ischiatic arch in all deer. To ascertain the exact location of this site, three road-killed deer were obtained from the Minnesota Department of Natural Resources. A catheter was inserted as previously described. When the obstruction was encountered, the catheter was clamped into place and the entire urinary tract removed. Careful dissection of the urethra beginning at the urethral orifice and progressing to the tip of the catheter revealed that the catheter had lodged in a urethral diverticulum. This was found in all three bucks examined. The diverticulum was located on the ventral aspect of the penile urethra just distal to the beginning of the pelvic urethra at the level of the bulbourethral glands. Its location and morphology appear to be identical to those of a male domestic goat (Capra hircus) (Hinkke et al., 1978, J. Am. Vet. Med. Assoc. 173: 1584-1586; Tayal et al., 1984, Vet. Radiol. 25: 260-264).

To further visualize the diverticulum, contrast radiographic studies were performed on dissected urinary tracts. Iothalmate meglumine contrast medium