PARARECTAL CYSTOTOMY FOR UROLITH REMOVAL IN STANDING HORSES
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Key Points:
- Pararectal cystotomy is a viable option for moderate to large urolith removal
- Careful dissection is essential in order to avoid inadvertent entry into the peritoneum or rectum
- Case selection and pelvic conformation are important factors to consider in order to minimize potential for complications

Cystic calculi are an uncommon but potentially serious condition in horses. This condition represents nearly 8% of all horses presenting with urinary tract disease and has a reported prevalence of 0.11%1. Although there are cases of nephrolithiasis and ureterolithiasis, the urinary bladder is the most common place of calculus formation. Reported surgical approaches in male horses include perineal urethrotomy1,2, pararectal cystotomy3-5, median or parainguinal laparocystotomy6-8, electrohydraulic and pulsed dye laser lithotripsy9, and laparoscopy10-12.

The purpose of this presentation is to describe the surgical technique, our experience and outcome of equine male patients undergoing standing pararectal cystotomy for treatment of urinary calculi.

Surgical Technique:
Horses are restrained in equine stocks, sedated with a combination of detomidine (0.01 mg/kg) and butorphanol (0.01 mg/kg) given intravenously and prepared for standing perineal surgery. Caudal epidural anesthesia is accomplished by administration of 2% lidocaine hydrochloride (0.15-0.3 mg/kg) in the first intercoccygeal space. Lidocaine hydrochloride (5-8 ml) is infiltrated subcutaneously at the level of the perineal incision. Additional doses of detomidine and butorphanol are administered throughout the procedure as needed. Feces are removed from the rectum and the tail is bandaged and secured overhead. The bladder is emptied before surgery and a cystoscopy is performed in order to verify the position of the ureteral openings. After aseptic preparation, a 10-15 cm vertical cutaneous incision is made in the space between the anus and the right semimembranosus muscle (Figure 1). The cutaneous incision is held open with hand held retractors, and the incision is deepened between the semimembranosus and the muscles of the external anal sphincter with a combination of blunt finger and Metzemaum scissors. Dissection continues to a depth of 15-20 cm to expose the neck of the bladder using the surgeon’s right hand, avoiding damage to the internal pudendal artery and vein and its end branches, that include the caudal rectal artery and to the pudendal and caudal rectal nerve (Figure 2). These structures are found at 8-10 cm deep, running in a lateromedial and proximodistal direction.

Figure 1: Skin incision
In stallions, special care has to be taken in order to avoid damaging the accessory glands, especially the seminal vesicles (vesicular glands) and the ampulla of deferent duct that lie dorso-lateral to the neck of the bladder. The left hand of the surgeon manipulates the cystolith per rectum towards the neck of the bladder, creating a moderate amount of tension over the bladder’s surface (Figure 3). A 22 blade, attached to a length of sterile #2 Nylon, is used to make the cystotomy incision avoiding damage the right ureter. The blade is guarded by the surgeon’s right hand in order to avoid inadvertent damage to the soft tissues. Using the urolith as cutting surface, a 2 cm cystotomy is performed which is then bluntly enlarged. The urolith is grabbed with forceps or by hand and removed intact. Following urolith removal, the bladder is irrigated using sterile saline through a sterile nasogastric tube.

Following copious lavage of the bladder and endoscopic examination of both bladder and incision, the incision is either left open to heal by second intention or is partially sutured using #0 Polyglactin 910 in a cruciate pattern for the cystotomy (2-3 interrupted sutures) and subcutaneous tissues, followed by interrupted cruciates a the level of the skin using #2-0 Polypropelene suture, leaving the ventral half of the incision open to allow drainage (Figure 4).

Results:

To date we have successfully performed 13 pararectal cystotomies in 14 geldings. Short term complications have included moderate bleeding (n=1) and urine pooling (n=1) at the level of the incision, both of which resolved without incident. A serious complication occurred in one horse where the peritoneum was entered which resulted in the development of peritonitis and laminitis. Although this horse recovered successfully, these complications resulted in an extended period of hospitalization. In one horse a pararectal cystotomy was attempted but the approach was aborted due a rectal laceration suffered during tissue dissection, which required suturing. We believe that the laceration was the result of excessive axial and dorsal dissection which resulted in a false surgical plane, thus exposing the rectal wall. A pararectal cystotomy

Figure 2: Diagram depicting the internal pudendal artery (A), vein (B) and pudendal nerve (C). D- Urinary bladder

Figure 3: The cystolith is stabilized with the left hand per rectum as the cystotomy is created with the right hand thru the pararectal incision

Figure 4: The ventral third of the incision is left open to allow drainage
was not performed in this horse and the urolith was successfully removed via a parainguinal laparocystotomy. This horse recovered without complications.

References: