Traumatic Pseudoaneurysm of Bulbourethral Artery Managed by Coil Embolization

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Abstract Urethral injury is a common form of urogenital trauma in males. Urethral injuries can be diagnosed with ease in emergency due to the presence of blood clot at external urethral meatus or inability to catheterize the urethra. Stricture formation is usual sequelae of such injuries. Uncontrolled urethral hemorrhage is a relatively rare complication which can present either as immediate or delayed. Such injuries can be managed conservatively in majority; however, if uncontrolled may require interventional management. Such patients usually have underlying pseudoaneurysm formation or arteriovenous fistula. Here, we are reporting a case of bulbar urethral injury which presented with delayed uncontrolled urethral hemorrhage. On angiography, pseudoaneurysm arising from left bulbourethral artery with active urethral extravasation was noted and was managed with coil embolization.

Keywords Urethral hemorrhage · Bulbourethral artery · Pseudoaneurysm · Coil embolization

Urethral injuries may be iatrogenic resulting from instrumentation or due to blunt or penetrating trauma. Management of urethral injury mainly depends on the extent and severity of urethral disruption [1]. A major goal in the management of urethral injury is to restore the continuity of urethra and minimize morbidity in the form of impotence and incontinence. Majority of the patients with pelvic fracture urethral distraction defects are managed with a suprapubic cystostomy followed by delayed repair usually between 3 and 6 months following trauma. Early primary repair has been plagued by higher rates of impotence. The major indication for a primary repair is bladder neck injury, as a competent bladder neck (internal sphincter) is the major determinant of eventual continence in these patients as the external sphincter (distal to verumontanum) is usually involved in trauma [2, 3]. Hematuria following anterior urethral injury is a usual presentation in acute setting and usually resolves by its own with conservative management either by manual compression or electrofulguration. Presentation as uncontrolled hematuria is very rare. Here, we are reporting a case of traumatic anterior urethral injury who presented with uncontrolled urethral bleeding. It was managed successfully by transcatheter angioembolization of bulbourethral artery.

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Case Report

A 48-year-old male presented to the emergency, following blunt perineal trauma, with acute urinary retention and hematuria. On clinical examination, there was blood at the external urethral meatus. No external injuries were seen. Emergency dynamic retrograde urethrography was performed which

revealed disruption at the bulbomembranous junction with contrast intravasation into the vascular channels and within corpora spongiosa (Fig. 1a). NCCT pelvis was performed which revealed no pelvic fracture. Urethral catheterization was deferred, as there was complete urethral disruption and urinary diversion was established by suprapubic cystostomy under USG guidance. The patient was advised to have routine follow-up in OPD for delayed repair. A week later, the patient presented in the emergency a history of frank bleeding per urethra and penile pain. Clinical examination revealed blood at meatus. Penile USG was performed which revealed distended anterior urethra with echogenic content within the urethra, indicating a blood clot. Doppler USG revealed no pseudoaneurysm. Initially, the patient was managed conservatively with manual compression. As bleeding could not be controlled and patient continued to have frank urethral bleeding, digital subtraction angiography was planned to identify the bleeding source. Selective DSA of bilateral internal pudendal artery was performed which revealed a tiny pseudoaneurysm from left bulbourethral artery with active contrast extravasations into the anterior urethra (Fig. 1b, c). The bleeding bulbourethral artery was super selectively accessed with microcatheter, and coil embolization was performed (Fig. 1d), which resulted in cessation of urethral bleeding. Patient was kept in observation for any recurrent

bleeding for 2 days. Patient was discharged after 48 h. The patient is planned for an end-to-end anastomotic urethroplasty by progressive perineal approach for proximal bulbomembranous urethral stricture after 2 months.

Discussion

Urethral injuries result from a variety of mechanisms including blunt and penetrating perineal trauma or iatrogenic injury due to instrumentation. Posterior urethral injuries often result from blunt pelvic trauma associated with multiple pelvic bone fractures and pelvic organ injuries whereas anterior urethral injuries can occur in isolation. With increasing availability of transurethral procedures, the incidence of iatrogenic trauma is increasing. The major goal in the management of any urethral injury is to restore the continuity of the urethra and minimize morbidity by following the gold standard approach of SPC followed by delayed urethroplasty. Bladder neck injuries and rectal injury need primary repair at the time of trauma, as described earlier.

The development of pseudoaneurysm from a pelvic vessel following pelvic trauma is a rare complication. Pudendal artery pseudoaneurysm can present clinically as penile ecchymosis and perineal swelling [4]. Majority of cases often present as painful priapism due to arteriocavernosal fistula. Transarterial embolization is a well-established treatment modality in high flow priapism due to arteriocavernous fistula with negligible complication rate [5]. Although hematuria following urethral injury is a common presentation, presentation as uncontrolled urethral bleeding is very rare. In rarest of cases, bleeding can be uncontrolled where transarterial embolization can be attempted. The role of bulbourethral artery embolization in refractory hematuria is not much described in literature, as majority of cases can be managed conservatively either by manual compression or by electrofulguration. Few case reports have been documented where patients presented with gross hematuria due to an internal pudendal artery–urethral fistula [6–8]. Jayesh V Dhabalia et al. described a case of refractory hematuria following visual internal urethrotomy for anterior urethral stricture in which bleeding was successfully controlled through embolization of bulbourethral artery [6]. In their case, there was active contrast extravasation without any pseudoaneurysm from bulbourethral artery, and embolization was achieved with PVA particle. There was no immediate complication. Our patient also presented with uncontrolled bleeding per urethra, and imaging revealed pseudoaneurysm from bulbourethral artery with active extravasation into the anterior urethra which was successfully embolized with microcoil. Complications reported following internal pudendal artery embolization include erectile dysfunction and urethral ischemia, resulting in stricture and impotence. Our patient responded favorably to

Fig. 1 Retrograde urethrography showing disruption at the bulbomembranous junction with non-filling of posterior urethra (arrow) and bladder with intravascular and intracorporal contrast extravasation (arrow head) (a). Selective angiography of left internal pudendal artery (b, c) showing tiny pseudoaneurysm from bulbourethral artery (thick arrow) with active extravasation into the bulbar urethra (thin arrow). Post-coil embolization run (d) showing microcoil (arrow head) in the bulbourethral artery with complete non-filling of pseudoaneurysm

embolization without any ischemic complication probably due to rich collateral circulation through contralateral pudendal artery.

To conclude, transarterial embolization is a viable treatment option in case of refractory hematuria due to urethral trauma where conservative treatment has failed.

Ethical statement We hereby ensure that we are abiding to the ethical standards maintained by the journal, and we do not have any conflicts of interest.

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