Pediatric Case Reports

Traumatic Penile Pseudoaneurysm After Straddle Injury Presenting With Life Threatening Anemia: A Unique Case and a Diagnostic Challenge

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Partial urethral disruption after blunt perineal trauma can be initially managed with urethral catheterization. Lower urinary tract symptoms after catheter removal should raise suspicion for urethral stricture and requires further investigation. Lesser known complications require high index of suspicion to prevent life threatening sequelae. In this report, we describe a case of blunt perineal trauma and partial urethral disruption in a pediatric patient presenting with refractory anemia due to a penile artery pseudoaneurysm. We discuss an unusual presentation, challenging diagnosis and management of this rare condition. UROLOGY 125: 210–212, 2019. © 2018 Elsevier Inc.

Blunt perineal trauma is common in children and usually occurs when a child straddles an object as they fall, striking the urogenital area with the force of his or her body weight.[1] Injury occurs as a result of compression of the soft tissue against the bony pelvis.[2] Common genitourinary injuries occurring after blunt perineal trauma include genital hematomas and lacerations, urethral disruption, and testicular injury. We present a rare case of partial urethral disruption in a patient after a straddle injury with concomitant traumatic pseudoaneurysm of the penile artery resulting in life threatening hemorrhage.

CASE PRESENTATION

A 15-year-old male with history of Attention Deficit Hyperactivity Disorder and illicit drug abuse presented to our emergency department complaining of gross hematuria and blood at the meatus after perineal blunt trauma. The patient was attempting to jump over a wooden fence but fell and landed on his perineum. He reported that he was able to urinate without difficulty but experienced gross hematuria with passage of small clots. On examination, he was noted to have blood at the meatus but no penile, scrotal or perineal ecchymosis, or hematoma. Laboratory findings demonstrated a hemoglobin (Hgb) of 10 g/dL (normal: 13.0-16.0 g/dL). Plain films of the pelvis did not demonstrate any pelvic fractures. A retrograde urethrogram demonstrated extravasation of contrast at the level of bulbar urethra, consistent with partial posterior urethral disruption (Fig. 1). Cystourethroscopy under conscious sedation confirmed a 2 cm partial disruption at the ventral aspect of the bulbar urethra with no evidence of active bleeding. A foley catheter was placed atraumatically into the bladder over a wire under direct cystoscopic visualization. Urine was noted to be clear yellow after catheter placement, and the patient was discharged from the emergency room with a planned follow-up in 2 weeks. However, he returned to the emergency room 2 days later after catheter was removed by an outside facility due to complaints of bladder spasms but the outside facility was unable to replace the catheter. At our institution, the catheter was successfully replaced under direct cystoscopic guidance with return of clear yellow urine. However, routine laboratory testing demonstrated that the patient had anemia (Hgb of 7.0 g/dL). He was transfused 2 units of packed red blood cells and contrast-enhanced Computed Tomography (CT) of the abdomen and pelvis to evaluate for pelvic bleeding as the source of anemia was performed, with no remarkable findings. He was observed for 48 hours and noted to be hemodynamically stable with a stable post-transfusion Hgb and was discharged with foley catheter. He was seen in clinic 2 weeks later and underwent a pericatheter retrograde urethrogram which did not show any urethral extravasation. The catheter was discontinued and patient was able to urinate without difficulty (uroflometry: 15.5 mL/s). However, blood at the meatus was noted again and patient reported new-onset fatigue and exertional dyspnea. Laboratory tests obtained in clinic showed a Hgb of 3.7 g/dL. He was transferred to the emergency room and received 3 units of packed red blood cells transfusion. Repeat contrast-enhanced CT of the pelvis with dedicated arterial phase was obtained which revealed

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Figure 1. Retrograde urethrogram at initial presentation demonstrating focal extravasation of contrast (arrow) at the bulbar urethra, consistent with partial posterior urethral disruption.

a focus of contrast extravasation in the bulbar urethra arising from a branch of the left penile artery (Fig. 2). After consultation with Interventional Radiology department, the patient underwent a catheter-based left iliac arteriogram under conscious sedation and via a right common femoral artery approach, which confirmed the diagnosis of pseudoanyeurysm of the bulbar urethral branch of the left penile artery. Super-selective coil embolization via coaxial technique with a microcatheter was performed of this branch artery just proximal to the pseudoaneurysm with preservation of the remainder of the penile branches (Fig. 3). Bleeding from the meatus resolved immediately postprocedure. He was hospitalized for 72 hours postprocedure and remained hemodynamically stable with stable Hgb, and was subsequently discharged home. Three months postembolization, the patient reported normal erectile function with no sensory deficits.

DISCUSSION

Traumatic pseudoaneurysms of the pudendal artery are rare, with only a few case reports described in the literature in the adult population.[3,4] Clinical findings associated with a diagnosis of pseudoaneurym include penile ecchymosis and swelling, palpable penile mass at site of pseudoaneruysm, priapism, erectile dysfunction, and difficulty urinating, all of which were not presenting signs in our adolescent patient.[3] To our knowledge, this is the first case report to describe a traumatic penile pseudoaneurysm after a straddle injury presenting with refractory life threatening anemia.

Although pseudoaneurysms can be diagnosed on physical examination, imaging studies are still needed to confirm a suspicious clinical presentation. Doppler ultrasound has been used to accurately diagnose pseudoaneurysms in peripheral arteries in the extremities and provides information regarding size, morphology, and flow.[5] Doppler ultrasound is readily available and economical. However, it is operator-dependent, limited in the evaluation of deeper vessels, and cannot generate multidimensional vascular imaging that are necessary to guide intervention.[5] CT angiography is a more accurate modality than ultrasound, providing excellent-quality multiplanar imaging and delineating vascular anatomy otherwise not accessible by ultrasound.[6] Physicians should weigh the associated risk of radiation exposure and need for contrast media when employing this modality, particularly in a young patient. This report highlights the importance of dedicated arterial phase imaging when a pseudoaneurysm is suspected, as the standard venous phase only CT obtained initially in this patient's evaluation did not identify the pathology. Magnetic resonance imaging is another accurate study that provides excellent-quality imaging, delineating the vascular

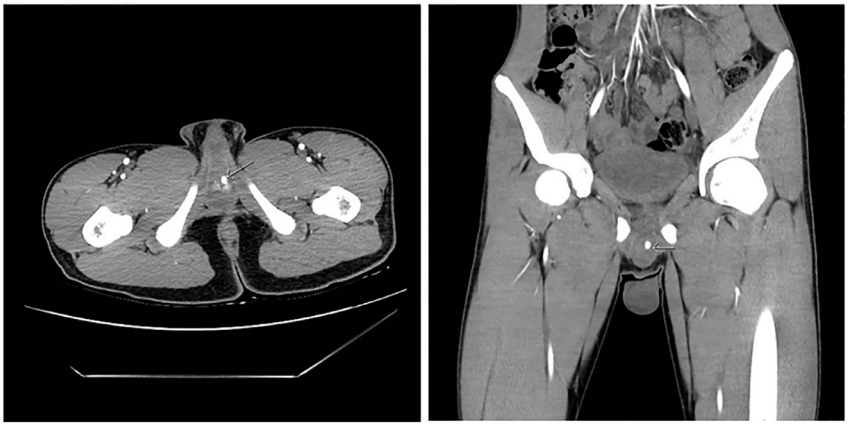

Figure 2. Axial and coronal images from contrast-enhanced CT angiogram in arterial phase demonstrating a focus of active contrast extravasation (arrow) in the bulbous urethra arising from a branch of the left pudendal artery. CT, computed tomography.

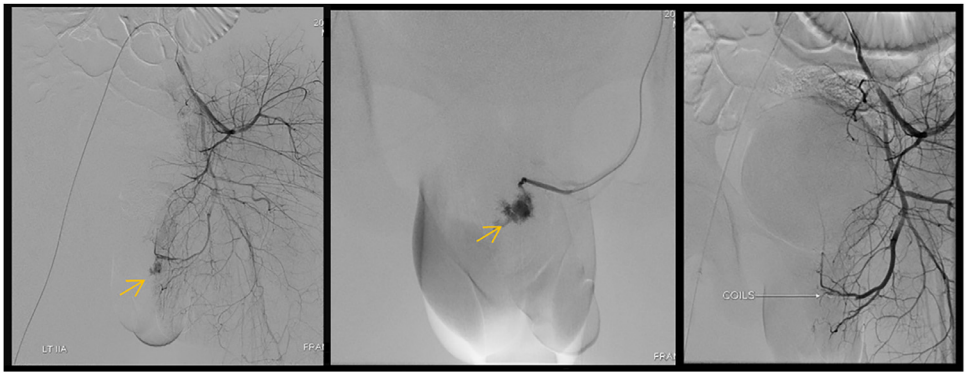

Figure 3. Initial diagnostic pelvic angiogram of the (**A**) left hypogastric, (**B**) bulbar urethral branch of left penile artery show the pseudoaneurysm (orange arrow) of the bulbar urethral branch, and (**C**) following embolization, the pesudoaneurysm is occluded with preservation of remainder of penile branches. (Color version available online.)

anatomy and flow. However, it is time intensive and expensive,[7] as well as have a lower resolution that may not as clearly characterize small peripheral vascular abnormalities. Additionally, due to the longer time to acquire images, MRI may not be the ideal study in patients with concern for life threatening hemorrhage.

In this report, hemorrhage was successfully controlled with super-selective coil embolization of the bulbar urethral branch of the left penile artery, preserving the remainder of penile branches and minimizing the risk of erectile dysfunction, which is a devastating complication in an adolescent male. Neurologic sequelae may also develop following embolization of arteries supplying the genitalia. These include loss of sensation over the scrotum, penis, and medial thigh as well as urinary incontinence.[8] Three months postprocedure our patient reported normal erections with no change in genital sensation or incontinence.

CONCLUSION

We present a rare clinical condition with an undescribed presentation in a pediatric patient. Acute anemia after isolated urethral injury with no associated pelvic fractures should raise suspicion for traumatic pseudoaneurysms, as a missed diagnosis can result in life threatening sequela. Cross-sectional imaging with a dedicated arterial phase is necessary as conventional protocols may miss this diagnosis. Super selective embolization of the involved branch with preservation of larger branches is necessary to minimize risk of sensory and erectile dysfunction.

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