

URETHRAL INJURY IN REGIONAL HOSPITAL IN THE BPJS ERA: A CASE REPORT

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ABSTRACT

Objective: To present a case of urethral injury treated in a male adult. **Case(s) Presentation:** A 48 year old Asian male patient previously involved in a motor vehicle accident presented to the hospital with a chief complaint of pain and bleeding from the genitalia. On examination, it is revealed bleeding from the urethral meatus, pain in touch, palpable bladder, high riding prostate, and a butterfly-shaped bruising on the perineum. X-ray examination demonstrated soft tissue mass in the right scrotal region. The patient is diagnosed with urethral rupture with urinary retention and then underwent ultrasonography-guided cystostomy and perineal hematoma evacuation. The patient is followed-up 1 month later with a complaint of difficulty in voiding and erectile dysfunction. The patient is then diagnosed with urethral stricture and underwent direct vision urethrotomy. **Discussion:** Urethral injury is a rare type of injury of genitourinary trauma that may cause long term morbidity such as strictures, incontinence, impotence, and infertility. Urethral injury can be classified into posterior urethral injury which is associated with pelvic fracture and anterior urethral injury which is associated with blunt trauma. The gold standard of radiographic examination in urethral injury is dynamic retrograde urethrography. Prompt diagnosis, staging, and selecting intervention must be done for minimalizing complications. Sequelae may also develop which also affects quality of life. The usage of universal health coverage such as BPJS in Indonesia can increase the accessibility of medical treatment. **Conclusion:** Urethral injury is a rare injury that requires prompt and careful management to minimize complications and increase the patient's quality of life.

Keywords: Urethral Injury, urethrotomy, urethral stricture.

ABSTRAK

Tujuan: Mempresentasikan penanganan kasus cedera uretra pada laki laki dewasa. **Presentasi Kasus:** Seorang laki-laki usia 48 tahun datang ke rumah sakit karena setelah kecelakaan lalu lintas dengan keluhan nyeri disertai keluar darah dari lubang penis. Pada pemeriksaan fisik, didapatkan adanya perdarahan dari meatus uretra externa, nyeri pada perabaan kandung kemih, prostat yang mengambang dan butterfly hematoma pada perineum. Pada pemeriksaan X-Ray didapatkan hasil adanya gambaran soft tissue pada regio skrotum kanan. Pasien didiagnosis dengan rupture uretra dengan retensio urin lalu dilakukan tindakan sistostomi dengan guide USG dan evakuasi hematoma di perineum. Pasien lalu kontrol 1 bulan kemudian dengan keluhan sulit berkemih dan tidak bisa ereksi saat berhubungan. Pasien didiagnosis dengan striktur uretra dan dilakukan tindakan uretrotomi interna. **Diskusi:** Cedera uretra adalah bentuk trauma yang jarang terjadi yang mengenai urogenital yang menyebabkan morbiditas jangka panjang seperti striktur, inkontinensia, impotens, infertilitas. Cedera uretra dibagi menjadi cedera uretra posterior yang terkait fraktur pelvis dan cedera uretra anterior yang terkait trauma tumpul. Gold standar pemeriksaan radiologis terkait cedera uretra adalah retrograd uretrografi. Penegakan diagnosis yang cepat dan penanganan yang tepat dibutuhkan untuk meminimalisir komplikasi. Komplikasi bisa terjadi yang mengganggu kualitas hidup pasien. Penggunaan jaminan kesehatan seperti BPJS di Indonesia dapat mempermudah akses pelayanan kesehatan. **Simpulan:** Cedera Uretra adalah kasus cedera yang jarang yang membutuhkan penanganan yang cepat dan teliti untuk meminimalisir komplikasi dan meningkatkan kualitas hidup pasien.

Kata kunci: Cedera Uretra, uretrotomi, striktur uretra.

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INTRODUCTION

Urethral injury is a rare type of injury that accounts for 4% of genitourinary trauma.¹ Urethral

injuries may be classified into anterior or posterior injuries. Anterior injuries commonly involve a crushing mechanism, whereas posterior injuries involve shearing forces. Motor vehicle traumas,

straddle injuries, blunt or penetrating trauma more commonly cause anterior injuries. Pelvic fractures and iatrogenic etiologies more commonly cause posterior urethra injuries.^{2,4} Common finding of urethral rupture are blood in the urethral meatus, ecchymosis of the scrotum or perineum. In rectal examination, “High-riding prostate” suggests the presence of hematoma which may attributed to partial or complete urethral disruption.⁵ In this study we presented a case of urethral rupture in 48 year old man following a motor vehicle accident.

CASE(S) PRESENTATION

A 48 year old man was admitted to the hospital with complaints of pain in and bleeding from the genitalia. The patient was previously involved in a motor vehicle accident. On examination, the genitalia area shows bruising. On physical examination, there was bleeding from the urethral meatus, pain in touch, a palpable bladder, high riding prostate and a butterfly-shaped bruising on the perineum. On rectal toucher examination, a floating prostate was found.

The patient then underwent radiographic examination of the pelvis region. X-ray examination demonstrated soft tissue mass in the right scrotal region. No bone fracture, hip joint dislocation, or symphysiolysis were found on X-ray examination. Blood laboratory examination such as blood glucose, clotting time, bleeding time, HBsAg, liver enzymes, ureum and creatinine are normal. The patient is diagnosed with urethral rupture with urinary retention. The patient then underwent multiple surgical procedures. The first is ultrasonography-guided cystostomy, then perineal hematoma evacuation. A urinary catheter was inserted afterward.

1 month after treatment, the patient is followed up. On follow-up, the patient

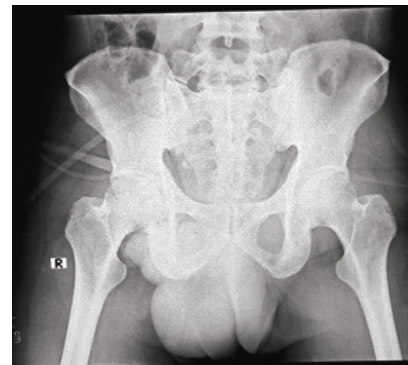


Figure 1. X-ray examination shows soft tissue mass in the right scrotal region.

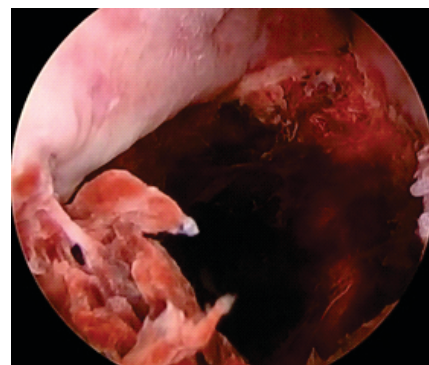


Figure 2 . Urethroscopy of the patient.

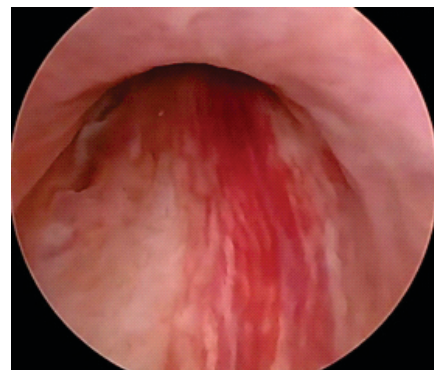


Figure 3. Urethroscopy after follow-up.

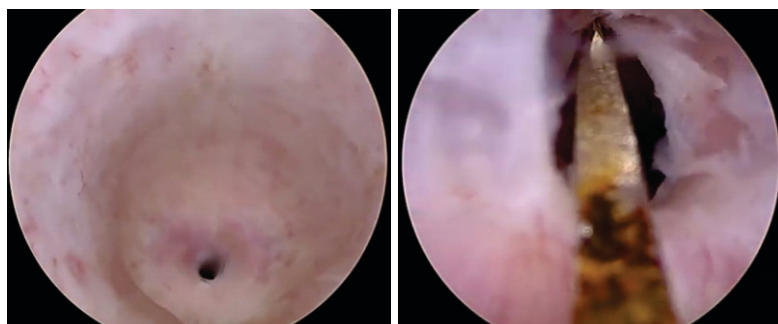


Figure 4. Direct Vision Urethrotomy.

complained a progressive difficulty of voiding and an erectile dysfunction. On examination, there was a palpable fibrous tissue and the is diagnosed with urethral stricture. The patient underwent direct vision urethrotomy to treat the stricture.

DISCUSSION

Urethral injury is a rare type of trauma that accounts 4% of genitourinary trauma. Urethral injuries may cause long-term morbidity such as strictures, incontinence, impotence, and infertility. 65% of urethral injuries are complete disruptions, while 35% are partial tears. Males are five times more likely to have urethral injury than women.⁶ Urethral injuries may also be associated with pelvic fractures. Bulbar urethra trauma is most commonly by bulbar injuries, while trauma to the bulbar urethra is commonly caused by penile fractures. Iatrogenic causes such as foley catheter-induced urethral injuries may also cause urethral injuries in 3 out of 1000 catheterized older patients, which can require additional management and treatment cost.⁷⁻⁸

Posterior urethral injury is suspected at the presence of pelvic fracture, as pelvic fractures are commonly associated with posterior urethral injury. In physical examination, blood in the meatus is a cardinal sign of posterior urethral injury. Distended bladder by palpation, inability to void, perineal bruising and perineal ecchymosis are suggestive of urethral disruption. However, clinical findings alone are entirely reliable in the diagnosis of posterior urethral injury. Anterior urethral injury can be suggested when there is a recent blunt or penetrating trauma to the perineum, genitalia, or pelvis. Blood in the meatus is also the cardinal sign of anterior urethral injury. If the injury has disrupted the buck's fascia and tracks to Colles fascia, there will be a "butterfly" hematoma in the perineum.⁹⁻¹⁰

The gold standard radiographic examination of urethral injury is dynamic retrograde urethrography. However, we did not

perform urethrography examination on this patient due to the absence of urethrographic facilities in the hospital. We performed X-ray examination of the pelvis to assess the presence of fractures or other possible disruption, which demonstrated a soft tissue mass in the right scrotal region. Polytrauma patients may also be examined by computed tomography (CT) scans. A suprapubic catheter is inserted and cystogram performed if posterior urethral injury is suspected. Magnetic resonance imaging or endoscopy may be used if simultaneous cystogram and urethrogram are to visualize the proximal urethra.¹¹ Urethrographic appearance can also be used for the classification of urethral injuries, which was proposed by Goldman and colleagues that emphasizes the anatomic location of the injury.¹²

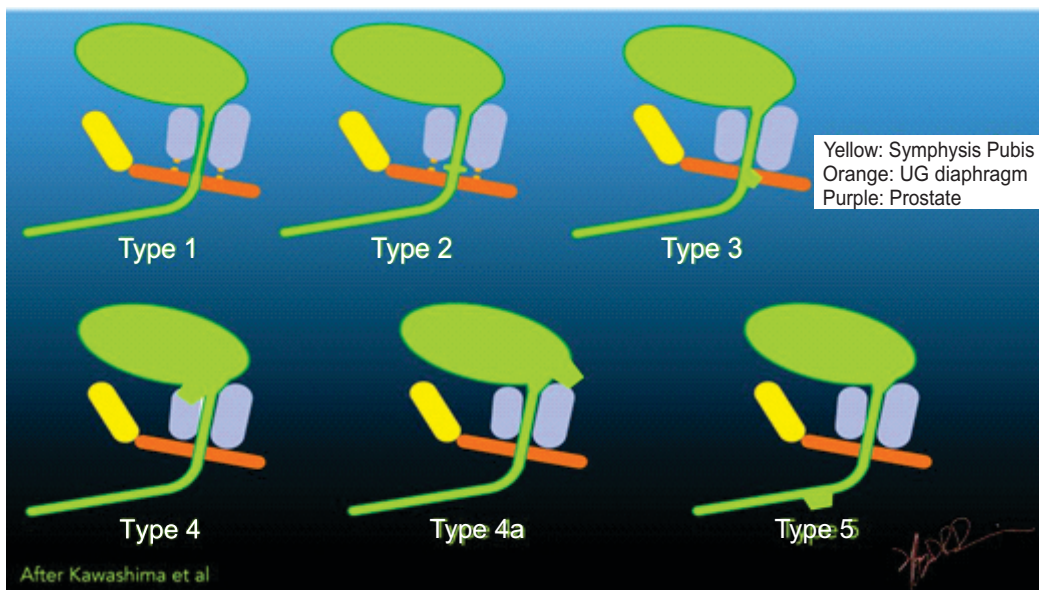
Our patient exhibited several signs of urethral disruption, namely bleeding from the meatus, high riding prostate and butterfly shaped bruising on the perineum which suggests an anterior urethral injury. A palpable bladder also suggests an inability to void which warrants a cystostomy procedure. The presence of hematoma which was confirmed by radiographic examinations warrants the use of ultrasonographic guidance the cystostomy procedure, as hematoma may displace the location of the bladder.¹³

Management of urethral injuries comprises prompt diagnosis, accurate staging, and proper selection of intervention which minimizes the risk of complications. Posterior urethral injury management aimed to minimize debilitating conditions such as incontinence, impotence, urethral stricture, and avoid opening or infecting pelvic hematomas. In initial management, a Foley catheter is inserted when there is no contraindication to relieve urinary retention, decompress the bladder, and monitor urinary output. Initial management of anterior urethral injury is prompt diagnosis as missed injuries may exist and can result in infection of extravasated urine and blood which poses the risk of abscess formation or necrotizing fasciitis of the scrotum and perineum. Anterior urethral injury may present in contusion or laceration.

Injury Type

Table 1. Goldman System Classification of Urethral Injuries at Urethrography.

Injury Type	Injury Description	Urethrographic Appearance	Treatment
1	Contusion	Normal	None
2	Stretch injury	Elongation of the urethra without extravasation	Conservative management with suprapubic or urethral catheterization
3	Partial disruption	Extravasation of contrast agent from the urethra with opacification of the bladder	Conservative management with suprapubic or urethral catheterization
4	Complete disruption	Extravasation of contrast agent from the urethra without opacification of the bladder and with urethral separation of <2 cm	Endoscopic realignment or delayed graft urethroplasty
5	Complete disruption	Complete transection with urethral separation of >2 cm or extension of injury to the prostate or vagina	Endoscopic realignment or delayed graft urethroplasty

**Figure 5.** Goldman classification for Urethral Injury.

Contusion management is expectant while lacerations mandate definitive management.¹⁴ Singh et al (2012) recommended an algorithm for managing anterior and posterior urethral injury which is as follows:¹⁵

Urethral injury by the mechanism of the injury itself or its treatment may cause the formation of sequelae which significantly the patient's quality of life. One such sequelae is

urethral strictures. 19% of urethral structures are caused by traumatic injury and the most frequently injured segment is the bulbar urethra. The causes of urethral strictures consisted of traumatic, idiopathic, iatrogenic, and inflammatory. The development of strictures is caused by fibrosis of the epithelial-lined cavernous tissue which leads to contraction of corpus spongiosum with scar formation which

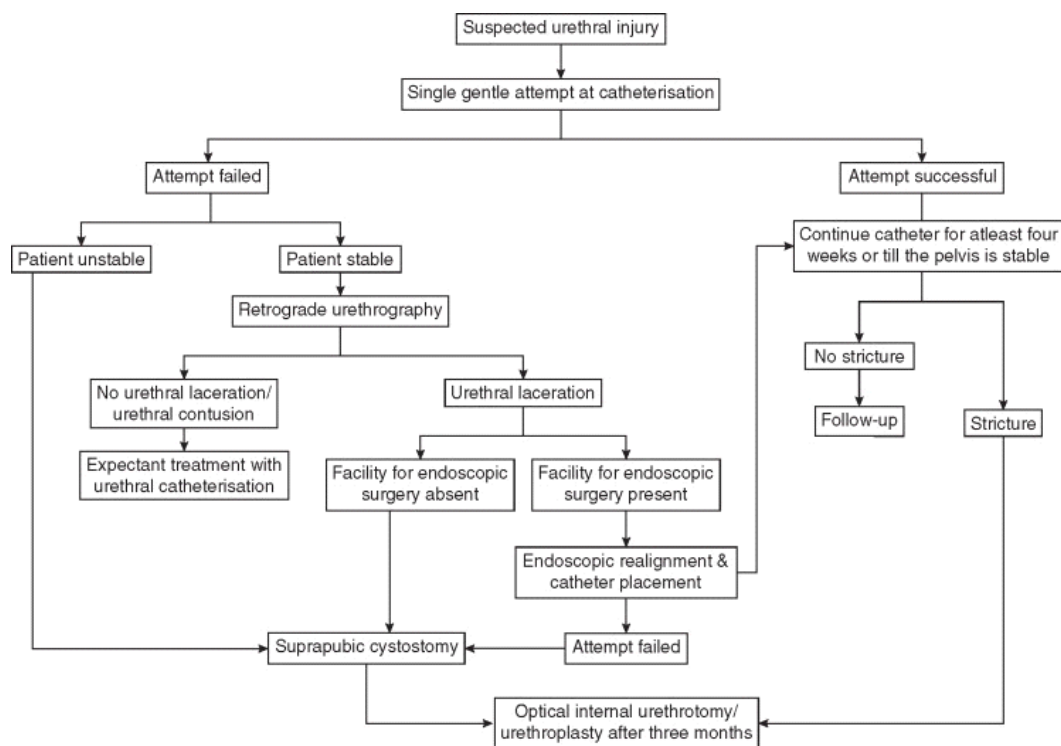


Figure 6. Approach to Management of Posterior Urethral Injury.⁴

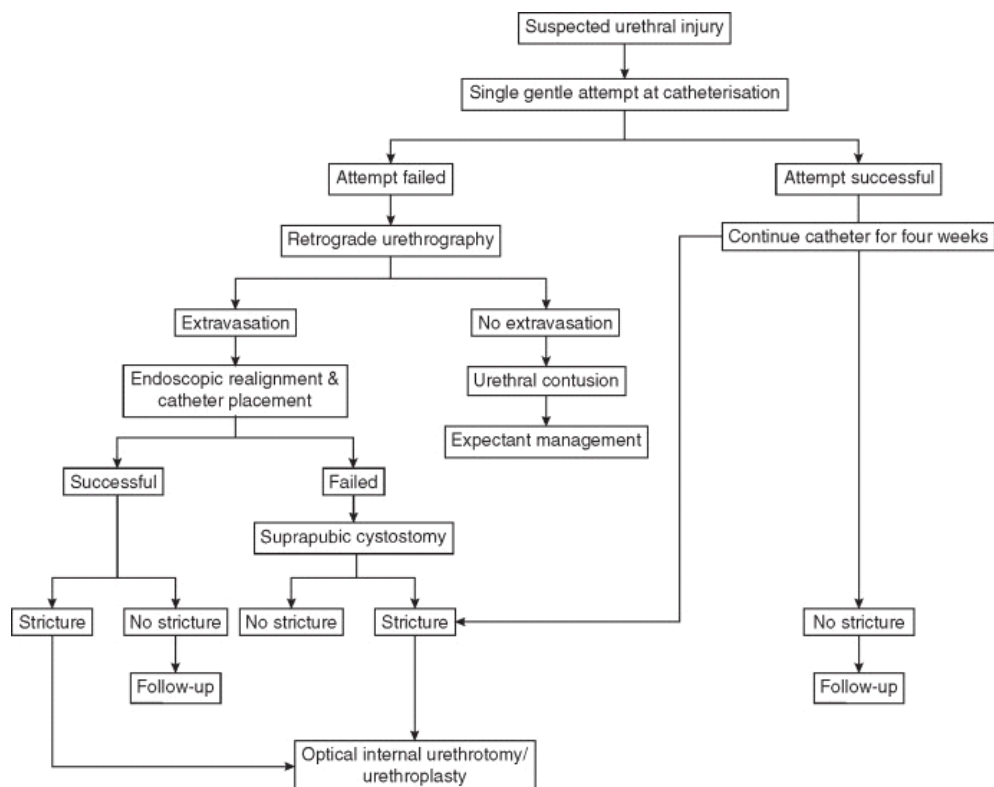


Figure 7. Approach to management of anterior urethral injury.

caused narrowing of the urethral lumen.¹³⁻¹⁴ Strictures following injury is typically short or flimsy.

In one study by Elgammal et al (2009) stricture occurred in 19 of 22 patients (86%) with complete urethral rupture and 10 in 31 (32%) patients with partial rupture.¹⁶ Another sequela that may affect the patient's quality of life is erectile dysfunction (ED), such as in our patient. Pelvic fracture urethral injury (PFUI) lacerates and often avulses the posterior urethra, while simultaneously injuring the nerves and arteries that transverse the pelvic floor to enter the penis. It was suggested that neurogenic ED is the more common etiology for PFUI patients.¹⁷

The incidence of erectile dysfunction after pelvic fracture was found in a meta-analysis by Blaschko et al to be 34%, in which delayed urethroplasty contributed an additional 3% risks above the 34% associated with PFUI alone.¹⁸ Bulbar urethral strictures are most commonly treated with direct vision internal urethrotomy (DVIU). However, DVIU has the disadvantage of increasing the length and density of spongiofibrosis after repeated procedures. Other surgical techniques for bulbar strictures may include end-to-end anastomosis, substitution urethroplasty, and augmented anastomotic urethroplasty. Penile stricture may be treated with one- or two-stage urethroplasty.¹⁹ A study by Wright et al (2006) found that the most cost-effective management of short-bulbar urethral stricture is to reserve urethroplasty for patients in whom a single endoscopic attempt fails.²⁰ In our case, the patient had developed urethral strictures in follow-up which was treated with DVIU.

The complex nature and the high cost needed to perform surgical procedures such as in our patients can put an economic burden for patient with less wealthy background. The inability to pay for medical treatment has the potential to defer patients seeking treatment or to postpone treatment until the disease has reached an advanced stage. Since the year 2000, many countries has adopted universal health coverage (UHC) policies to increase the accessibility of medical treatment for the less

wealthy population. In Indonesia, *Badan Penyelenggara Jaminan Sosial* (BPJS) or *Jaminan Kesehatan Nasional* (JKN) was implemented as a form of UHC policy for a wide range of medical treatment including surgical procedures.

Anindya et al (2020) demonstrated that BPJS contributed to the reduction of inequalities in access to maternal health services in which 61% of women that had given birth were insured by JKN.¹⁹ Erlangga et al (2019) demonstrated the effect of JKN on healthcare utilization, which found that JKN increased the probability of inpatient admission for the contributory and subsidized groups by 8.2% (95% CI 5.9–10.5%) and 1.8% (95% CI 0.7–2.82%), respectively. The contributory group had an increase in probability of an outpatient visit of 7.9% (95% CI 4.3–11.4%).¹⁶ The admission of our patient to the hospital may also contribute to the availability of BPJS that can be utilized by the patient. Patient's approval of surgical procedures and various laboratory examination may also been affected by the availability of BPJS, which may also contribute to the overall outcome and quality of life of the patient.

CONCLUSION

Urethral rupture is a urological emergency that may result from trauma in the pelvic area and should be suspected in the presence of urethral bleeding, urinary retention, bruising in the perineal area, and floating prostate. The urethrographic examination is the gold standard for urethral ruptures, however, clinical signs may be sufficient to warrant immediate surgical procedures in low-resource settings. Following initial treatment, sequelae may form such as urethral stricture which may require further surgical procedures and follow-up. We presented a case of 48-year-old man with urethral rupture treated with cystostomy and hematoma evacuation. On

follow-up, there is a stricture and erectile dysfunction of the patient which was treated with direct vision internal urethrotomy. The utilization of BPJS in medical treatment may also contribute to the overall outcome of the patient.

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