

Case Report

Rupture of a penile artery and erectile body. An uncommon cause of dysuria in a horse

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Summary

In this case report, we describe the clinical features and treatment of a Thoroughbred gelding presented for dysuria caused by rupture of a penile artery, with subsequent tear to the *bulbospongiosus* muscle and *corpus spongiosum* due to suspected blunt force trauma.

Case details

History and clinical findings

A 15-year-old Thoroughbred gelding was referred to the Equine Medical Center of Ocala for a history of dysuria. Prior to presentation for colic, the referring veterinarian treated the horse on the farm with laxatives, analgesics and i.v. fluid therapy. The horse was observed by the referring veterinarian to have dysuria, so a urinary catheter had been inserted into the bladder. Urine obtained through the catheter appeared grossly normal. The horse had been kept in a paddock with 4 other horses and fed a diet of grass hay and grain.

On admission, the horse was in good body condition (6/9 body condition score), and during physical examination, no abnormalities were observed. A complete blood count was normal. During examination of the abdomen, performed *per rectum*, a greatly distended bladder was palpated. A urinary catheter was placed into the bladder and a urine sample was obtained with sterile technique for urinalysis and culture. Salient results of these tests included hyperproteinuria (≥ 300 g/l) and no bacterial growth on culture medium. During endoscopic examination of the urethra and bladder, signs of mild to moderate inflammation in the floor of the bladder with a mild accumulation of sabulous debris was observed. Normal renal architecture was

visualised during ultrasonographic examination of the left and right kidneys.

Preliminary differentials for the dysuria were cystitis (sterile or infectious) or neurogenic urinary incontinence.

Treatment and diagnostic follow-up

The bladder was lavaged with sterile, normal saline solution until all sabulous debris was removed. An indwelling urinary catheter was left *in situ* to allow continued drainage of the bladder. Fluids (20 ml/kg bwt q. 8 h) were administered i.v. for diuresis, trimethoprim/sulphadiazine (30 mg/kg bwt *per os* q. 12 h) was administered to provide antimicrobial therapy, flunixin meglumine (1.1 mg/kg bwt *per os* q. 12) was administered to reduce inflammation of the bladder and provide analgesia, and bethanechol (0.025 mg/kg bwt subcut. q. 8 h), was administered to encourage micturition.

The next day, the urinary catheter was removed to evaluate the horse's ability to urinate. At this time, the horse would posture to urinate, but while vocalising, would void only small streams (approximately 100 ml) of urine. Intravenous administration of fluids was discontinued, and administration of a urinary anaesthetic, phenazopyridine (4 mg/kg *per os* q. 12 h), was initiated.

Minimal to no improvement was noted with the initial treatment regimen after 48 h. Ultrasonographic examination of the bladder, performed *per rectum*, found no abnormalities, but during this examination, we observed anechoic fluid in the urethra between the trigone of the bladder and the root of the penis. During ultrasonographic examination of the urethra with a high frequency tendon probe, a 3 x 8 x 4 cm mass was identified 5 cm distal to the rectum and caudal to the penis. The mass was presumed to be a haematoma based on its echogenicity and dyshomogenous nature. Colour-flow Doppler ultrasonography of the area showed normal flow of blood through the penile arteries proximal to the mass (Fig 1), but vasculature at the level of the mass appeared to be disrupted. The urethra appeared to be compressed and deformed by the mass. Identification of the mass via palpation was still unrewarding even after identification with ultrasound.

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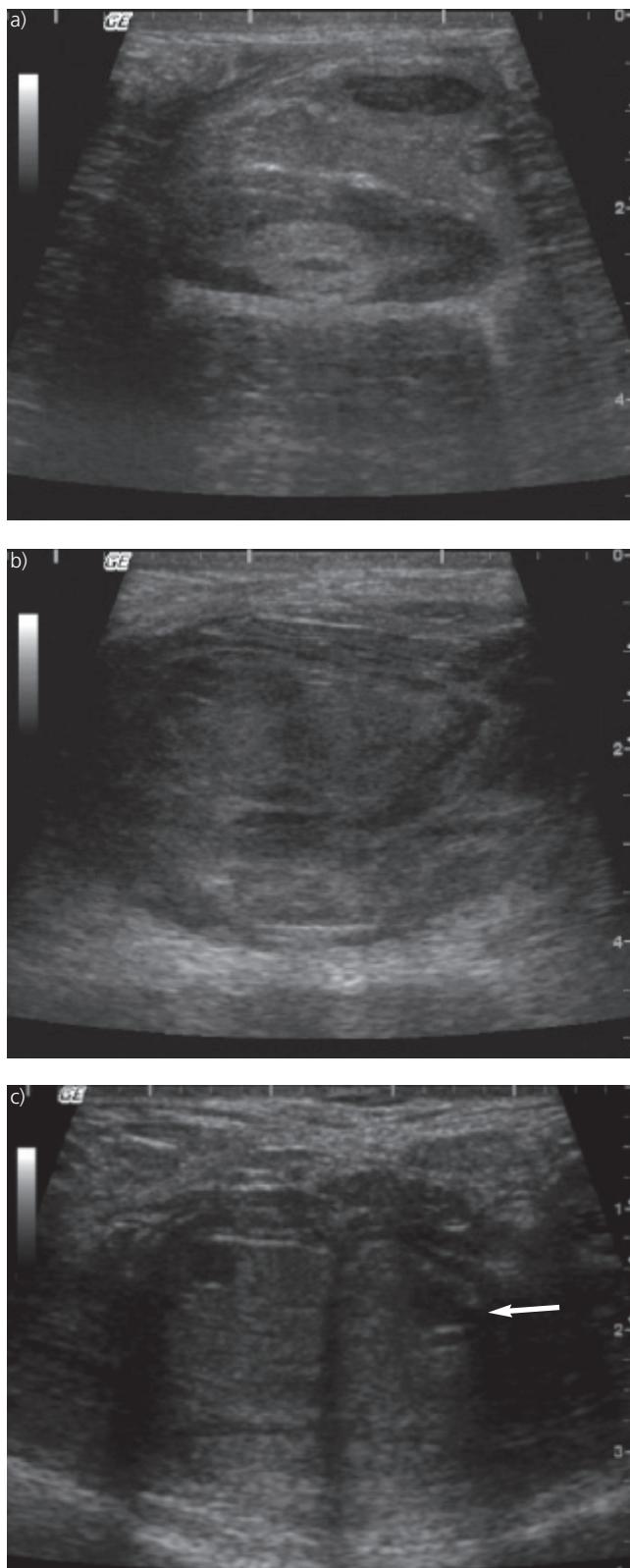


Fig 1: Ultrasonographic appearance of the urethra. Image a) is of the proximal aspect of the haematoma, no changes in the urethra are present. Image b) is of the centre of the mass, the urethra is completely compressed. Image c) illustrates the disruption in the right artery of the glans penis as exemplified by the arrow.

The mass was surgically removed under sedation to relieve extraluminal compression of the urethra. The perineal area was prepared for sterile surgery, and local anaesthetic solution was infused subcutaneously along the perineal raphe caudal to the mass. A catheter was inserted into the bladder to enhance identification of the urethra. A 5 cm longitudinal incision was made on perineal raphe, and using blunt dissection, a haematoma was exposed. The haematoma was removed manually (**Fig 2**). A 13 mm longitudinal tear was visualised in both the *bulbospongiosus* muscle and *corpus spongiosum*. The urethra grossly appeared to be unaffected. Evacuation of the haematoma was accompanied by haemorrhage, most of which appeared to emanate from the artery of the *glans penis*, and after this artery was ligated, haemorrhage decreased. Haemorrhage from smaller vessels was controlled by packing the cavity with sterile laparotomy sponges. The incision was allowed to heal by second intention after the sponges were removed 12 h after surgery.

The horse urinated normally shortly after the surgical procedure was completed. The incision had 10–20 ml of

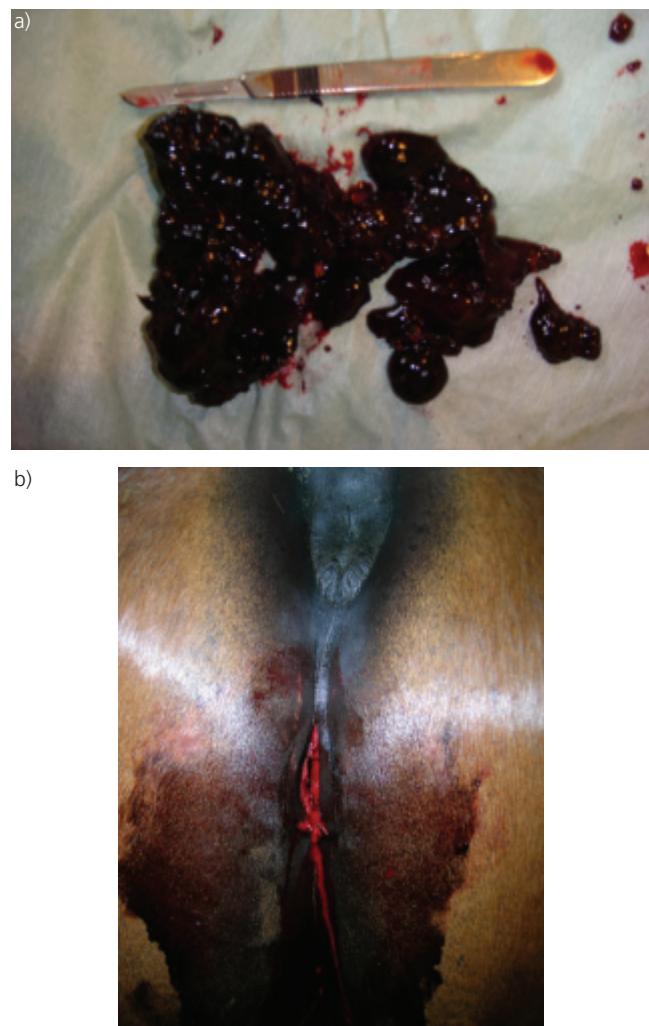


Fig 2: Image a) is the removed haematoma. Image b) is of the perineal area after removal of the haematoma.

serosanguineous to haemorrhagic drainage per day that decreased in nature over a period of 3 days. The horse was discharged from the hospital 3 days after surgery. The owner was instructed to administer trimethoprim/sulphadiazine (30 mg/kg bwt *per os* q. 12 h) for 10 days and flunixin meglumine (1 mg/kg bwt *per os* q. 24 h) for 5 days. Follow-up examination at the farm 2 weeks later revealed a small perineal wound filled with healthy granulation tissue. The horse has had no difficulty urinating since the haematoma was removed.

Discussion

A common clinical sign of urinary disease is dysuria, or stranguria (i.e. painful or difficult urination) (Divers and van Metre 2001; Duesterdieck 2001; Carr 2003; Blood *et al.* 2006; Duesterdieck-Zellmer 2007). Dysuria and stranguria are often used as synonyms due to the difficulty in differentiating them clinically in the horse. Dysuria can be caused by inflammation of the urethra or bladder, neurological conditions that prevent emptying of the bladder, or urethral obstruction (Divers and van Metre 2001).

A horse with stranguria may strain to urinate, urinate small amounts frequently (i.e. pollakiuria), show signs of abdominal discomfort, develop urine scalding of the pelvic limbs, have difficulty in retracting or extending its penis, or have increased vocalisation during urination (Carr 2003).

An accurate history and a thorough physical examination are essential to determine the cause of dysuria. Diagnostic evaluation may include a complete blood count, urinalysis with culture, ultrasonographic examination of the urinary tract performed transabdominally and *per rectum*, and endoscopy of the urethra, secondary sex glands and bladder (Divers and van Metre 2001; Duesterdieck 2001; Carr 2003; Duesterdieck-Zellmer 2007).

Treatment of horses with dysuria is variable depending on the cause of stranguria. Horses with dysuria have a good to poor prognosis for recovery from dysuria. A good prognosis can be given as long as underlying causes can be resolved (e.g. uroliths, removal of masses, or ectopic ureters). A poor prognosis is reserved for horse with a neurogenic origin of dysuria (Divers and van Metre 2001; Duesterdieck 2001; Carr 2003; Duesterdieck-Zellmer 2007).

This case represents a unique cause of dysuria in the male horse. Unwitnessed blunt trauma to the perineal region probably disrupted pelvic vasculature, *bulbospongiosus* muscle and the *corpus spongiosum penis* causing haemorrhage into the loose fascia surrounding the penis, which in turn, compressed the urethra. The haematoma was not identified during the initial physical examination due to the lack of evidence of trauma to the perineal area. The haematoma could not be palpated after it was identified with ultrasound. The nonelastic nature of the perineum contributed to our difficulty in diagnosing the haematoma and increased the compression of the haematoma on the urethra.

A literature search reveals very few case reports of penile fracture in domestic animals. A similar case was seen in a breeding stallion, with a tear in the *corpus spongiosum* just

distal to the ischiatic notch (Firth 1976). A haematoma developed between the *corpus spongiosum* and *bulbospongiosus* muscle causing external compression on the bladder (Firth 1976). In this case report the stallion died shortly after admission (Firth 1976). Blunt or high velocity trauma to the lower portion of the abdomen is more commonly reported to result in ruptured pelvic vasculature in man (McAninch 2004). The resulting haemorrhage compresses the urethra, causing similar clinical signs to the above case (McAninch 2004). Surgery is often required to remove the haematoma and to stop further haemorrhage (McAninch 2004). Rupture of the *tunica albuginea* of the human *corpus cavernosum penis* is referred to as a penile fracture. Rupture of the *tunica albuginea* causes clinical signs similar to that displayed by the horse in this report, including dysuria, pain during urination and external swelling from development of a haematoma. A penile fracture in man is often easily diagnosed due to an accurate history reported by the patient and swelling noted externally (Zargooshi 2000; Jacodic *et al.* 2007). Human penile fractures occur when high impact trauma occurs to the erect penis, most commonly during sexual intercourse (Zargooshi 2000; Jacodic *et al.* 2007). The most appropriate treatment for men with a fractured penis is immediate surgery. The haematoma is removed, haemorrhage is controlled and the defect in *corpus cavernosum penis* and *tunica albuginea* is sutured closed (Zargooshi 2000; Jacodic *et al.* 2007).

This was a unique presentation for urethral obstruction in the horse. When treated with surgical intervention a favourable prognosis can be given.

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