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Primary anastomosis for complete bulbar urethral rupture with rectal laceration caused by straddle injury: A case report

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ABSTRACT

INTRODUCTION: The initial management of urethral trauma remains disputed, and there are several suitable techniques, including delayed repair and suprapubic urinary diversion as well as primary endoscopic or open alignments. The treatment choice used depends on the rupture's location and length as well as the accompanying trauma.

CASE PRESENTATION: A 33-year-old male patient was referred to the department of emergency, with the chief complaint of inability to void experienced 1 day before being admitted, after falling from a height of approximately three meters. There was a laceration to the perineum 3 cm long to the rectum, with no active bleeding. After the incident, the patient could not void, but the lower abdomen was not painful. Upon retrograde urethrography examination, contrast extravasation of the bulbous urethra was seen through the anorectal laceration. Immediate debridement and repair for the anorectal wound, then primary anastomosis for the bulbous urethra, was performed.

DISCUSSION: The likelihood of an injury to the anterior urethra increases with certain clinical features, including blood in the urethral meatus, palpable bladder distention, and a butterfly appearance on the perineum. Immediate exploration and reconstruction of the urethra is recommended in urethral traumas associated with penile fractures and non-life-threatening penetrating injuries. Furthermore, small lacerations are repaired primarily, while total ruptures are treated with anastomosis.

CONCLUSION: Proper identification and management of urethral rupture determines the outcome. Initial urethral trauma management is disputed; however, a bulbous urethra rupture with anorectal lacerations can be treated safely and effectively with primary anastomosis.

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1. Introduction

About 10% of traumatic injuries in patients have a certain form of genitourinary involvement [1]. These involvements are subtle and difficult to define, and therefore they require great diagnostic expertise. In addition, early diagnosis is essential in order to prevent serious complications [2]. Urethral injury is most prevalent in males and usually occurs as blunt trauma without penetration wound. The emergency of these injuries is critical to the patient's prognosis, and improper treatment tends to cause fistula, infection, incontinence, impotency, or urethral stricture, significantly affect-

ing the patient's quality of life and making further treatment more difficult. However, urologists around the world currently disagree on urethral trauma treatments' numerous aspects [3].

Urethral injuries are categorized in terms of the injury's anatomical location. The male urethra is divided by the urogenital diaphragm into anterior and posterior sections; the posterior section is comprised of the prostatic and the membranous urethra, while the anterior section is comprised of the bulbar and penile urethra. Only the posterior section exists in females [2,4].

The anterior urethra is susceptible to both blunt and penetrating injuries, with blunt injuries being more prevalent. Straddle injury is the most prevalent; it is characterized by a crushing of the immobile bulbar urethra against the undersurface of the pubic symphysis. Unlike in posterior urethral disruptions, the pendulous urethra is often not harmed, and the injuries are not often associated with pelvic fracture [5,6].

Urethral trauma occurrence should be presumed with injury mechanism, urethral meatus bleeding, or inability to void after a

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Fig. 1. Perineal Laceration.

traumatic event, and it is diagnosed through retrograde urethrography [6,7]. Emergency management remains disputed, but three procedures—realignment endoscopy, emergency anastomosis, and

cystostomy—are currently used [8]. Despite the lack of consensus, in general, posterior injury due to blunt trauma is best managed with primary realignment (if possible), straddle bulbar urethral injury is best managed with suprapubic urinary diversion, and penetrative urethral injury is best managed with urinary diversion and primary repair [9,10]. Here, in line with the 2020 Surgical Case Report guidelines, we report a case of an adult male with a complete bulbar urethral rupture with rectal laceration caused by straddle injury [11].

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2. Case presentation

A 33-year-old male patient was admitted to the department of emergency with complaints of not being able to urinate, which he had felt since one day before he was admitted to the hospital and after falling from his two-story house, which was approximately three meters high. The patient fell with his buttocks hitting a blunt iron rod, resulting in a laceration of the perineum (Fig. 1). There was a history of blood at the urethral meatus several hours after the incident but no wounds in other areas.

Primary survey examination showed stable hemodynamics. In the secondary survey examination, no abdominal injury was seen, the suprapubic was not bulging, peristaltic auscultation was normal, and palpation and percussion were within normal limits. The examination of the external genitalia found no blood visible at the urethral meatus and no injury to the penis and scrotum. The perineum appeared torn, with irregular edges, at a 12 o'clock direction, 3 cm long, and no active bleeding. Rectal toucher was performed, with the tone of sphincter ani as normal, a palpable 1-cm tear from the anal verge at an 11–12 o'clock direction; on the glove, there were feces and no blood from inside the rectum. Laboratory tests were within normal limits.

Retrograde urethrography showed extravasation of contrast in the bulbous urethra and out into the tissue through the anorectal



Fig. 2. Retrograde urethrography shows extravasation of contrast at bulbar urethra (arrow).

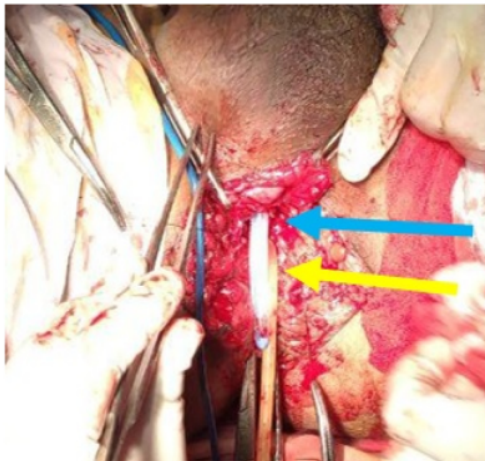


Fig. 3. Intraoperative photo: distal tip of the urethra (blue arrow), and Foley catheter inserted in the bladder (yellow arrow).

laceration (Fig. 2). No contrast was seen in the filling of the bladder. Pelvic radiography showed no signs of fracture.

In terms of the Covid-19 screening, a chest X-ray showed no ground-glass opacity, and a rapid test for IgM, IgG was non-reactive.

The patient was rushed to the operation unit, where we—a urology surgeon, a digestive surgeon, and a resident—performed anorectal exploration and debridement, followed by primary urethral anastomosis. Anorectal exploration revealed a 3-cm-long full thickness laceration to the rectum, which could be managed with primary repair. We conducted further exploration of the urethra and noted a complete disruption of bulbar urethra with a 1-cm distance; thus, we performed primary urethral anastomosis (Fig. 3). The patient was given an intravenous broad-spectrum antibiotic

(ceftriaxone 1 g q12hr) that was administered for 5 days, along with analgesics drugs (ketorolac 30 mg q6hr) that were administered for 3 days if the patient required analgesia. No postoperative complications were noted. The patient later returned to the hospital for wound care. A pericatheter urethrogram performed at one month post-operation showed no extravasation on the bulbar urethra (Fig. 4). Additionally, the patient was able to void normally through the urethra and has continued to do well, with a normal uroflowmetry (maximum flow rate 24.2 mL/s and average flow rate 14.8 mL/s) at two months post-operation.

3. Discussion

Straddle injury consists of injuring the distal urethra due to fall while straddling an object [12]. Urologists group bulbar injuries into three categories—incomplete disruptions, complete disruptions, and contusions—in clinical practice. Urethral contusions require a urethral catheter for only a few days and often heal without sequelae; however, the optimal management for partial or complete disruption remains disputed [9,10]. The current patient fell with his bottom landing on a bent metal rod, which tore his perineum. There was a history of bleeding from the external urethral meatus several hours after the incident. The likelihood of an injury to the anterior urethra increases with certain clinical features, including blood in the urethral meatus, palpable bladder distention, and a butterfly appearance on the perineum. The classic triad of urethral injury is composed of the first three clinical features; however, these are absent in some cases, consequently leading to uncertain diagnostics [13,14]. In this patient, there was a history of bleeding from the urethral meatus several hours after the incident, but no suprapubic distention, due to urine extravasation through the lacerated wound. To diagnose, we performed retrograde urethrocytography and revealed extravasation at the bulbar urethra, with no contrast filling the bladder.

Immediate exploration and reconstruction of the urethra is recommended in urethral trauma associated with penile fractures

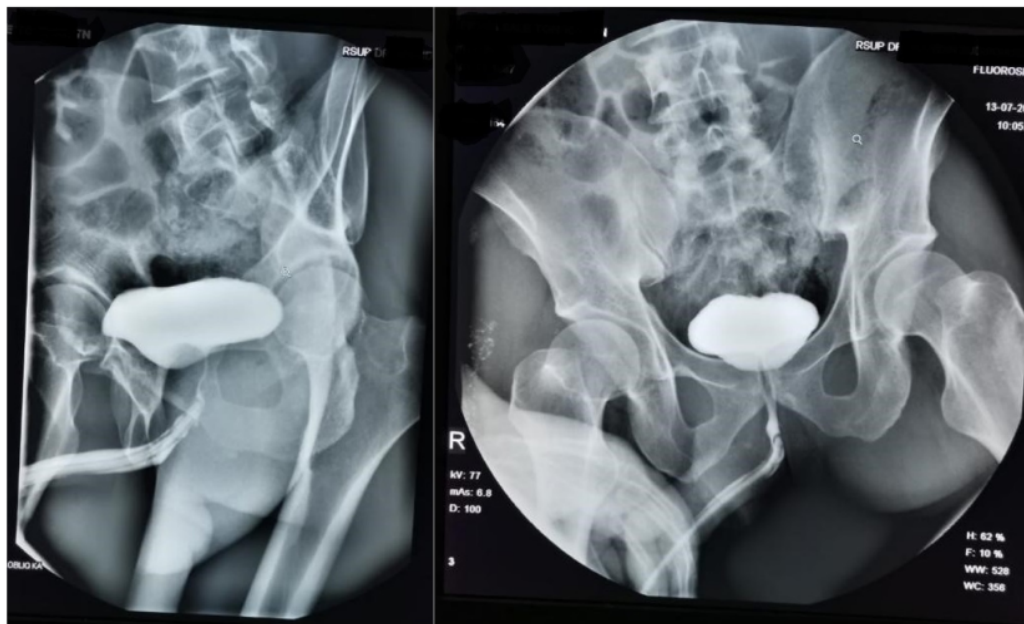


Fig. 4. Pericatheter urethrogram, 1-month post-operation.

and penetrating injuries that are not life-threatening. Furthermore, small lacerations are repaired primarily, while total ruptures without extensive tissue loss are treated with anastomosis [9]. The role of emergency urethroplasty in blunt urethral trauma is disputed, and the failure rate in emergency urethroplasty patients does not differ significantly from that of patients undergoing delayed urethroplasty after suprapubic urinary diversion [13,15].

Previous study conducted by Park et al. [5], with a total of 591 patients have reported a degree of stricture after immediate improvement. Currently, the indications for emergency urethroplasty are the presence of a penetrating wound, prostate and bladder neck injuries, trauma having perineal degloving laceration, and rectal trauma [8].

Primary anastomosis in this patient was an option because this was a case of straddle injury accompanied by rectal laceration that needed immediate exploration.

4. Conclusion

Although lower urinary tract trauma is not immediately life-threatening, prompt diagnosis and management are important in order to prevent later morbidity. Accurate injury staging, prompt diagnosis, and selection of appropriate interventions—thereby minimizing the overall likelihood of urethral incontinence complications, impotence, and stricture—are the key to early management of urethral injury. The choice of primary anastomosis is preferred in these patients, given the accompanying trauma of anorectal laceration.

Declaration of Competing Interest

Nothing to declare.

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Ethical approval

The study is exempt from ethical approval in our institution.

Consent

Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Author contribution

Syarif, Khoirul Kholis, Muhammad Asykar Palinrunji, and Syakri Syahrir: study concept and surgical therapy for this patient. Syarif and Adriani Purnasakti Pakan: Data collection and Writing—Original draft preparation. Khoirul Kholis: senior author and the manuscript reviewer. Syarif, Muhammad Asykar Palinrunji, and Muhammad Faruk: Editing and Writing. All authors read and approved the final manuscript.

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