Colorado State University
College of Veterinary Medicine and Biomedical Sciences

E-ROUNDS
APPLIED RESEARCH FOR TODAY'S EQUINE COMPANION

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Case File: The Bladder (stone) Buster

Signalment and History

- *Eight* is a 19-year-old Quarter Horse gelding.
- The horse had a history of pollakiuria since the previous summer and urinary incontinence represented by dribbling urine.
- A firm mass was palpated in the trigone of the bladder via transrectal palpation by the referring veterinarian/owner.

Initial Examination

- Physical examination was within normal limits.
- Transrectal palpation revealed a small bladder with a firm mass (3–4 cm diam.) located at the caudal aspect of the bladder sitting on the pelvic floor.

Differential Diagnoses

- Mass/Tumor in the trigone of the bladder
- Cystic Calculi

Diagnosis

- Cystic Calculi

Further Diagnostics

- Chemistry panel: Kidney enzymes were within normal limits.
- Transrectal ultrasound: The mass was hyperechoic with a strong distal acoustic shadow which was consistent with cystic calculi.
- The palpable portion of the ureters were within normal limits (transrectal palpation).
- No stones were visualized within the kidneys and the renal pelvis of both kidneys were not dilated.

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CSU Veterinary Teaching Hospital

At Colorado State University, equine veterinary care is delivered through the collaboration of three nationally recognized equine service centers:

- Colorado State University Orthopaedic Research Center
- Colorado State University Equine Reproduction Laboratory
- Colorado State University Veterinary Teaching Hospital Equine Service

Equine treatment capabilities at CSU are at the forefront of equine veterinary medicine through the shared expertise of these organizations.

Questions regarding this case file may be directed to:

CSU Veterinary Teaching Hospital
Equine Clinical Service

Equine News & Events

Treatment Options

- Removal through a perineal urethrostomy (males) or urethrotomy/sphincterotomy (females)
- Parainguinal laparocystotomy
- Caudal paramedian laparocystotomy
- Pararectal cystotomy
- Caudal ventral midline laparocystotomy
- Laparoscopic cystotomy
- Perineal urthrostomy and lithotripsy

Treatment

- *Eight* underwent perineal urethrostomy and lithotripsy on December 1, 2012.
- He was sedated with 5 mg detomidine and 5 mg of butorphanol as a loading dose and then maintained on an IV drip of sedation to effect (20 mg/L detomidine and 10 mg/L butorphanol in saline).
- A caudal epidural with 75 mg xylazine and 100 mg mepivacaine was performed.
- Perineal urethrostomy (PU) performed at the level of the ischial arch.
- Advancement of the specimen retrieval bag (Endo Catch™ II, Covidien, Fig. 1) into the bladder via the PU site.
- Transrectal manipulation of the stone into the bag.
- Sterile lubrication is then pumped into the bag containing the stone.
- The lithotripsy device is advanced into the opening of the bag, and a hand is passed transrectally to stabilize the stone while the lithotripsy device is activated (Fig. 2).
- Once the stone had been fragmented to small enough pieces, the bag was extracted from the bladder with gentle traction (Fig. 3).

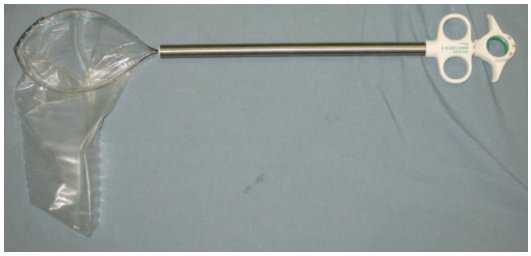

Fig. 1: Deployed specimen retrieval bag (Endo Catch™ II, Covidien)

Fig. 2: Placement of the lithotrite into the Endo Catch II bag to fragment the urolith contained within the bag.

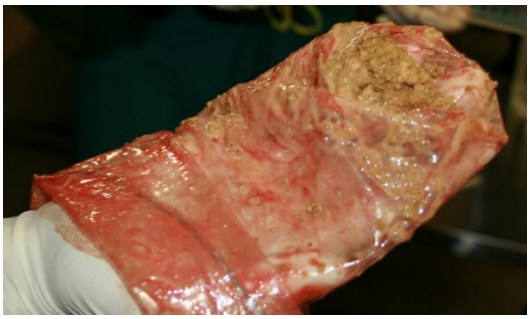

Fig. 3: Fragments of the urolith that were contained within the bag after lithotripsy.

- Upon removal of the stone, cystoscopy was performed through the PU site and the bladder was examined for any additional stones or injury.
- Mild sediment persisted and the bladder was copiously lavaged. The lavage was repeated the following day.
- *Eight* was discharged the following day. The PU site would heal by second intention. *Eight* was to remain on Trimethoprim Sulfa for seven days and flunixin meglumine for three days.

Follow Up

Eight did well post-operatively. At one week post-operative, the PU site was healing nicely. At five months post-operative, he had healed completely and was back to work. There was no longer evidence of pollakiuria or urinary incontinence.

Discussion Points

The prevalence of equine urolithiasis is low (0.04–0.5%). During clinical presentation, calculi are most commonly found in the bladder or urethra and less commonly in the ureter and kidney. Equine uroliths are primarily composed of calcium carbonate and are often round with a spiculated surface (Fig. 4). The environment of the equine bladder; alkaline, viscid due to mucus production and mineral supersaturation, is a perfect environment for urolith formation. Veterinarians should ultrasound both kidneys and perform a diagnostic profile to search for renal azotemia prior to proceeding with surgery to provide an accurate prognosis.

Fragmentation of equine uroliths can be achieved manually with crushing forceps or by lithotripsy. Lithotripsy in equine patients has been reported. The reports describe the use of electrohydraulic lithotripsy (shockwave) or laser lithotripsy. The lithotripsy device utilized in this case was a pneumatic lithotrite (Fig. 5) driven by pressurized carbon dioxide or nitrogen gas.

Fig. 4: Cystoscopy revealing a large calculus

Fig. 5: Fragmentation of equine uroliths can be achieved manually with crushing forceps or by lithotripsy. Lithotripsy in equine patients has been reported. The reports describe the use of electrohydraulic lithotripsy (shockwave) or laser lithotripsy. The lithotripsy device utilized in this case was a pneumatic lithotrite (shown assembled in top photo) driven by pressurized carbon dioxide or nitrogen gas.

Acknowledgements

This case was prepared by Katie Seabaugh, DVM, MS, DACVS. This procedure was initially described by Dr. John Ismay from Sturgis, South Dakota. Through his generous donation of the equipment to CSU, we are now able to provide this treatment option to horses with bladder stones.

Equine News & Events

- **April 26**
  Equine Reproduction Laboratory Grand Opening
  The **Equine Reproduction Laboratory** invites you to the grand opening of its research, teaching, and clinical service flagship facility. The event begins at 4 p.m., with short remarks at 4:15 p.m. The grand opening features guided tours (until 5:15 p.m.) and refreshments. No reservations needed, just drop by and enjoy the hospitality of the new ERL.

- **April 27 at Noon**
  Join us at the B.W. Pickett Equine Center on Colorado State University's Foothills Campus for a **free** screening of the new CSU film documentary, "**Horse Sense**." This film was created by Chapman University's documentary film program and illustrates how CSU is helping advance equine health, support equine industry growth, and preserve the human-horse connection. Lunch is available for purchase, and no reservations are necessary.

- **April 27 at 1:30 p.m.**
  Legends of Ranching and Special Showing of "Horse Sense"
  The annual **Legends of Ranching Performance Horse Sale** caps a trademark education program in CSU Equine Sciences. In the program, CSU students have the unique opportunity to train well-bred young horses, taking the animals from barely halter-broken to working calmly under saddle. Legends of Ranching is held at the B.W. Pickett Equine Center, on Colorado State University's Foothills Campus. The event will feature a special showing of the documentary Horse Sense at noon, with introduction by Dr. Jerry Black, Director of the Equine Sciences Program and the Equine Reproduction Laboratory.